

The Rise of FinTech in China

Redefining Financial Services

- Explosive Growth of FinTech
- Opportunities to Scale
- Current and Future Landscape

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Foreword

While London, New York and Silicon Valley, compete to position themselves as the world's 'FinTech hub', China has leapfrogged ahead to become the undoubted centre of global FinTech innovation and adoption – thanks to developments across multiple hubs, such as Shanghai, Hangzhou, Beijing, and Shenzhen. The speed, sophistication, and scale of development of China's FinTech ecosystem have been at a level unmatched in more established markets. As banks and financial services institutions in the West look at ways to incrementally innovate, China's technology leaders are revolutionising many aspects of financial services.

China's FinTech revolution is a consequence of multiple factors – not least the scale of unmet needs being addressed by dominant technology leaders, combined with regulatory facilitation and easy access to capital. Underserved by China's incumbent banking system, consumers and small-to-medium-sized enterprises (SMEs) are increasingly turning to alternative providers for access to payments, credit, investments, insurance, and even other non-financial service offerings.

The willingness of Chinese consumers to adopt FinTech services is just as striking. Forty percent of consumers in China are using new payment methods compared to 4% in Singapore. Thirty-five percent are using FinTech to access insurance products compared to 1-2% in many Southeast Asian markets. There are also significantly higher rates of FinTech participation in wealth management and lending.

Underpinning China's FinTech dominance are leading domestic technology companies setting out to own entire customer journeys and consumption ecosystems across both financial and non-financial activities. 'Platform effects' enable them to capture data and use it to offer ever more services with significantly better and more comprehensive customer experiences than traditional financial services players. The relationship with Chinese corporates and start-ups is also often very collaborative, helping to fuel the rapid innovation and expansion.

If FinTech in the West has reached the tipping point of inflection, China has moved beyond the point of disruption.

The *Rise of FinTech in China* lifts the lid on China's unique, dynamic and rapidly evolving FinTech ecosystem. It examines the drivers behind the explosive growth of Chinese FinTech. It looks at the FinTech ecosystem, the unique characteristics and development profiles of China's FinTech giants, and assesses the implications both in Asia and internationally.

While there are lessons to be learned from the rise of FinTech in China – including from the response of regulators and incumbents – it is clear that not all products and services can simply be replicated in the West. China's heady mix of rapid urbanisation, regulatory acquiescence, a massive and underserved SME market, escalating e-commerce growth, and explosion in online and mobile penetration, have created a fertile ground for innovation in commerce, banking and financial services more broadly.

Developments in China are also worth considering relative to other markets. For consumers and SMEs at least, it is in developing markets where FinTech will likely have the greatest impact. Markets in which the scale of unmet needs and leapfrogging technology combine to create “10x solutions” – that is, solutions that are an order-of-magnitude better than what they replace. This step-change in quality, efficiency, and user experience is necessary in order to achieve mass adoption – as what we have seen in China.

From an international perspective, the key question is whether these powerful domestic Chinese FinTech players will be able to replicate their success abroad – or whether they, ultimately, will prove unable to compete outside of their Galapagos-like protected market.

What will it take to build comparable platforms and ecosystems outside of China? Given the inherent platform effects and benefit of scale, will we see global ecosystem alliances between major Chinese and Western players – or international rivalries?

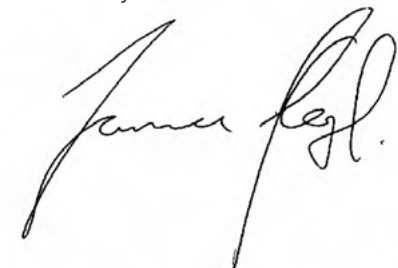
Only time will tell but what is clear is that we can expect that the next phase of development in FinTech innovation in China will have a major influence on the way global financial services are delivered in the future.

Neal Cross

A stylized, handwritten signature in black ink, appearing to read 'Neal Cross'.

Chief Innovation Officer
DBS Innovation Group, DBS Bank

James Lloyd

A stylized, handwritten signature in black ink, appearing to read 'James Lloyd'.

Asia-Pacific FinTech Leader
EY

Executive Summary

Aspects of China's traditional financial services sector may be somewhat underdeveloped compared to those in other developed markets, but the nation is emerging as the world's FinTech market leader. For the period July 2015 to June 2016, Chinese FinTech investments in the market surged to US\$8.8 billion, commanding the largest share of global investment in this sector.¹ As this exponential growth continues, China is poised to leapfrog developed nations and move to a digital financial marketplace.

Domestic Dominance

With high levels of internet and mobile penetration, China is already the world's largest and most developed retail e-commerce market, accounting for 47% of global digital retail sales² – the result of a massive domestic retail market in a closed digital economy. Now, these digitally savvy Chinese consumers, who have few reservations about sharing personal information, are ready to embrace FinTech offerings, creating opportunities for FinTech firms and incumbents willing to take on digital transformation.

These opportunities will come initially from the under-banked or unbanked populations of small and medium enterprises (SMEs) and consumers with unmet needs. FinTech firms are also targeting the maturing demands of the burgeoning middle class for wealth management, insurance and private banking. To meet these needs, the Chinese technology giants (often referred to by the "BAT" shorthand – referring to dominant players Baidu, Alibaba, and Tencent) are aggressively creating all-encompassing platforms with the aim of embedding their services – financial and non-financial solutions – into customers' lives. They are also investing heavily in emerging technologies to support next-generation financial services, such as blockchain and artificial intelligence solutions.

Once the nation-wide Social Credit System (SCS) is in place, the potential of China's FinTech market will open up even further. The SCS, which is expected to be operational by 2020, will assign a credit score to every citizen and business in China based on their financial and social behaviour. Ahead of the SCS, China's National Internet Finance Association has just launched its Internet Financial Industry Information Sharing Platform³, accelerating the entry of credit scoring into the internet finance fold.

These are challenging times for China's incumbent financial services providers, which are already struggling with a slower rate of economic growth, non-performing loans and other such factors. This is further exacerbated by the spectacular leapfrog of retail customers from cash into mobile payments – bypassing payment cards altogether – thus depriving the incumbent banks of potential sources of income. In 2015, net profit growth for China's commercial banks

reduced to a pedestrian 2.4%, with bigger banks registering their slowest growth in years.

China's financial services sector is hence ripe for disintermediation and a new-normal environment, whereby:

- FinTech firms are leveraging big data from e-commerce, messaging, search, social media and other internet-based services to personalise the customer experience, provide new services, and leverage operational efficiencies. The emphasis is on acquiring customers and their data, which can be used to support other online revenue streams, such as lending, insurance, investment and wealth management.
- With aspects of their business vulnerable, more progressive Chinese financial services players are responding with their own digital and FinTech transformations – launching e-commerce platforms, e-payment tools and online financing and wealth management services.
- Incumbents are also increasingly seeking to collaborate with earlier-stage FinTech firms, leveraging new technologies or business models to reach traditionally underserved customers, which would not have been possible without user and merchant information, and the online banking capabilities of the large e-commerce players. At the same time, new regulations requiring in-person verification to open accounts mean that online-only banks need to collaborate with traditional banks to use their established infrastructure.

Currently, the big winners in this flurry of activities are domestic players, both the dominant technology players and more progressive incumbents. Almost all of the FinTech activities are being funded by domestic state-owned and private investors. Equally, attempts by foreign entrants have met with varying levels of success – limited by government restrictions on operations and investment, as well as cultural differences.

Nonetheless, China's market is too big, too valuable and has too much untapped potential for international players to ignore. For those still keen on entry but awaiting the government to ease some of its barriers to foreign participation, we see two main strategies for addressing Chinese FinTech opportunities:

1. Outbound – opening up new markets for Chinese consumers who increasingly shop and invest overseas.
2. Inbound – providing new capabilities to Chinese firms in areas such as risk management and banking system automation.

Global Aspirations

The giant Chinese technology firms, flush with cash and IT infrastructure, have extensive global ambitions. They are penetrating new product markets overseas to diversify

revenue streams and reduce their domestic reliance. In addition to investing in Silicon Valley and other mature markets, the “BAT” giants (and their long-tail of affiliates) are expanding to serve outbound Chinese travellers while simultaneously pursuing new customers in emerging economies from Africa to Southeast Asia. They are particularly interested in the future possibilities of new online-to-offline (O2O) revenue streams.

However, Chinese players have not always fared well outside their uniquely protected domestic market. In theory, internationalisation efforts should: provide technologies for advanced transaction processing capabilities; open up the global settlement network; break down international payment barriers; and enhance opportunities for these Chinese technology players to transform financial services from the ground up. Yet, just like in China, business success overseas requires catering to the individual peculiarities of international markets and their consumers.

Chinese companies cannot merely replicate and export domestic business models abroad. They need to adapt to local cultural norms and expectations and focus on safety and security reassurance. To do so, they will need to collaborate with and invest in overseas comparators. A key challenge for Chinese FinTech firms as they seek to internationalise will be in attempting to replicate their domestic ecosystems overseas; this is where local FinTechs (and, indeed, established financial services providers) can cooperate – or compete.

The Future of Chinese FinTech

In the coming years, China looks set to continue to dominate the global FinTech industry with a very strong domestic market. Internally, the push and pull factors are clearly in place to catalyse the establishment of a leading digital finance sector. On the push side, capital investment is pouring in and the market is being bolstered by substantial government support for innovation. On the pull side, demand is being driven by under-served SMEs and tech-savvy, often unbanked, consumers keen to access financial services via their mobile phones.

Overseas, Chinese FinTech firms will also play an increasingly important role in the global collaborations driving technological innovation. What these companies learn abroad, they will bring back to the domestic market, further fuelling the sector to stay ahead of the rest of the world.

Exciting times lie ahead. ■

Introduction

FinTech refers to the application of technology within the financial services industry. The sector covers a wide range of activities from financial data and analysis to financial software, digitised processes and, perhaps most well-known to the wider public, payment platforms. China is emerging as a leading FinTech market not just in Asia-Pacific, but globally.

China has a huge amount of white space open to disruptive and innovative models, as evidenced by the exponential growth in Chinese FinTech investments. The numbers speak for themselves, with FinTech investments in China surging to US\$8.8 billion between July 2015 to June 2016, equivalent to an increase of 252% since 2010⁴.

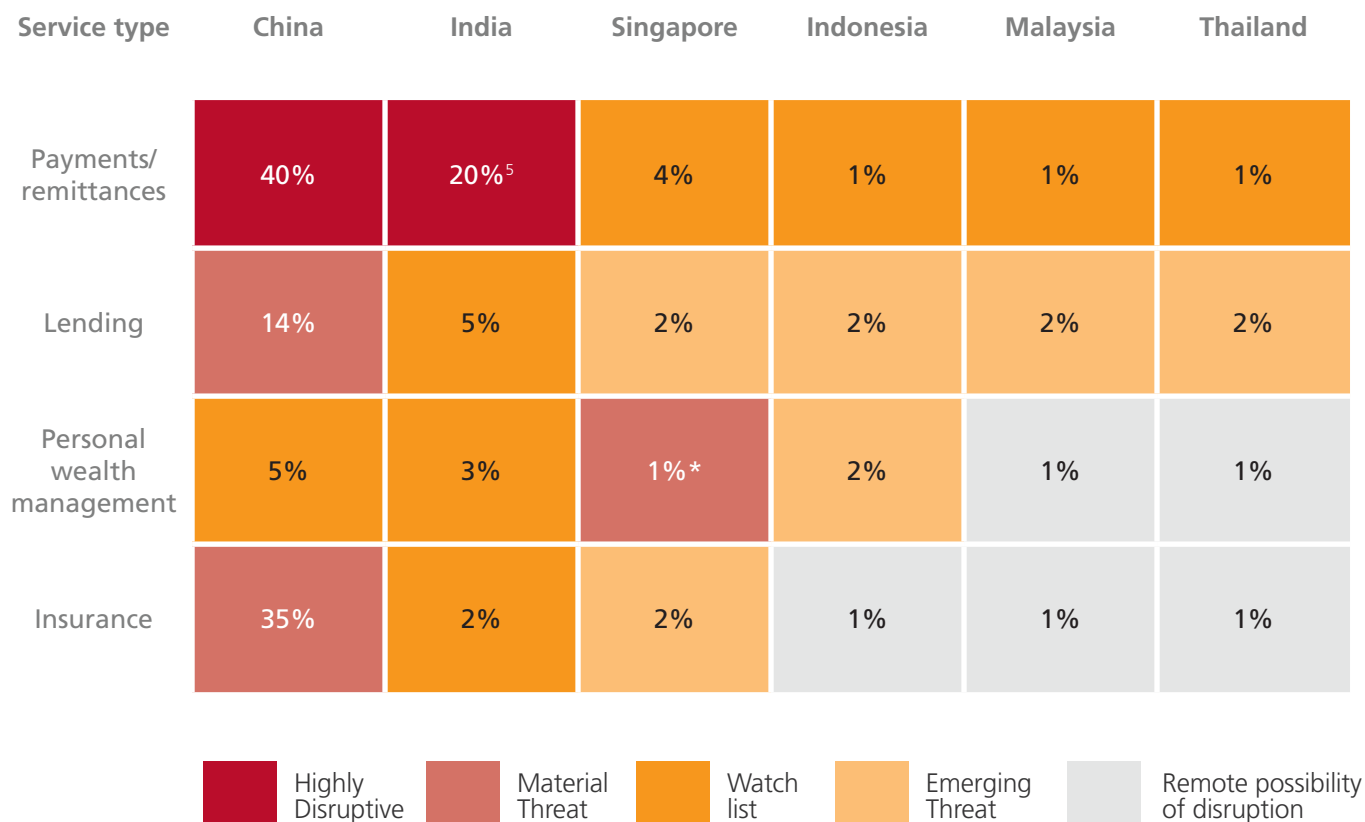
Some notable highlights include Tencent's WeChat sending 32 billion digital red envelopes over the six-day Chinese New Year holiday in 2016, logging in those few days more than six times the 4.9 billion mobile and desktop transactions PayPal did for the entire 2015. Meanwhile, Ant Financial's Yu'e Bao became one of the largest online funds managing US\$96 billion for more than 295 million clients by mid-2016. Elsewhere, China's biggest P2P player, Ping An Insurance-backed Lufax, had more than 23.3 million users at 30 June 2016, a figure more than double a year earlier. Players like Lufax and peers propelled China into the biggest P2P lending market globally, advancing 3% of system retail loans versus 0.7% for P2P lenders in the United States (US). China also houses several of the largest mutual funds, such as Yu'e Bao and Tencent's Licitong.

2016 has only seen growth continuing, with FinTech financing in Asia-Pacific reaching almost US\$10 billion in the first half of 2016. This is more than double the figure for all of 2015, eclipsing the aggregate of North America's (US\$4.6b billion) and Europe's (US\$1.85 billion) over the same period. Investment in Asia-Pacific continue to be driven mainly by growth from China, with US\$1 billion invested each in two of China's largest internet finance companies, Lufax and JD Finance.

A further US\$4.5 billion was raised in the second quarter of 2016 by Ant Financial, the financial services arm of Alibaba. This was the largest single private placement in any FinTech firm globally, valuing it at US\$60 billion, just shy of China's fifth-largest bank, Bank of Communications. Although such a deal may be uncommon, it showcases the massive potential for digital banking services in China.

The disruptive nature of FinTech is best illustrated in China, where disintermediation is starting to reshape the industry

Diagram 1: Percentage of banking/financial services customers using FinTech services



Source: DBS Bank, 2016

*Robo-advisors (online platforms that provide automated investment advice) can take advantage of Singapore's fast growth rate of ultra-high net worth individuals and the wealthy to drive adoption rates. Thanks to favourable demographics, FinTech can reach a tipping point in just two years despite strong competition from major established banks.

Consequently, China's FinTech industry is leading by huge margins in Asia-Pacific with segments like payments and insurance already beyond the tipping point⁶ (the juncture where it is broadly accepted by the mass market) with non-banks commanding an impressive 35% or higher market share within the span of two years. First movers contributing to the percentages include Ping An, which leads digital insurance in China (in partnership with Alibaba and Tencent), alongside Alipay, Tenpay and UnionPay for payments/remittances. Unsurprisingly then, China has 8 of the 27 current FinTech "unicorns"⁷ – technology companies that investors value at more than US\$1 billion.

Chinese FinTech activity spans seven key vertical markets:

1. Payments and e-wallets

A mobile payments ecosystem facilitated by e-commerce and social media players, of which Alipay (of Ant Financial) and Tenpay (a Tencent company) dominate the market. Other notable players include UnionPay, ICBC e-wallet, JD Pay/Wallet (of JD.com) and 99bill (of Dalian Wanda Group).

2. Supply chain and consumer finance

E-commerce players lend to underbanked or unbanked individuals and small medium enterprises (SMEs) by leveraging users' merchant data on the platform. Key participants include Ant Financial and MyBank (Alibaba), WeBank with WeChat (Tencent), JD Finance (JD.com) and Gome Electronic Appliance, which recently ventured into providing financial services for individual customers and suppliers.

3. Peer-to-peer (P2P) lending platforms

P2P platforms create a marketplace for peers to lend to individuals and SMEs underserved by the traditional lending sector. Market leaders are Lufax (Ping An Insurance), Yirendai (CreditEase), Rendai, Zhai Cai Bao (Alibaba) and Dianrong (the co-founder of Lending Club).

4. Online funds

Funds linked to payment platforms that offer ease of access and more competitive returns than the historically low deposit rates. Primary participants are Yu'e Bao of Ant Financial, Li Cai Tong (Tencent) and Baifa (Baidu).

5. Online insurance

E-insurance sold through e-commerce and online wealth management (WM) platforms. Notable brands are platforms by the People's Insurance Company of China (PICC), Ping An, and Zhong An (in partnership with Ping An).

6. Personal finance management

Recently developed mobile-centric finance solutions providing access to mutual funds through stock trading apps. These platforms offer offline-to-online activity, with online brokers accounting for over 92% of new clients. Key players include Ant Financial (Alibaba), Li Cai Tong (Tencent), Baifa (Baidu), Wacai, Tongbanjie, Zhiwanglicai (CreditEase) and JD Finance (JD.com).

7. Online brokerage

Investment, social network and information portals for investors in China, providing thematic investing via websites and mobile apps, and offered by FinTech firms such as Snowball Finance, Xianrenzhang and Yiqiniu. ■

Key Drivers of FinTech in China

China's financial services sector is ripe for disintermediation, buoyed by several factors such as exponential growth in digital connectivity; deep penetration of smartphones; unmet financial needs; the explosion of e-commerce and a core of restless internet giants. Unlike in the US or Europe, disruption by FinTech firms is not occurring at the periphery of the Chinese financial sector. It has gone past the inflection point, with technological innovation reshaping the financial landscape.

1. Unmet Financial Needs

At US\$10.9 trillion in 2015, China's GDP already almost equates to the aggregate of the next 10 largest markets. Despite recent market gyrations, its economic growth continues to outpace that of most other countries. Years of sustained economic growth is swelling the ranks of the middle class⁸, with individuals in this category set to rise from about 150 million to one billion – or 70% of China's projected population by 2030.

This exponential growth in both China's economy and middle class, with their new-found spending power, has been paving the way for a corresponding rise in financial services in China. To date, the commercial banks, have been the largest beneficiaries⁹. Yet when compared to other markets, China's banking sector seems somewhat underdeveloped.

Diagram 2: Banking infrastructure per 100,000 adults in 2014¹⁰

	China	USA & Canada	Europe
Commercial bank branches	8.1	28.2	28
ATMs	55	222	81

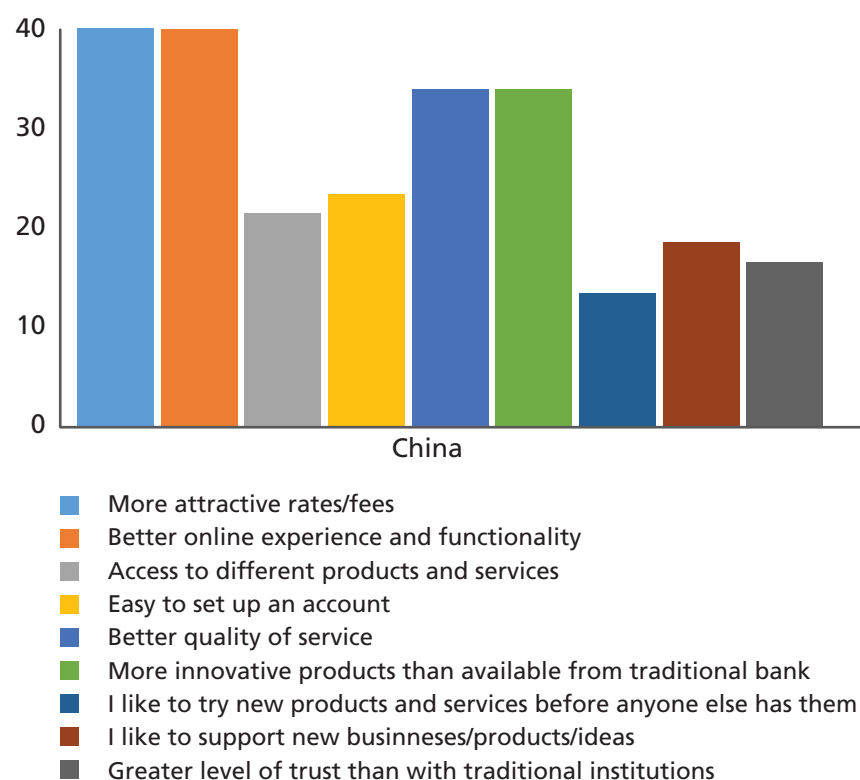
Source: World Bank, August 2016

At 20%, current retail loan penetration is also one of the lowest in the world. One in five of China's adult population remain unbanked. In fact many Chinese do not have existing banking relationships as evidenced by the fact that national credit bureau only has information on less than 20% of the population¹¹.

State-owned banks have largely underserved the SME and retail customer segments. SMEs, which lack of qualified collateral and credit repayment track records, receive only 20-25% of bank-disbursed loans. Yet they account for 60% of GDP, 80% of urban employment, and contributing to 50% of fiscal and tax revenues in China. SMEs also suffer from asymmetric information, with limited transparency in their financial positions and credit rating assessments. Even if they do secure bank loans, the interest rates are typically double that of large corporations, based on inherent (or perceived) risk concerns.

Such imbalances will only worsen as SME financing needs mature and extend beyond basic borrowing into transaction banking and cash management, supply-chain financing or investment management. These ballooning, yet unfulfilled, lending needs – coupled with traditional banks' lack of customer-focus and innovation – are driving these SMEs to seek better experiences and more comprehensive financial solutions elsewhere.

Diagram 3: Reasons for using a non-bank rather than traditional bank



Source: EY Global Consumer Banking Survey 2016, September 2016 (with N~ 56,000 globally and 35,000 for the 6 markets above)

Retail customers have not been particularly well served by China's under-developed consumer banking system either. Even as banks continue to grow their coverage, not all are rushing to initiate a conventional banking relationship. Traditional banks are seen as offering homogeneous, uncompetitive, unimaginative financial products that are pushed out to customers, rather than responding to customers' needs.

This was one of the findings of the EY *Global Consumer Banking Survey 2016*, where more than 2,000 individuals were interviewed in China (and almost 56,000 globally) to understand changing consumer perceptions and continued relevance of products and services at traditional banks.

As Diagram 3 illustrates, the survey found that non-banks have an upper hand in China especially when it comes to competitiveness in offerings, digital functionality and experience, quality, innovation and (albeit relatively new to the financial scene) even trust levels.

For these reasons, SMEs and retail consumers, lacking funding or seeking more attractive and broader product offerings, are increasingly turning to financial services from non-traditional lenders.

2. Ubiquitous Connectivity

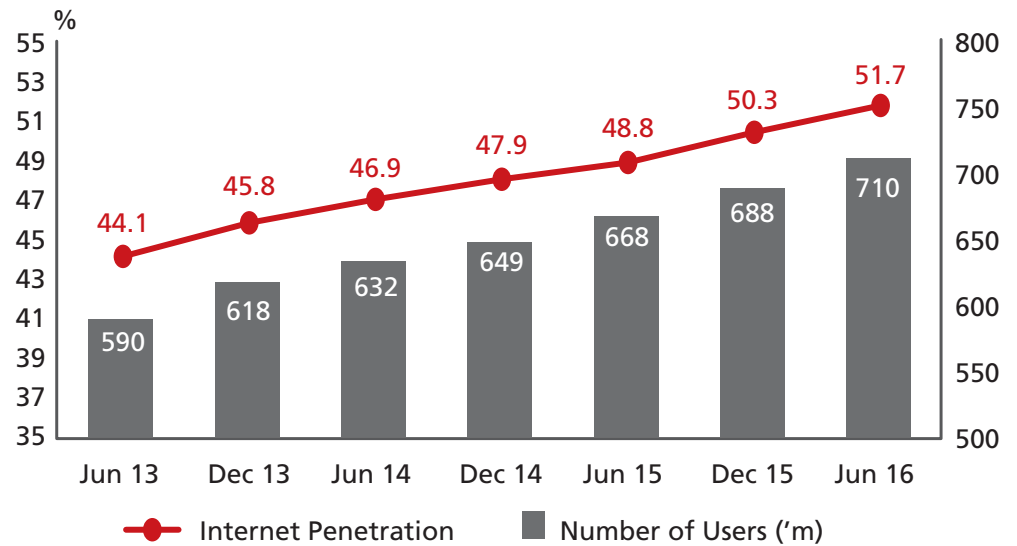
China is set to leapfrog developed nations and move directly into a digital financial marketplace. Although China may have much less extensive physical banking infrastructure compared to the US and Europe, its digital infrastructure is far more mature, with a population ready and able to use their smartphones for mobile banking.

In June 2016, China had 710 million internet users (already more than the US and Europe combined), bringing its online penetration rate up from 1.8% of the population in 2000 to 8.5% in 2005, and 51.7%¹² by mid-2016 (See Diagram 4). At this rate of growth, the current penetration rates of 89% in North America and 73.9% in Europe will be within reach in a few years¹³.

Meanwhile, the smartphone is becoming the universal internet access device. At 30 June 2016, 656 million or 92.5% of users were going online via connected devices, driven by the development of 'Smart City' and 'Wireless City' public access wireless networks in China's major cities.

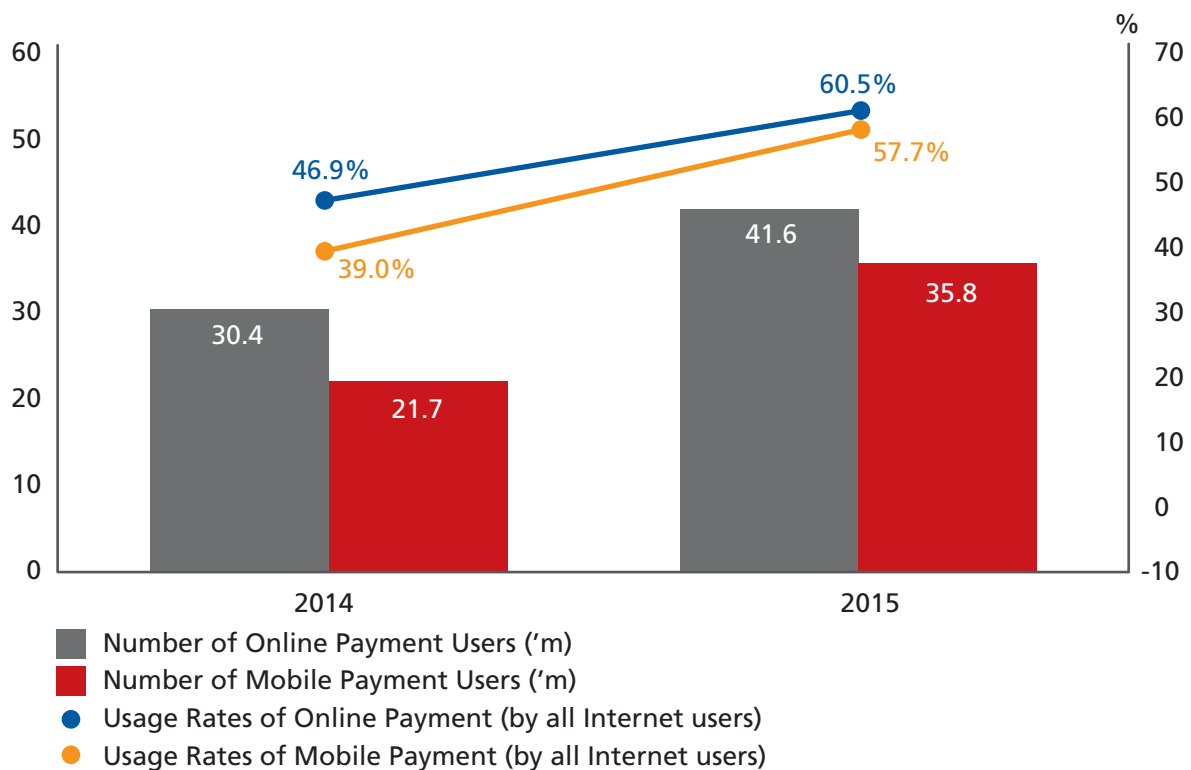
As a result, mobile online payment users touched 358 million individuals by the end of 2015, on an impressive annual growth rate of 64.5%, despite rising concerns about the security of mobile finance activities. At that point, China's utilisation ratio of mobile online payments stood at 57.7%, with more than 1-in-2 persons using their smartphone to conduct financial transactions primarily through Alibaba's Alipay or WeChat's payment service. In 2016, mobile banking values have continued to rise exponentially, with 6.3 billion mobile payment transactions conducted in the second quarter of this year, spending RMB29.3 trillion (US\$4.4 trillion).

Diagram 4: Internet users and internet penetration rate in China



Source: CNNIC, June 2016

Diagram 5: Online payment/mobile payment users and usage rate in China, 2014-2015



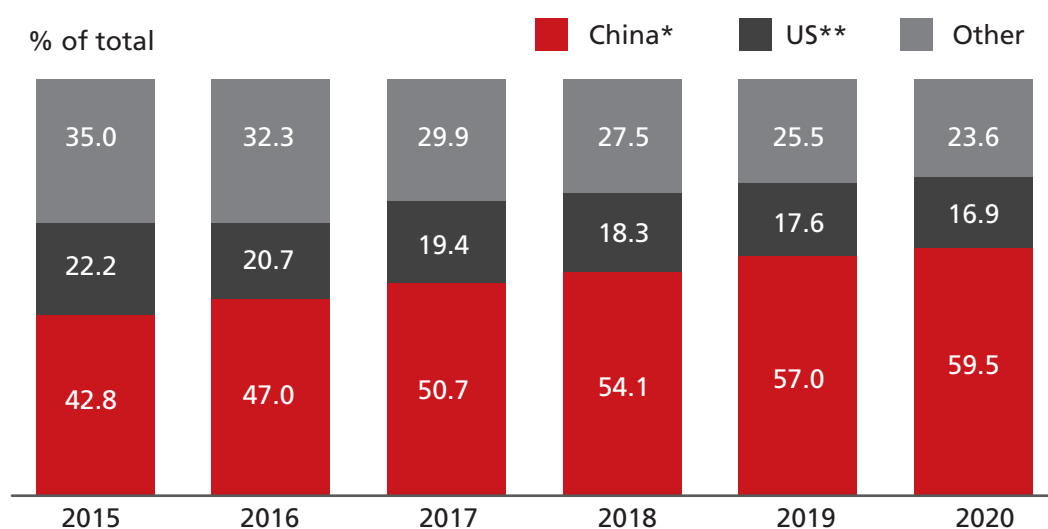
Source: CNNIC (Statistical Survey on Internet Development in China), Dec 2015

3. E-commerce with Chinese Characteristics

Given its high levels of internet and mobile penetration, it is perhaps not surprising that China has become the world's largest and most developed retail e-commerce market. In 2016, e-commerce sales are projected to reach US\$899 billion¹⁴ – 47% of global digital retail sales, as illustrated in Diagram 6.

At the same time, digital purchases in China are expected to reach a globe-topping 18.4% of the country's total retail sales value, compared with 8% in the US, 12% in South Korea and 16% in the UK. By 2020, mobile transactions will rise from 55.5% of all e-commerce sales to 68%. With Beijing encouraging citizens to shop using mobile technology, and mobile broadband subscriptions projected to reach 90% by 2020¹⁵, we expect an accelerated adoption of e-commerce activities beyond urban metropolitan into rural areas.

Diagram 6: Share of global retail e-commerce sales, China vs. U.S., 2015-2020F

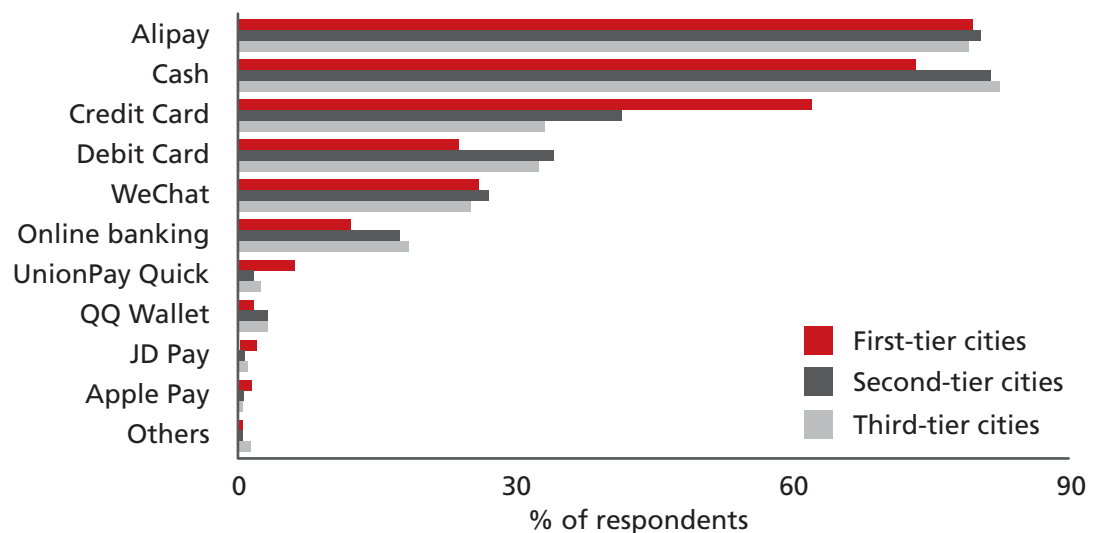


Source: eMarketer, August 2016

Despite China's massive e-commerce growth, incumbent banks have been unable to capitalise on digital payments due to low credit card penetration rates. Unlike many developed markets, where payment cards have entrenched themselves with loyalty schemes and widespread merchant acceptance and integration into back-end IT systems, cards never gained traction in China. Instead, according to PBOC statistics, the country had only 0.29 cards per capita in circulation at the end of 2015¹⁶, down from 0.34 a year ago and in stark contrast to an average of 3.3 credit cards per individual in Singapore¹⁷. Spending on bank cards has similarly contracted, with users paying 3.3% less YoY via cards in the second quarter of 2016.

In a nation where cash historically dominates, it appears that Chinese consumers, especially those living in first-tier tier cities, are moving from cash to digital wallets on their smartphones, largely bypassing payment cards. This rapid spread of mobile payment platforms such as Alipay, WeChat and UnionPay Quick, is illustrated in Diagram 7 below, with a combined 98.3% of respondents having used mobile payment platforms over the past three months. Alibaba's Alipay was the most frequently used payment platform as cited by almost 80% of respondents living in first-tier cities, greater than those who most regularly used credit cards (about 60%), debit cards (about 30%) or even cash (79%), and rapidly eating into the market share of traditional banks.

Diagram 7: Payment method used most regularly the past 3 months



Source: Survey of 1,000 urban consumers conducted by FT Confidential Research, a unit of the Financial Times¹⁸, May 2016

China's flourishing e-commerce market, and its adoption of internet and mobile payments can also be attributed in part to the presence of a massive domestic retail market in a closed digital economy which filtered out or blocked a significant amount of global internet competition. This drove the development of functionally equivalent (and often more advanced) services such as Baidu, WeChat, Weibo and Youku respectively.

At the same time, dominant domestic online marketplaces for consumers such as Taobao (Alibaba), Tmall and JD.com also proliferated, turning the country's under-developed traditional offline retail infrastructure into an advantage. Emergence of these e-commerce firms served as a precursor to the rise of the FinTech firms – many of which are their financial subsidiaries focused on payments and third-party remittances.

4.1 Internet Giants Driving Innovation

With digital technology embedded into consumers' lives and consumers now comfortable with e-commerce and online payments, business is booming for payment service providers. Alibaba's Alipay is now the largest online payment gateway in China, accounting for half of Chinese third-party online payments (and 68.4% of the mobile payments market¹⁹); Tencent's Tenpay currently commands another 10% (and 20.6% of the mobile payments market).

In June 2013, Alibaba used its Alipay platform to launch money market fund Yu'e Bao, run by Tianhong Asset Management, another Alibaba affiliate via a controlling stake from Ant Financial²⁰. Merchants and customers using Alipay could easily park their excess cash in Yu'e Bao to earn an attractive interest that banks were unable to offer. This natural extension of Alipay's services resulted in exponential growth. In June 2015, following the success of Yu'e Bao, Ant Financial launched MYbank, a new online bank in China.

Similarly, Tencent's WeChat has grown beyond being just a social media platform – users are now able to transfer money between each other, as well as pay for services such as taxis, digital subscription, food delivery and restaurant bills. WeChat transformed itself into a payment platform in 2013 and launched a personal online investment fund in January 2014, which was followed by the launch of WeBank, China's first online bank a year later.

Additionally, mobile payments are growing, fuelled by QR (quick response) codes and, particularly, by online-to-offline (O2O) services. In the O2O business model, although customers are acquired online, delivery of the product or service takes place at physical locations. Following the online-to-offline discussions, Alipay has announced ambitions for one million offline partner merchants globally within three years, a move that will allow 200 million Chinese users to pay with Alipay even when they are abroad²¹. The first of these cross-border payments partnerships was rolled out in 2015, allowing Chinese tourists with an Alipay account to shop seamlessly and pay at 70,000 overseas merchants with the app.

To bolster its O2O offering, in 2015, Alibaba invested in Suning Commerce, one of China's largest consumer electronics retail chains,²² while rival, JD.com likewise financed Chinese supermarket chain Yonghui²³.

4.2 Internet Giants Driving Innovation

Unlike in the US and Europe where FinTech has been driven by startups, or in some cases financial services incumbents, China's internet giants have largely been the sources of capital for its FinTech firms. Ant Financial, which operates the Alipay payment platform, was a spin off from Alibaba before its 2014 IPO²⁴. Both organisations remain controlled by Alibaba's Executive Chairman, Jack Ma. Similarly, Tencent owns and operates Tenpay, which allows users to transfer money through WeChat, its social messaging app. Tencent is also a major shareholder of WeBank, China's first online-only bank²⁵.

Funding and innovation in China has also originated from mobile device manufacturers, such as Huawei and Xiaomi. Many of these hardware and handset makers are moving into FinTech, such as Huawei and Xiaomi's respective mobile payment partnerships with UnionPay. This has been assisted by a regulatory environment that has been generally facilitative to specific industry verticals – e-commerce, gaming, chat and search engines – now moving laterally into financial services.

Diagram 8: QR codes are key in China in enabling interaction between online and offline worlds



Source: DBS Bank, 2016

The reverse interaction—offline-to-online—is also popular in China. Diverting from today's norm of acquiring customers online, a rising number of Chinese retailers (both bricks-and-mortar and e-commerce companies) have started using QR codes on billboards, posters and flyers to offer discounts and product information. By scanning the codes, smartphone users can use mobile payment options to immediately purchase the product or service – promoting impulsive purchasing.

Recognising this growing trend, PBOC recently revealed plans to regulate QR based payment technologies and has authorised the China Payment & Clearing Association to draft standards for mobile purchases linked to QR codes²⁶. Favourable regulation will likely support the development of virtual credit cards, providing further stimulus for FinTech firms focused on digital payments.

5.1 FinTech Ready Generation

Chinese consumers are more than ready to embrace FinTech offerings, creating opportunities for both incumbent and new financial services providers. Key markets are the under-banked or unbanked populations, and the maturing demands of the burgeoning middle class for WM, private banking and custodian businesses.

Amidst the growing middle class is a disproportionately large presence of a new segment of digital savvy consumers – the Gen-Y and millennials – who account for 45% of consumption. These ‘digital natives’ are more open to new technologies. They not only exhibit a higher tolerance towards financial risks and greater propensity to spend than the older generations, but also demonstrate more individualised preferences, and demand real-time, hyper-connected, client-centric offerings. They are driving the online retail market and leading the charge in China’s mobile payments adoption, with 66% of post-1990s millennials shopping and 54% banking via their mobile devices.

Moreover, digital natives are not easily impressed or influenced by the brand, heritage or longevity of traditional banks. EY’s recent *Bank Relevance Index*, (created as part of the *Global Consumer Banking Survey 2016*) indicates that traditional Chinese banks are becoming less and less relevant to their customers. China’s Index score of 69.5% was the third lowest in the world, against a global average of 75.1%.

Chinese consumers now have higher expectations of the customer experience. They will not hesitate to migrate away from banks to engage with digital disruptors that can better deliver to their financial needs with higher interest rates and fast, convenient services. As a result, a rising number of young Chinese consumers end up accessing financial services for the first time through FinTech-developed platforms, rather than incumbent banks.

Traditional banks are not winning consumers’ trust either. Trust is a key predictor of advocacy and, therefore, future business. Today, it is less about customers’ conviction that banks will keep their money physically secure, and more about whether they can trust banks to charge fair fees, and provide high-quality, unbiased advice, that place their interests and needs first. A host of public relations disasters in recent years, such as the mis-selling of financial products and other industry scandals, have undermined consumers’ trust in banks – in China and around the world.

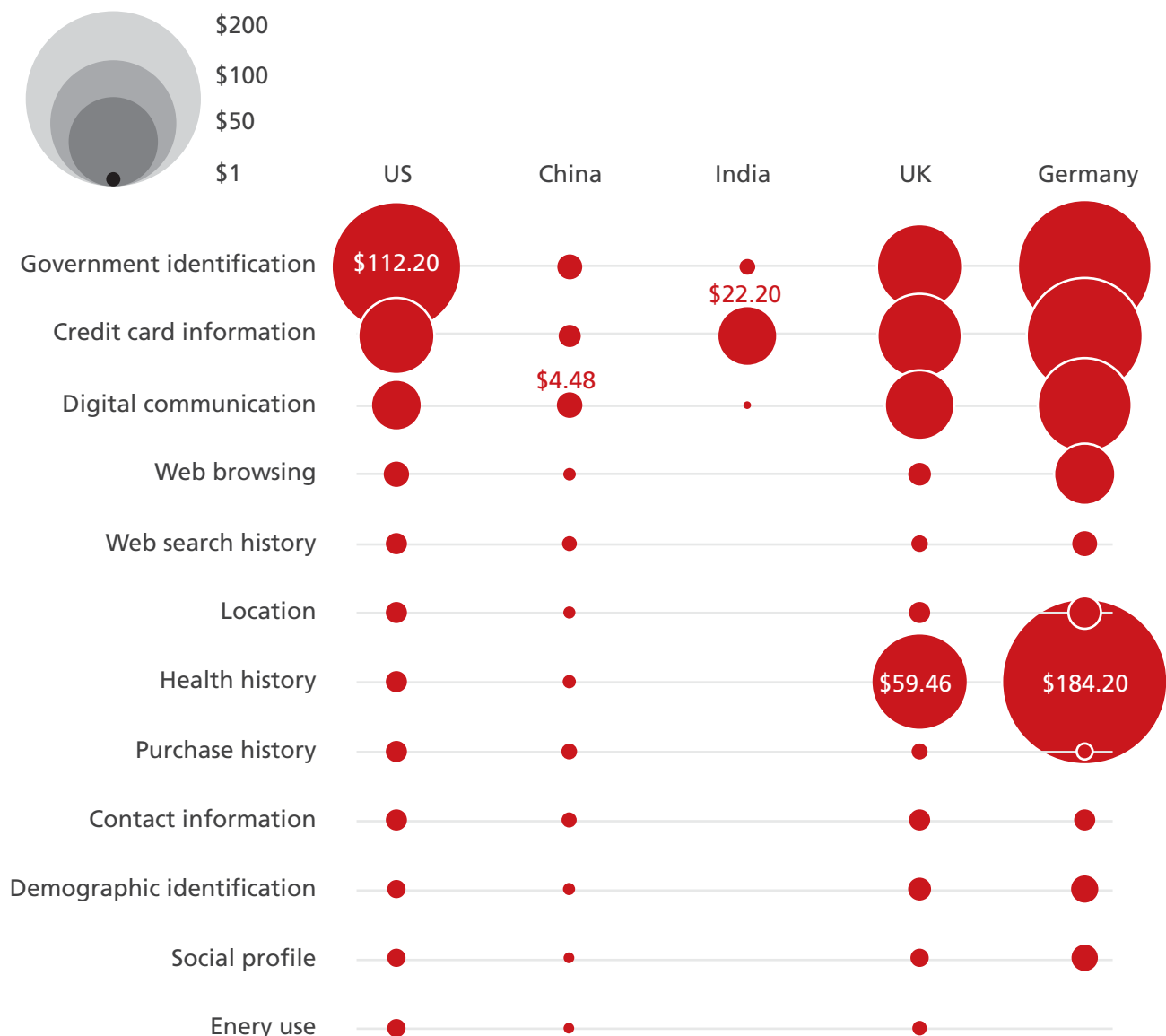
With an erosion of trust in traditional Chinese banks and the reduced importance of physical banking channels, an increasing segment of consumers are considering non-banks as candidates to manage their finances. Early 2015 statistics from the CNNIC indicate that 54.5% of internet users trust online content, a dramatic rise from 35.1% in 2007²⁷.

Ironically, e-trust in China also stems from the social norm of reduced anxiety over data privacy. A survey by Harvard Business Review revealed that Chinese consumers place far less value on their personal data than consumers in the US, UK and Germany²⁸. The maximum amount of money that Chinese respondents would pay to protect digital communication information was

US\$4.48 per person, compared to a sizeable US\$184.20 by the Germans to protect data on their health history. Even on a normalised basis, this works out to represent 0.03% of the GDP per capita in China (based on purchasing power parity in 2015), compared to 0.39% in Germany.

Consequently, it is no surprise that Chinese consumers are open to sharing personal information online, store payment information in their smart devices and experiment with other forms of non-cash payments. This has been the social foundation for e-commerce and digital banking success – commencing with retail spending and third-party payments, and quickly expanding to include financial services such as P2P lending, WM and mutual fund purchases.

Diagram 9: Chinese consumers are more willing to trust companies with their personal data



Source: Harvard Business Review. May 2015

5.2 Tech Talent

Developing a FinTech sector requires a highly skilled work force with an agile mind-set. In China, the hubs for such talent and financial innovation are:

- Beijing – hosts country headquarters of a number of foreign and local technology multinationals such as Microsoft, IBM, Cisco, JD.com and Baidu.
- Shenzhen province – near the financial centre of Hong Kong, is home to local tech giants such as Huawei, ZTE and Tencent.

- Shanghai – an international financial hub and near Hangzhou, where Alibaba is based.

FinTech firms are also located near some of the world's top-ranked universities for technology and engineering, such as Peking University and Tsinghua University. These educational powerhouses create an unparalleled and constant pool of new talent for the tech industry.

Diagram 10: Tech giants concentrated in Beijing, Shenzhen and Shanghai-Hangzhou



These regions are continuously investing to nurture a conducive environment for FinTech firms in China. For example, Shenzhen is expected to spend about US\$680 million in 2016 to attract global professionals and academics²⁹.

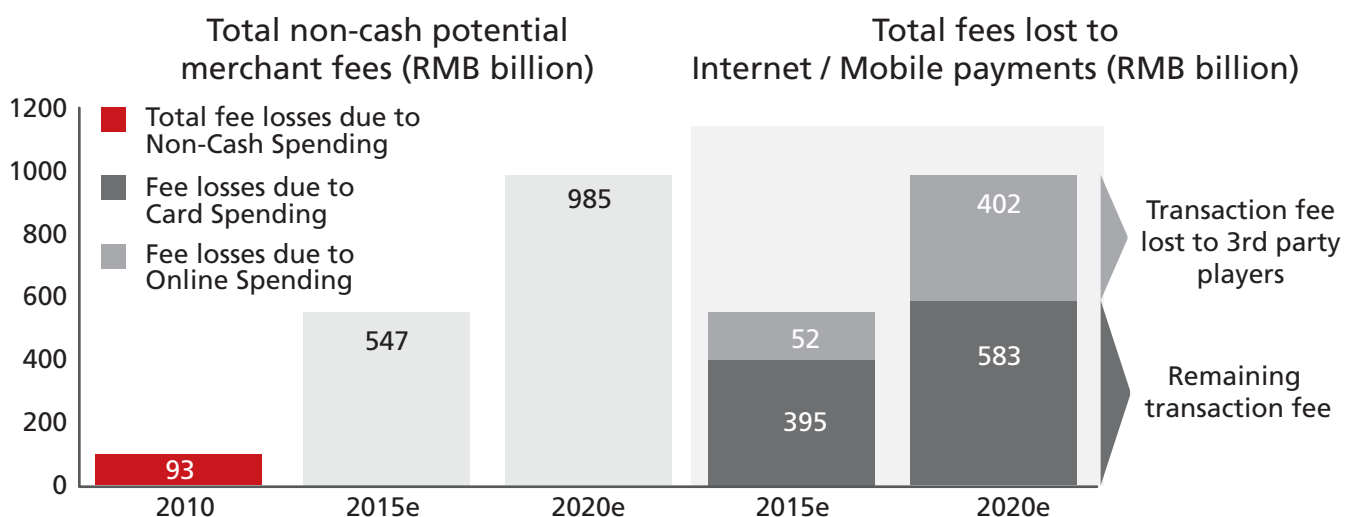
Meanwhile, an increasing number of Chinese who opt to study at top US universities and are recruited by the likes of Google and Facebook do end up returning home. The wealth of knowledge and experience transferred back into China upon their return is invaluable to further innovation. ■

Key Trends in FinTech

1. From Competition to Collaboration

FinTech firms, such as online-only banks like MYbank and WeBank with streamlined lending processes and innovative credit rating assessments, have broadened financial access for a large segment of the population often ignored by banks in China. This resulting spectacular leapfrog of retail customers from cash into mobile payments has had dire consequences for traditional banks. Diagram 11 estimates an opportunity loss of RMB152 billion (US\$22.8 billion) in card fees alone last year, that may rise to an estimated ~RMB402 billion (US\$60 billion) by 2020.

Diagram 11: Bank fees lost to digital payments in 2015



Assumes 0.78% transaction fee
Source: EuroMonitor, iResearch, Kapronasia Analysis, July 2016

More importantly, diverting payments away from incumbents deprives them of the customer data and consumption patterns critical for them develop any competitive advantages, including pricing and customised services. Payment transactions disintermediation also cuts traditional banks off from relationships with merchants and retail customers, with the potential to spill over to affect other mainstay business lines, such as loans, deposits and investments.

In the fight to acquire data and scale up their customer bases from user traffic and payments, many FinTech firms have opted to absorb the transaction costs that customers typically pay to banks. However, this strategy can prove to be costly. In Tencent's 2015 fourth quarter, "other revenue" expenses rose 153% to RMB1.5 billion (US\$225 million) largely due to transaction fees owed to banks by WeChat Pay³⁰. Consequently, Tencent started charging customers for fund transfers between its WeChat Pay and bank accounts from February 2016. Rival Alipay, China's largest online payment service company with 63% of mobile payment transaction value, also announced new fees from October to offset rising costs. They started charging 0.1% fees for amounts over RMB20,000 (US\$3,000)³¹. Such intensity in the FinTech firms' battle for dominance in the payments space reflects an emphasis on acquiring customers and eventually their data, which can be used later to support other revenue streams (e.g. lending, insurance, investment and WM) in their larger online ecosystem.

With their livelihoods at risk, the more progressive local banks are fighting back with their own FinTech transformation. For instance, ICBC, the world's largest bank by assets, has been ramping up efforts within the payments space to capture customer data. It successfully launched an e-commerce platform, e-Buy mall, which has grown to become one of China's largest e-commerce platforms. ICBC relied on its capabilities as a bank to facilitate e-commerce, payments and forex. Although still in its early days and some way to go before rivalling the 450 million users of Alipay³², its quick payment tool ICBC e-Payment already had 60 million customers in September 2015³³.

ICBC also launched an e-based finance product system that offers payments, financing and WM services, with the largest local online revolving loan extending RMB1.73 trillion (US\$259 billion) to more than 70,000 SMEs. This bank's commendable foray into e-commerce, payments and online financing products demonstrates the need for traditional incumbents to defend every part of their value chain.

However, we see that in addition to working on their own FinTech innovation, commercial banks have also responded by collaborating with FinTech firms to launch digital initiatives. For example, the Postal Savings Bank of China (PSBC), China's largest lender by branch network with 40,000 branches, is deepening its cooperation with

The emergence of a tech-savvy middle class and transition towards a consumption-heavy economy offers significant opportunities for disruptors to gain substantial scale and potentially change the banking status quo in China

Ant Financial and Tencent in internet and mobile finance. As a starting point, PSBC is partnering with Ant's MYbank to improve the speed and convenience of its account opening process. Through such collaboration, incumbents will be able to reach a new segment of unbanked customers, which would not have been possible without the user and merchant information, and the online banking capabilities of the large e-commerce players.

Additionally, the scalability of online-only banks to reach unbanked individuals cost effectively aligns with the Chinese Government's policy to promote financial inclusion³⁴ in a country where 71% of China's 234 million unbanked adults live in rural areas and 54% in the poorest two quintiles of households³⁵. This explains the massive drive by both Chinese banks like PSBC and FinTech firms alike to expand aggressively into rural China.

Recent concerns over money laundering and fraud led to new PBOC regulations³⁶ governing how bank and payment accounts are opened. For example, since April 2016, in person verification has been required to open a bank deposit account (Class I). Lacking a physical branch network, online-only banks need to collaborate with traditional banks to use their established infrastructure. Thus, MYbank's partnership with PSBC has created an additional source of liquidity for the online bank from a broader customer deposit base³⁷.

In P2P lending, online financing suffered significant reputational damage after various incidents where customers lost their investments. A well-known case was Ezubao³⁸, which lured investors with offers of double-digit annual returns on funds and became China's largest online financing platform in just 18 months. Ezubao attracted US\$7.6 billion from 900,000 users before being identified as a Ponzi scheme with more than 95% of borrowers for projects being fictional entities.

P2P lenders became more willing to collaborate with banks to restore and improve the credibility of their platforms. They sought out conventional banks to conduct all financial transactions and hold investors funds on their behalf. For example:

- The 2014 collaboration between Dianrong.com and the regional Bank of Suzhou to set up a P2P loans platform targeting small enterprises³⁹.
- The Shanghai-based P2P lender China Rapid Finance (CRF) collaboration with China Construction Bank to create a P2P platform providing investors access to CRF's P2P offerings via the bank.
- The early 2015 individual arrangements between P2P lenders Jimubox, RenRenDai and Minshengyidai and China Minsheng Bank for the bank to manage and safeguard investors' funds.
- CreditEase's similar arrangement with China Citic Bank⁴⁰.

2. Increasing Regulatory Focus

The legacy regulatory environment in China has been conducive to non-financial services players thriving in areas such as microfinance and mutual funds.

Since 2015 a more pronounced regulatory approach has become apparent. In the P2P sector nearly one-third of all online financing platforms in China ran into financial difficulties by the end of 2015⁴¹, and almost 1,600 P2P lenders (around 40%) exited the market by April 2016.⁴² Given this mounting crisis in P2P lending, PBOC introduced a series of rules and regulations to oversee P2P lending and online payments in China.

Among others, these rules imposed credit limits, and prohibited pooling and lending of funds by P2P platforms. They also required a principal guarantee by the platform, and debt securitisation to mitigate lenders' credit risks. High profile scandals, such as Ezubao's Ponzi scheme disguised as a P2P platform, also prompted the government to establish a task force

Diagram 12: Comparative P2P regulations in core FinTech markets

	China (Mainland)	Hong Kong	Singapore	UK	US
Specific regulations/ guidelines for P2P	Yes (Finalised in August 2016)	The Securities and Futures Ordinance prohibits retail investors under current legislation.	Yes	Yes	No specific regulations but P2P lenders must navigate multiple regulations. Platforms are currently operating by filing full registration statements with the SEC and registering the securities they offer to investors.
License requirement	License required to be registered with local financial authority.		The platform operator is required to hold a Capital Markets Services (CMS) licence.	Investment-based crowd funding platforms are required to obtain a Financial Conduct Authority (FCA) license.	
Minimum capital requirement	No minimum capital requirement as P2P players are information intermediaries and do not assume any credit risk.	N/A	Base capital requirement of S\$500,000 to offer loans to retail lenders and S\$50,000 to offer loans to accredited and institutional lenders.	Loan-based crowd funding platforms are required to fulfil a minimum capital requirement of £20,000.	N/A

Sources: China Banking Regulatory Commission, Financial Conduct Authority, Monetary Authority of Singapore, Securities and Futures Commission of Hong Kong, 2016

to crackdown on fraudulent P2P lenders. The National Internet Finance Association, run by the central bank and with 400 member traditional financial and internet finance companies, was established to regulate Chinese FinTech firms⁴³ and control risks in the sector.

Even so, China's P2P regulations remain relatively less onerous than those in developed markets, such as Singapore and the UK, as indicated in Diagram 12. For instance, Chinese P2P platforms are simply required to register themselves with the local financial authorities and do not need to be licensed or have minimum capital requirements. While local regulators are attempting to stay aligned with industry developments, they are still cognizant of needing to allow for the continued ease of establishment and expansion of FinTech firms in China.

Regulating data privacy in China

A more substantive data protection framework is now being implemented in Chinese legislature, driven by concerns over highly publicised data security breaches⁴⁴. The new framework includes PBOC's additional requirements for non-bank payment institutions around effective protective measures, risk control systems and KYC measures, and storage of sensitive information. The Chinese government will likely continue to take a leadership role in setting the agenda on data privacy and protection as this will increasingly become a central pillar of the financial services marketplace – critical in enabling the FinTech sector to operate and prosper.

3. Opening Up?

In the past, favourable treatment allowed domestic institutions to grow their services exponentially before the entry of foreign players. For example, China's first credit card transaction issuer UnionPay used to be the only bank card association allowed to provide card payment settlement services in RMB. Foreign payment processing companies such as Visa and MasterCard have had to work through UnionPay when processing local transactions.

Following a WTO ruling, China started to accept proposals from foreign payment processors for domestic card clearing businesses in June 2016 and foreign card processors are now going through the licensing process. However, before the card processing market opened up, PBOC mandated that such companies in China need to abide by the PBOC 3.0 standard that governs the methods by which a bank card transmits account holder data⁴⁵. This standard is presently used only by UnionPay and incompatible with the EMV standards by MasterCard and Visa.

As a result, long-protected from foreign competition, UnionPay accounts for some 80% of debit card settlements in China⁴⁶. Foreign companies have a formidable task of competing with an established market leader that has not only regulations, but scale and infrastructure on its side. Interestingly, its biggest threat does not come from international competitors, but from the likes of Alipay as the online players move to physical point-of-sale. For foreign entities hoping to enter via these FinTech firms, China still has limitations on ownership stakes in internet finance companies. For example, foreign investors were excluded from

the fundraising deal for Tencent's WeBank after China's banking regulator expressed concerns about foreign ownership⁴⁷. This is likely to be an ongoing issue, as tech giants are often registered as "value-added telecommunication companies", which carry many restrictions around foreign investments.

The central government launched the "Internet Plus" initiative in March 2015 to foster further growth in China's mobile, internet, e-commerce and cloud computing sectors as part of a wider effort aimed at stimulating the economy⁴⁸. The plan maps various development targets and supportive measures for emerging industries, including help for local internet companies to gain even greater traction within international markets, financial funding and tax relief for key projects, and encouragement for local governments and private investors support. It aims to hasten the integration of online technologies with offline sectors, including traditional financial services. China has also created a RMB40 billion (US\$6.5 billion) emerging industry innovation investment fund⁴⁹ to promote digitalisation and smart technologies, with the goal of transforming new sectors into mainstream growth drivers by 2018. In order to realise the objectives of the initiative, China would have to open up some of these sectors to tap foreign expertise and know-how.

4. More Formalised Funding

State Funds

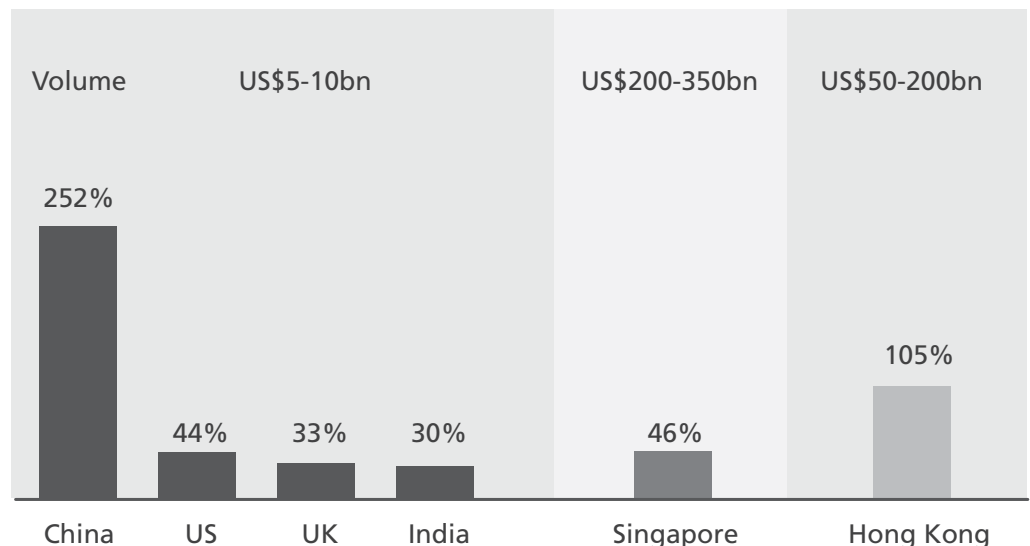
While previously the internet giants themselves financially supported innovation in this sector, interest in the FinTech industry has been spreading from private financial institutions to state-owned and state-controlled entities. The Chinese Government operates more than 750 government-guided funds nationwide. In 2015, it raised a massive US\$231 billion to fund start-ups⁵⁰, in addition to the US\$6.5 billion in government grants, tax breaks and subsidised technology parks pledged for start-ups by the Chinese premier⁵¹. Chinese start-ups also enjoy a range of benefits from the Government, such as eligibility for annual tax deductions. Those qualifying as New High Tech Enterprises⁵² (NHTE) are taxed at a lower corporate tax rate of 15% compared to the normally applicable 25%.

Even FinTech firms already financially backed by large internet players have been able to secure funding from government-affiliated firms. For instance, when Alibaba's FinTech affiliate Ant Financial raised US\$4.5 billion in a Series B funding round in April 2016, it attracted investments from state-controlled entities like China Investment Corp, CCB Trust, China Life, China Post Group and China Development Bank Capital⁵³.

Private Funds

In May 2016, China saw its first FinTech angel fund and accelerator, FinPlus, which was backed by the Fugel Group. The angel fund intends to invest RMB1 to 5 million (US\$0.15-0.75 million) in seed funding into individual start-ups while providing corporate offices and access to Fugel Group's clientele⁵⁴. Other private investors include Chinese leasing provider, Bohai Leasing, which took part in a US\$207 million Series C funding round in 2015 in Dianrong.com.

Diagram 13: Percentage growth of FinTech funding from July 2015 to June 2016



Source: IC Dowson and William Garrity Associates, July 2016⁵⁵

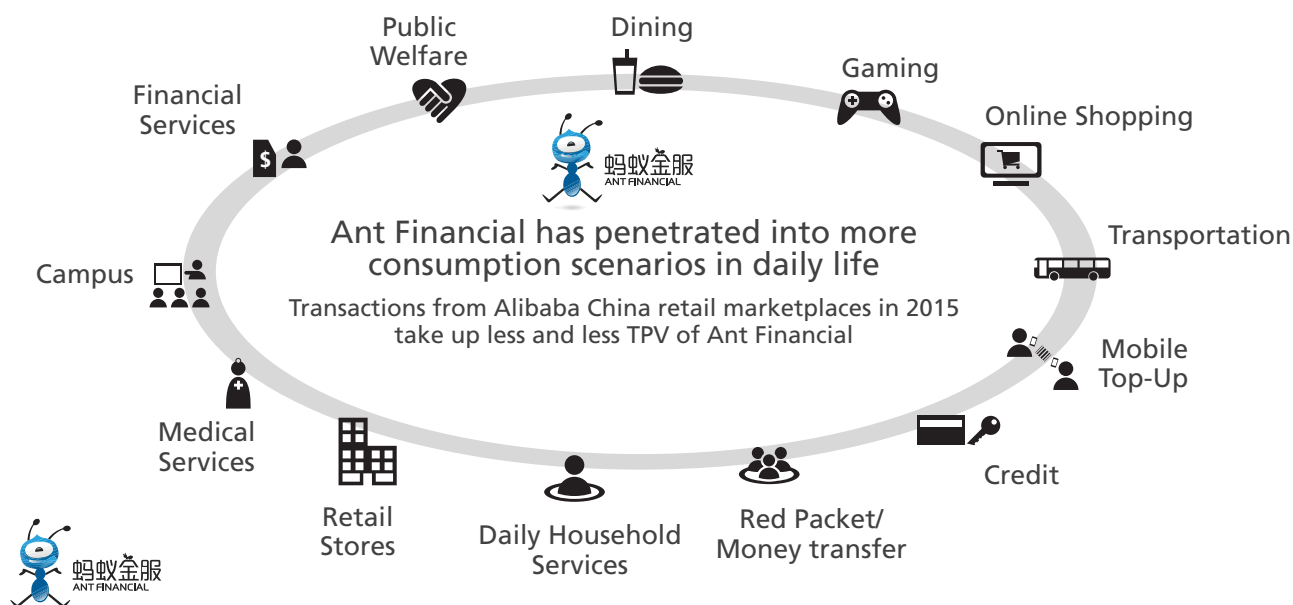
Competition is heating up for funding Chinese start-ups, with a large number of funds gunning for a handful of firms with financially-viable ideas. This led to a 252% expansion in FinTech investments in the 12 months to June 2016, multiples ahead of the world's other FinTech capitals. Such sizeable investments are flowing in from domestic sources that regulatory restrictions in foreign investments is not a major concern for Chinese FinTech firms.

Nonetheless, foreign investors are venturing in. In the absence of a physical presence in China, and lacking networking and partnership opportunities with start-ups, some have resorted to funding companies in the riskier Series A stage. Foreign funding is also originating from venture capital firms, such as Silicon Valley's Sequoia Capital, which launched a China division in 2005⁵⁶ and was looking to raise US\$1.45 billion for a pair of funds to invest in Chinese technology start-ups earlier this year.

5. Value Chain Participation

The biggest of the Chinese FinTech firms are aggressively creating all-encompassing platforms. Ant Financial, for instance, seeks to embed its services into customers' daily life to raise the percentage of users with multiple products, in the process boosting customer stickiness and generating ever more complete customer data. Ant Financial is building an ecosystem that goes beyond financial services to encompass transportation, dining, medical services, and much more. This has already reaped initial successes as measured by speed of customer acquisition, with the period for a financial product within the Ant ecosystem to reach 100 million users reducing from 31 months for insurance, down to 20 months for Yu'e Bao, then 11 months for Sesame Credit.

Diagram 14: User engagement across Ant's expanding ecosystem



Source: Alibaba Group Investor Day, June 2016

Tencent, meanwhile, has started testing new tools for businesses to build sub-apps within WeChat that can make services even simpler to use while staying within WeChat. In effect, these could upgrade WeChat's app into an operating system within an operating system. WeChat could become a one-stop app that replaces a number of existing apps and/or integrate new, innovative functions on its own platforms, so users would rarely have to leave to use other mobile apps.⁵⁷

FinTech in China is being further enhanced by the participation of players from outside the financial and tech industries bringing along industry experience and customer data. Retail and real estate players, such as Gome, Suning and Wanda, are venturing into the FinTech arena, banking on their strong offline presence and in-depth industry knowledge to provide unique advantage. For example, retail giants like Gome and Suning are familiar with the financing requirements of both the upstream and downstream components of the retail supply chain, allowing them to develop customised financial products to suit the requirements of participants within their supply chain. ■

Beyond Payments: Fintech Forays

Insurance

China's insurance industry is tightly regulated by the China Insurance Regulatory Commission⁵⁸ and obtaining an insurance license is a complicated and challenging process. As a result, FinTech firms seeking to penetrate the market have largely chosen to collaborate with existing carriers, rather than writing insurance contracts themselves. FinTech firms not only benefit from incumbents' guidance in navigating regulatory hurdles, they also tap into risk assessment, pricing analytics and other technical know-how.

In response, existing Chinese insurers are scaling up their own digital expertise. More than 100 out of around 130 traditional insurers have introduced online sales platforms, distributing RMB200 billion (US\$30 billion) or 130% YoY more premiums digitally in 2015 than in 2014, equivalent to 9% of aggregated premium value. As incumbents have strengthened their online presence, it has become increasingly difficult for FinTech firms to penetrate this space without collaborating with existing players. Despite its increasing digital capability, the industry remains receptive to FinTech collaboration. Large platform companies come equipped with a coveted war chest of customer data, enabling incumbents to tailor solutions for customers with different risk profiles at competitive premiums.

The collaborative value possibility was demonstrated by China's first online-only insurer, Zhong An, which launched in 2013 as a collaboration between Alibaba, Tencent, and China's second largest insurance firm, Ping An⁵⁹. Chinese insurance tech start-ups excluding Zhong An raised US\$205 million between 2010 and May 2016, but the comparative premiums collected by this online insurer alone was a multiple of 4.5 times at US\$931 million⁶⁰. Seeing the opportunity, others followed suit, including: Baidu with "Bai An Insurance" in a tie-up with insurance giant Allianz and Hillhouse Capital⁶¹; and CPPIC using big data and machine learning for better risk assessment in e-motor insurance.

Beyond collaboration, some FinTech players are going straight for acquisition, with Ant Financial taking a 60% stake in Cathay Insurance, the Chinese insurance unit of Taiwanese Cathay Financial Holdings⁶². This investment will help Alibaba broaden the product range made available on Leyebao, its online insurance sales platform, while creating insurance products to suit the needs of SMEs operating on Taobao.

Wealth Management (WM)

WM is a burgeoning financial segment in China, with the outstanding value of wealth management products (WMPs) expanding 56% YoY to RMB23.5 trillion (US\$3.5 trillion) or 35% of the country's GDP by the end of 2015. Such spectacular growth from a base of RMB7.1 trillion (US\$1.1 trillion) just three years' earlier correlates with the development of major digital financial management platforms such as Yu'e Bao and Licitong. By mid-2016, Yu'e Bao had more than 295 million customers, making it one of the largest, most influential global platforms offering mass-market consumers funds from as little as RMB1, in contrast to minimum purchase amounts of RMB50,000 (US\$7,500) for WMP at traditional peers.

We are also witnessing P2P lenders, such as Chinese platform RenRenDai and CreditEase, transitioning into WM service providers. These companies are following the footsteps of players such as SoFi in the US that expanded from marketplace lenders to full-service WM firms. With their access to massive social and analytical data around customers' credit worthiness and purchasing trends, these FinTech firms have opportunities to build out advanced finance platforms to support elevated expectations from increasingly demanding investors.

Anti-fraud regulation in August 2016 is likely to result in the thousands of online lending platforms consolidating. However, the larger, more established online lenders will survive this process and are poised to dominate the largest online lending marketplace in the world.

To meet demand from a growing generation of consumers for a richer landscape of investment vehicles, WM firms are launching smartphone apps to appeal to this younger, new-rich demographic. For example, Tiger Broker (with backing from China's smartphone maker Xiaomi) and Futu Securities (part funded by Tencent) both have mobile stock investing apps, Tiger Stocks and Futu Niuniu respectively. Meanwhile, an even newer digital tool introduced in mid-2016 by digital WM firms provides simplified investment advice service through sophisticated automated online platforms. These internet financing platforms are using robo-advisors: technology-based WM solutions that incorporate big data and

With WMPs growing into an immediate threat to China's financial system, CBRC new proposed restrictions for banks would pave the way for P2P lenders to enter WM and deliver financial advice in an innovative way. Chinese FinTech firms could leapfrog Western counterparts in emerging technologies like robotics.

artificial intelligence to eliminate or reduce the need for face-to-face interaction. The result is substantially lower costs, with the real potential to provide universal access to entry-level, affordable, yet customised online financial advisory services.

Robo-advisory first movers in the Chinese market include CreditEase, the largest marketplace lender and wealth manager, which launched its robo-advisory product ToumiRA to provide cost-effective access to international WMPs for Chinese retail investors, using trading algorithms to match investor risk preferences and objectives to their optimal portfolio. Another notable player is PINTEC with Xuanji, a robo-advisory technology platform providing intelligent investment advice to Chinese investors with the ability to customise and automatically rebalance a global portfolio. In addition to an onshore RMB and offshore USD asset version for retail investors, PINTEC is also offering a white-labelled B2B version customisable to the needs of other WM platforms, independent financial advisors, and financial institutions. Others offering machine-assisted investment advisory include Baidu Gupiao, PingAn One, MiCai and Clipper Advisor.

Robo-advisory could well reshape the future of China's WM business. Which players succeed will depend on them developing clever partnerships with global peers. They will also need a breadth and depth of asset offerings, portfolio allocation, and technological superiority in big data analytics and machine learning.

Blockchain

In Mainland China, blockchain initiatives have largely been associated with academia and research institutes. International banks, which are among the leaders in blockchain exploration, have been reluctant to enter the Chinese market. Nonetheless, interest has been escalating, partly fuelled by the second Global Blockchain Summit held in September 2016 in Shanghai. China's Ministry of Industry and Information Technology has also organised a special government-industry working group to present a plan for promoting the development and adoption of blockchain technology.

A recent survey estimates that FinTech markets' investments in blockchain technology will reach US\$1 billion by end 2016. This reflects an exponential growth curve, with VC-backed investments in blockchain and bitcoin companies rising from an almost non-existent US\$3 million in 2011 to US\$474 million in 2015.⁶³ The Chinese market has likewise seen a flurry of developments by mid-2016, with the formation of consortiums such as:

- **China Ledger Alliance** – comprising regional exchanges to create an open source blockchain protocol to support an eventual 'Internet of Everything' for China.
- **Financial Blockchain Shenzhen Consortium** – with members that include Ping An Insurance (part of R3, a global consortium of more than 50 financial companies involved in R&D for blockchain usage) and a Tencent subsidiary). This Consortium intends to collaborate on research and group-wide blockchain projects, with a focus on capital

markets technology, securities exchange, trading platforms, banking and life insurance. It aims to create a securities trading platform prototype and develop credit, digital asset registry and invoice management services.

- **Qianhai International Blockchain Ecosphere Alliance** – which aims to establish an efficient ecosystem for developing blockchain technology and its applications by combining Mainland China and international talent, technology and capital. The Alliance, which includes Microsoft, IBM and Hong Kong's Applied Science and Technology Research Institute (ASTRI), hopes to accelerate the commercialisation of blockchain R&D and promote its application to support China's social and economic development.

These blockchain forays are still at the nascent stages in China, with some proof-of-concept efforts under way but wider adoption and implementation remaining a long-term play. As with blockchain developments elsewhere, pain points in current platforms are impeding adoption. Challenges include: difficulties in integrating with current ecosystems; lack of security protection for application data, logic and operating environment; and issues around trust and protection of individuals' and business' privacy.

Digitising Credit Scoring

Presently, selected banks and financial institutions use the China Credit Reference Center (CCRC) as the centralised database to check on credit histories of Chinese citizens. However, the CCRC database is highly incomplete, with only 300 million citizens or two in five having documented credit records⁶⁴ - and issues around accurately assessing credit-worthiness. Consequently, with information asymmetry and incompleteness, some banks err on the side of caution and only lend to customers with a proper credit history.

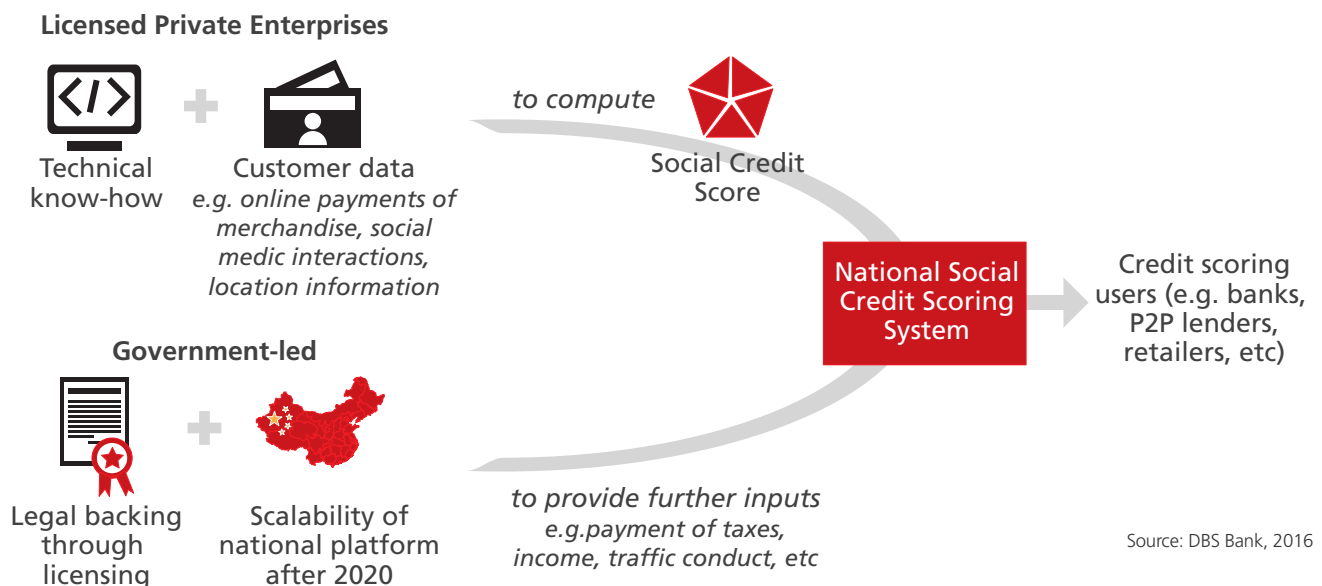
National Social Credit System

One social and regulatory initiative that could prove a game-changer for financial services in China is the nation-wide Social Credit System (SCS), which is expected to be operational by 2020. The system will assign a credit score to every citizen and business in China based on their financial and social behaviour.

The Government has granted licenses to eight private enterprises to develop their credit scoring systems, using online data sources, such as shopping behaviours and information from social media sites⁶⁵. Two went to internet giants Alibaba and Tencent, one to financial services provider, Ping An, and the remaining five to credit scoring companies: Pengyuan Credit Services, China Chengxin Credit Information, IntelliCredit, Credit Arm of Shenzhen-listed Blue Focus and Yin Zhi Jie⁶⁶. It's possible that the Government will prescribe standardised parameters to derive private credit scores, which would in turn be combined with government inputs to provide a single credit score.

Ahead of the SCS, in September 2016, China's National Internet Finance Association (NIFA) launched its Internet Financial Industry Information Sharing Platform (IFIISP)⁶⁷, bringing credit

Diagram 15: Government engaging private entities for a social credit scoring platform



scoring into the internet finance fold. This initiative will track customers' credit information, enabling member companies to analyse the credit worthiness of loan applicants from multiple angles. This will prevent duplicate loan applications, ensure legal compliance, improve information verification processes, and reduce default rates and business risks.

The IFIISP provides credit data on a customer by sending requests to all other member companies and collating the results (of information around existing loans, amounts borrowed, number of recent checks) but without divulging the source data to protect competitive insight. NIFA's 17 inaugural member companies in internet banking and consumer finance include Ant Finance, JD Finance, Lufax and Yirendai, which are also tasked with encouraging peers join the credit information sharing platform to deepen customer coverage.

The IFIISP is a crucial step in developing a proper credit score system, which in turn will support financial services to grow consumer spending. Chinese consumer spending currently accounts for only about one-third of GDP, compared with its two-thirds share of the US's GDP⁶⁸. Any enhancements to China's credit information system will support risk-adjusted loan growth to bolster consumer spending, further supporting the growth of FinTech.

Private credit scoring

In addition to the government-driven front, some players are already ahead of the curve with their own variants in credit measurements. One of the earliest components of the SCS is "Sesame Credit Management" – a scoring platform built and run by Alibaba's Ant Financial. Sesame Credit analyses data generated on Alibaba's shopping platforms from 300

million customers and 37 million small businesses⁶⁹ to assign a credit score of between 350 - 950⁷⁰. Customers with a higher credit scores will be eligible for special privileges, such as renting vehicles or apartments without an initial deposit, more expedient hotel checkouts, and even fast-tracked visas for international travel.

Other similar systems built by Chinese tech companies include Tencent's own credit information service, using data generated from its social media app, "WeChat"⁷¹, which it also offer to other financial services providers. For example, Jubao uses social media data generated on WeChat and Weibo to assess customers' credit worthiness⁷². Meanwhile, JD Finance is partnering with US-based ZestFinance in a JV to develop credit risk evaluation services and extend consumer access to credit in China⁷³.

As China's mobile money market matures, these credit assessment initiatives also raise the possibility that the Chinese government might emphasize interoperability across mobile wallets and other banking services to improve efficiencies, democratise the ecosystem and level the playing field between new entrants and incumbents. Such an open-architecture policy would start a race to offer the most innovative solutions, as players attempt to differentiate themselves from the pack. ■

Chinese FinTech Going Global

Aggressive Chinese tech firms flush with cash, and equipped with skilled IT infrastructure and application development are looking to internationalise. With global ambitions, they are penetrating new product markets overseas to diversify revenue streams and reduce their home-ground reliance. In addition to investing in Silicon Valley and mature markets, the BAT giants are expanding to serve outbound Chinese travellers and expats, while seeking out new customers in emerging economies from Africa to South and South-east Asia. They are particularly interested in the future possibilities of new O2O revenue streams.

Casting a Wide Net

Some of the recent global forays by China's technology heavyweights include:

Alibaba Group

Alibaba Group currently has more than 86% of revenues from China but aims to eventually generate half of all sales from overseas. The Group is developing an international ecosystem that encompasses targeted marketing, logistics, payment services and cloud computing. This will be achieved via a mix of international acquisitions and organic expansion; for instance, its AliExpress e-commerce platform is already doing brisk business in markets such as Russia and Brazil.

In line with its globalisation agenda, Alibaba made its largest international investment to-date in April 2016 with a US\$1 billion deal for control of Lazada Group, Southeast Asia's largest clothing and electronics portal. To further increase exposure into Southeast Asia, Alibaba spin off, Ant Financial, followed up in June by taking a stake in Ascend Money, a Thai online-payment provider. Ant Financial has also teamed up with Alibaba on a number of domestic investments such as Chinese food-delivery app Ele.me and the taxi firm Didi Chuxing.

In 2015, Ant Financial ventured into India with a US\$680 million purchase for about 40% of Paytm (India's largest mobile commerce platform with 122 million users and 23 million mobile wallet users) and another US\$100 million odd for online marketplace Snapdeal. These forays give Alibaba a payments banking license in India and an immediate foothold into a country where an exponential rise in smartphone adoption contributed to a CAGR of 50% for the online payments industry from 2007-2014.

In Europe and the Americas, Alibaba intends to continually expand offerings to the expats and 120 million Chinese tourists who travel abroad annually. With 450 million active registered users and 200 financial institution partners, Alipay is collaborating with leading global payment providers to ensure international merchants can easily integrate acceptance into the customer payment experience, including:

- A partnership between Ant and European retail merchants and platforms, such as Germany's Wirecard and Concardis, the nation's largest credit card acquirer with a market share of 40%⁷⁴, to serve the growing number of Chinese tourists in Europe.
- An agreement with Ingenico to embed Alipay into Ingenico's payment gateway (the largest in Europe), allowing European acquirers to easily integrate and offer Alipay acceptance to their merchants⁷⁵.
- A global agreement with AXA to distribute travel insurance to outbound Chinese travellers.
- US partnerships with San Francisco-based ride-hailing service Uber Technologies, Airbnb and Macy's for Chinese customers to use their Alipay wallet.

Baidu

Baidu has been busy with extending its overseas service, Baidu Wallet, in Thailand, with additional services to follow for South Korea, Japan, Hong Kong, Macau and Taiwan.⁷⁶

More interestingly, it has also been making aggressive moves into several verticals outside its core search engine operations. This includes investing in the O2O business for food-delivery, ticketing, and entertainment with a US\$3 billion investment in group-buying site Nuomi and leading a US\$1.2 billion fundraising round in Uber. (Though we saw earlier that Uber's China operations were subsequently sold to bigger local rival Didi Chuxing in a deal that left Uber with a one-fifth stake in DiDi.) Baidu has plans to invest US\$3.2 billion from 2015-2018 into O2O services.⁷⁷ Analysing customers' purchasing habits and building up more robust user profiles allow the search engine to sell the information to advertisers, influence consumers' choices in O2O spending and receive a cut of each transaction conducted online and completed offline. It is not just Baidu, but all three of the BAT giants that envision massive possibility of future revenue streams from O2O businesses.

Tencent

Social media giant and WeChat owner, Tencent, has been investing internationally, diversifying into hundreds of companies focused on gaming, mobile money and artificial intelligence. Such deals include: a US\$90 million funding round for Indian health-care information provider, Practo, which provides an online search tool for consumers to find healthcare professionals; and leading a group of investors paying US\$8.6 billion⁷⁸ for a majority stake in Finnish game-maker, Supercell, in June 2016, further cementing its role as a global leader in gaming.

Tencent also took a billion-dollar stake in a combined US\$4.5 billion private equity investment into Chinese car-hailing app Didi Chuxing. This is in addition to alliances with US's Lyft, India's ride service Ola, and Southeast Asia's ride-hailing startup Grab, and the acquisition of Uber's Mainland Chinese network to tap business from Chinese travellers. Tencent also has plans to expand into Hong Kong, Taiwan, Macau, Japan, South Korea, Europe and Russia.

Challenges with Internationalising

Chinese players have not always fared well outside their home ground. In theory, internationalisation efforts should: provide technologies for advanced transaction processing capabilities; open up the global settlement network; breakdown international payment barriers; and enhance opportunities for these Chinese tech companies to transform financial services to a lifestyle product for consumers. However, just like in China, business success overseas requires catering to the individual peculiarities of international markets and their consumers.

The Chinese cannot merely replicate and export domestic business models abroad. They need to adapt to local cultural norms and expectations; for example, in Canada where banks are traditionally seen as a symbol of security and stability, the FinTech firms need to collaborate with established banks. They also need to couch offerings to new audiences appropriately. In Germany, a direct challenge to the mainstream financial sector might work. In other countries, consumers will be more receptive to a less aggressive stance. FinTech firms also need to be aware of and manage cross-border cultural and language differences that could impact staff and customer communications – not to mention successful commercial collaborations.

Given certain trust issues with 'made-in-China' products, institutions must also focus on safety and security reassurance. When announcing a new cloud product suite and international partnerships in 2015, Alibaba's cloud division Aliyun for instance, emphasized its "Data Protection Pact" to assure enterprises of the security of data in its cloud. The pact underscored its data privacy commitment to customers (who have rights to free and safe access, and to share, exchange, transfer or delete their data at any time) and Aliyun's responsibility for customer data protection on the platform. Such reassurance is particularly critical following Aliyun's 14-hour Hong Kong data center disruption in June 2015.⁷⁹

The difficulty of replicating home successes abroad is epitomised by WeChat's situation. In China, WeChat combines e-commerce and real-world services in ways that have Western companies playing catch-up – allowing users to pay bills and hail taxis as well as sharing photos and messages. It has a 806 million- strong captive market by mid-2016⁸⁰, most of whom are locals or those overseas and using it to connect with people in China. In 2012, armed with several hundred million dollars, Tencent began an aggressive outbound expansion from China. However, outside of China, WeChat was not as attractive. Once it ventured overseas, WeChat's functionality was restricted by limitations to Chinese internet services, leaving it only able to offer chat and photo sharing – essentially no different to

Facebook's WhatsApp and Messenger services that already have strongholds in several countries.

As a result, WeChat has altered its expansion tactics. Instead of pushing its own brand overseas, Tencent invested US\$50 million in Kik, a Canadian chat app that aspires to be the 'WeChat of the West'.⁸¹ Most recently, it was also part of a consortium that invested more than US\$175 million⁸² in Hike Messenger, an app that seeks to position itself as the equivalent of WeChat or WhatsApp for India.

How to Enter China

Just as Chinese tech giants may enjoy greater success in seeking local collaboration, the same advice rings true for foreign firms trying to enter the Chinese market.

Foreign players have experienced varying levels of success in China, with many facing challenges despite being global brands, dominating many other markets. For example, PayPal has captured 35% market share (only second to Alipay⁸³) for online purchases in China when buying from foreign websites, even though it has not been able to secure a license for domestic payments. Competitor Apple Pay has also had some success; although, initial reports highlight the lack of seamless integration into popular local services such as WeChat.

Less successful was US-based Uber Technologies that ended up selling its China operations to rival, Didi Chuxing in August 2016. Despite the backing of Baidu, Uber faltered partly because it was a relatively late entrant into the market, entering two years after its Chinese rivals started their ride hailing businesses in 2012. By then, Didi had already expanded coverage to 178 cities⁸⁴. The subsequent merger between Didi (backed by Tencent group) and Kuaidi (backed by Alibaba group) in February 2015 only tilted the scales further in favour of the merged entity, Didi Chuxing. By September that year, it had already captured 80% and 99% market shares for private cars and taxis respectively⁸⁵, leaving little room for Uber.

Nonetheless, the financial services market of China is too big, too valuable and has too much untapped potential for international players to ignore. For those keen on entry, we see the following collaborative opportunities for breaking into the market.

As Chinese consumers increasingly shop and invest overseas digitally, a flurry of activity is arising in WM and capital markets, driving cross-border transactions. In particular, Baidu, Alibaba, Tencent (BAT) affiliated or big FinTech players (BAT+) seeking overseas exposures offer foreign players attractive collaboration opportunities with massive domestic scale and scope.

- US-based DriveWealth is partnering with CreditEase to launch robo-advisory product ToumiRA for Chinese investors to efficiently access international equities.

- Robinhood, a mobile-first zero commission broker that lets customers buy US shares and Exchange Traded Funds (ETFs) without any fees, is collaborating with Baidu to penetrate the Chinese market⁸⁶. Although the Robinhood app does not charge for trades, it makes money by collecting interest on non-invested cash in customer accounts and plans to generate revenue from margin trading, eventually charging 3.5% interest for the service⁸⁷. Robinhood's services are integrated with Baidu's stock trading app, StockMaster, that uses artificial intelligence to predict share price movements.
- PayPal is catering to Chinese consumers by collaborating with UnionPay to support outbound cross-border transactions and payments. This enables Chinese consumers to purchase goods from foreign e-retailers directly in countries where UnionPay still has limited acceptance. Merchants in European countries can also accept payments from UnionPay credit and debit cards through PayPal's Braintree platform for mobile commerce⁸⁸. PayPal and UnionPay also launched "PayPal China Connect", allowing Chinese customers to directly convert RMB to their payment currency of choice, rather than an intermediate currency, saving them conversion fees⁸⁹.

Despite their exponential growth, China's FinTech players lag behind counterparts in the developed world in certain areas, such as risk management, WM and banking system automation, giving foreign players important opportunities to bridge the gaps. To this end, in May 2016, Danish online multi-asset trading and investment specialist Saxo Bank announced an agreement with China's largest internet finance company, Lufax, to leverage the trading technology that underpins SaxoTraderGO. This white label product gives Lufax's 21 million registered users a seamless experience across digital platforms, including complete functionality across the trade cycle for ETFs and cash stocks⁹⁰.

Alternatively, foreign institutions seeking a foothold in the Chinese market should look beyond the BAT+ and consider collaborations with promising tier-two firms with the human talent, but less capacity to invest in the new technologies necessary to compete with the Chinese FinTech behemoths. For example, Germany's Wincor Nixdorf is partnering with Aisino, a Chinese company that specialises in information security solutions and EFTPOS solutions. Operating as Aisino Wincor, the entity will offer banks and retailers POS systems, self-checkout solutions, self-service solutions such as ATMs and cash recycling systems, and professional and managed services like project management and life-cycle maintenance⁹¹. ■

The Future of Chinese FinTech

Chinese FinTech is evolving incredibly fast and at a pace that the rest of the world struggles to emulate. As Chinese firms expand out of China, it remains to be seen whether they will prove robust enough for international markets. We may also start to see more direct competition between the likes of Baidu and Google, Alibaba and Amazon, Tencent and Facebook.

Whatever happens in China, there is no denying that incumbents and FinTech firms alike will need to transform to remain relevant in this new world order. The next few years will be an exciting time for the industry. Watch this space. ■

References

1. <http://www.crowdfundinsider.com/2016/07/87856-global-fintech-investment/>
2. <http://www.emarketer.com/Article/China-Eclipses-US-Become-Worlds-Largest-Retail-Market/1014364>
3. <https://www.kapronasia.com/china-banking-research/china-s-national-internet-finance-fintech-association-finally-launches-credit-scoring-system.html>
4. <http://www.crowdfundinsider.com/2016/07/87856-global-fintech-investment/>
5. Partly driven by PayTM becoming a household name in the payments space with over 122 million users by March 2016 (<http://timesofindia.indiatimes.com/tech/tech-news/Paytm-registers-122-million-active-users/articleshow/51838389.cms>).
6. Diffusion of innovation theory: <https://innovateordie.com.au/2010/05/10/the-secret-to-accelerating-diffusion-of-innovation-the-16-rule-explained>
7. <http://www.visualcapitalist.com/27-fintech-unicorns-where-born>
8. Spending of between USD\$10 to 100 a day
9. Moody's on China Banking System Outlook, 11th Dec 2015
10. <http://data.worldbank.org/indicator/FB.ATM.TOTL.P5>, and <http://data.worldbank.org/indicator/FB.CBK.BRCH.P5>, World Bank, 2014 (latest available data as of August 2016)
11. http://data.worldbank.org/data-catalog/financial_inclusion
12. The 2016 Statistical Report on Internet Development in China, jointly issued by the China Internet Network Information Center (CNNIC) and Internet Society of China, May 2016 and <https://www.techinasia.com/china-656m-mobile-web-users-710m-total-internet-users>
13. <http://www.internetworldstats.com/stats.htm>, June 2016
14. <https://www.emarketer.com/Article/China-Eclipses-US-Become-Worlds-Largest-Retail-Market/1014364>
15. <http://www.scmp.com/tech/china-tech/article/1991425/china-nears-full-mobile-broadband-coverage-back-increased-4g>
16. P&S Market Research
17. <https://sg.finance.yahoo.com/news/singapore-top-asia-credit-cards-105414790.html>
18. <https://www.ft.com/content/2588b356-1e97-11e6-b286-cddde55ca122>
19. "Digital payments in China 2016", Kapronasia Analysis, iResearch, July 2016
20. http://www.asiaasset.com/news/Alibaba_affiliateCH2702.aspx
21. <http://www.scmp.com/business/companies/article/1986774/alipay-aims-have-1m-offline-partner-merchants-globally-within>
22. <http://www.businesswire.com/news/home/20150810005452/en/Alibaba-Suning-Commerce-Enter-Strategic-Alliance>
23. <http://www.forbes.com/sites/ywang/2015/08/07/jd-com-invests-700-million-in-chinese-supermarket-chain-yonghui/#32f179e47c98>
24. <http://blogs.wsj.com/briefly/2016/04/26/5-things-to-know-about-chinas-ant-financial/>
25. <http://www.ft.com/cms/s/0/cc5a6dc-9488-11e4-82c7-00144feabdc0.html#axzz4J3Sn0FGm>
26. <http://english.caixin.com/2016-07-22/100969274.html>
27. http://www1.cnnic.cn/AU/MediaC/rdxw/2015n/201502/t20150204_51650.htm
28. <https://hbr.org/2015/05/customer-data-designing-for-transparency-and-trust>
29. <http://www.forbes.com/sites/caseyhall/2016/03/31/chinas-silicon-valley-wants-you-offers-million-dollar-payments-to-move-there/#77d59a2b5a27>
30. <http://www.ft.com/cms/s/0/df82fc8e-0d36-11e6-9cd4-2be898308be3.html#axzz4lxqLDHj2>
31. <http://www.scmp.com/business/article/2018681/alipay-charge-transfers-personal-bank-accounts-october>
32. <http://www.cnbc.com/2016/04/05/alipay-to-launch-in-europe-as-alibaba-steps-up-payments-game.html>
33. <http://www.icbc.com.cn/icbc/newsupdates/icbc%20news/ICBCInternetPushesTransformationandDevelopment.htm>
34. <http://pubdocs.worldbank.org/en/911391453407695993/CHINESE-Advancing-Financial-Inclusion-in-China-Five-Year-Plan-2016-2020.pdf>
35. <http://blogs.worldbank.org/eastasiapacific/new-accounts-china-drive-global-financial-inclusion-figures>
36. <http://www.pbc.gov.cn/goutongjiaoliu/113456/113469/2995389/index.html>
37. <http://www.reuters.com/article/alibaba-ant-financial-fundraising-idUSL3N17T1ZU>
38. <https://www.ft.com/content/4ca011f4-c88f-11e5-a8ef-ea66e967dd44>
39. <https://www.finextra.com/news/announcement.aspx?pressreleaseid=57122>
40. http://europe.chinadaily.com.cn/business/2015-01/08/content_19274196.htm
41. <http://www.economist.com/news/finance-and-economics/21688940-allure-and-peril-chinese-FinTech-companies-taking-flight>
42. <http://www.scmp.com/business/companies/article/1944590/nationwide-crackdown-takes-its-toll-chinas-p2p-and-internet>
43. <https://www.kapronasia.com/china-payments-research/official-FinTech-regulator-set-up-by-china-government.html>
44. https://www.cov.com/-/media/files/corporate/publications/2016/01/data_privacy_in_china_2015_year_in_review.pdf
45. <http://english.caixin.com/2014-11-13/100750722.html>
46. <https://lbsintelligence.com/lbs-journal/lbs-news/unionpay-top-dog-in-22trn-cards-market/>
47. <http://www.dowjones.com/scoops/warburg-pincus-temasek-left-out-of-fundraising-deal-for-chinese-internet-bank-webank/>

48. <http://siliconangle.com/blog/2015/03/10/china-launches-internet-plus-initiative-to-take-over-the-web/>
49. <https://www.ft.com/content/73f216c8-9c97-11e4-a730-00144feabdc0>
50. <http://www.bloomberg.com/news/articles/2016-03-08/china-state-backed-venture-funds-tripled-to-338-billion-in-2015>
51. <http://www.cnbc.com/2015/11/08/chinas-new-wave-of-angel-investors.html>
52. <http://www.china-briefing.com/news/2015/09/29/tax-incentives-for-high-tech-companies-in-china.html>
53. <https://techcrunch.com/2016/04/25/ant-financial-the-alibaba-affiliate-that-operates-alipay-raises-4-5b-at-a-60b-valuation/>
54. <http://www.asiabiznews.net/asia-tender-business-news/125583-FinPlus-Opens-as-Chinas-First-Angel-Fund-for-FinTech.html>
55. <https://fintechweek.com/wp-content/uploads/2016/02/FTVAgenda.pdf>
56. <http://www.bloomberg.com/news/articles/2016-03-21/sequoia-capital-said-to-look-up-to-1-5-billion-for-china-funds>
57. <http://www.wsj.com/articles/tencent-tries-out-a-stickier-wechat-1475086017>
58. <http://www.china.org.cn/english/DAT/214788.htm>
59. <http://www.globaltimes.cn/content/823054.shtml>
60. <https://www.cbinsights.com/blog/zhong-an-china-insurance-tech-startups/>
61. <http://uk.businessinsider.com/allianz-to-work-with-baidu-in-china-to-set-up-online-insurer-2015-11>
62. <http://www.wsj.com/articles/alibaba-affiliate-invests-in-china-insurance-unit-of-cathay-financial-1442233661>
63. <https://bitcoinmagazine.com/articles/global-blockchain-summit-in-shanghai-uniting-the-networks-of-blockchain-technology-1473272956>
64. <http://www.bloomberg.com/news/articles/2015-07-02/china-credit-scores-come-to-a-debt-leery-culture>
65. <http://www.bbc.com/news/world-asia-china-34592186>
66. <https://www.kapronasia.com/china-banking-research/china-s-national-internet-finance-FinTech-association-finally-launches-credit-scoring-system.html>
67. <http://www.crowdfundinsider.com/2016/09/090672-yirendai-named-one-internet-financial-industry-information-sharing-platforms-inaugural-members/>
68. <http://www.bloomberg.com/news/articles/2015-07-02/china-credit-scores-come-to-a-debt-leery-culture>
69. Financial Times - Alibaba's finance arm launches credit scoring service
70. <https://www.newscientist.com/article/dn28314-inside-chinas-plan-to-give-every-citizen-a-character-score/>
71. http://www.chinadaily.com.cn/business/tech/2015-08/08/content_21535587.htm
72. Financial Times - China lenders look at social media contacts to assess risk
73. <http://ir.jd.com/phoenix.zhtml?c=253315&p=irol-newsArticle&ID=2062772>
74. <https://www.concardis.com/de-en/artikel/collaboration-with-alipay>
75. <https://www.ingenico.com/press-and-publications/press-releases/all/2016/08/alipay-partnership.html>
76. <https://www.chinatechnews.com/2016/04/19/23416-baidu-wallet-expands-forex-payment-services-outside-china>
77. <http://www.fool.com/investing/general/2015/07/11/s-baidus-latest-investment-in-online-to-offline-s.aspx>
78. <http://money.cnn.com/2016/06/21/technology/clash-of-clans-tencent-supercell/index.html>
79. <http://english.caixin.com/2015-06-24/100822037.html>
80. <https://www.statista.com/statistics/255778/number-of-active-wechat-messenger-accounts/>
81. <https://www.ft.com/content/9def9c78-45d6-11e5-b3b2-1672f710807b>
82. <http://www.bloomberg.com/news/articles/2016-08-16/india-s-hike-wins-tencent-foxconn-backing-at-1-4-billion-value>
83. https://www.paypalobjects.com/webstatic/en_US/mktg/pages/stories/pdf/paypal_cbt_global_snapshot_nov_2014_2.pdf
84. <https://www.techinasia.com/5-lessons-ubers-rise-fall-taught-chinas-tech-market>
85. <https://www.techinasia.com/didi-kuaidi-partners-lyft-uber>
86. <http://www.bloomberg.com/news/articles/2016-06-01/robinhood-teams-with-baidu-to-offer-u-s-stock-trading-in-china>
87. <http://online.barrons.com/articles/robinhood-app-for-commission-free-stock-trades-1419046425>
88. <https://www.kapronasia.com/china-payments-research/paypal-announces-partnership-with-unionpay-launches-its-new-china-connect-service.html>
89. <https://www.kapronasia.com/china-payments-research/paypal-announces-partnership-with-unionpay-launches-its-new-china-connect-service.html>
90. <http://www.saxobank.com/news/press/saxo-bank-announces-landmark-partnership-with-lufax>
91. <https://www.finextra.com/pressarticle/64972/wincor-nixdorf-and-asino-embark-on-chinese-joint-venture>

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