

U.S. – China Economic and Security Review Commission

U.S. Access to China's Consumer Market - China's Financial Industry and Fintech

Finance Disrupted: How digital finance is changing the way 1.3 billion people bank and the implications for the U.S. & China relations.

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*Fin Tech *noun*: an economic industry composed of companies that use technology to make financial systems more efficient.¹*

Introduction

Near our previous office in Shanghai, there was an elder craftsman named Mr. Wang. Every morning, he would setup his modest sidewalk stand, which was nothing more than a few milk crates with a piece of wood and cloth on top, and gradually bend long strands of wire into the shape of small bicycles – the kind of model that you would put on your desk or dresser.

Each bicycle model took him about an hour to make, which Mr. Wang then sold for about \$4 each. On an average day, he sold about 10 of the wire bicycles, netting him, about \$8,000 a year. Not a bad salary in a country where the average yearly income in 2015 was \$7,925.² After walking by his stand numerous times, I finally bought one of the models. A month later, Mr. Wang wasn't at his usual spot and I did not see him again over the next month.

Shortly after, we moved to a new office in a different area of Shanghai, a few miles from where Mr. Wang's street-side shop was situated. One day, I had a meeting near our old office, and much to my surprise, he was there.

It turned out that Mr. Wang had gone digital. In his absence from his road-side stand, a friend had helped him start selling his small model bikes on Taobao & Tmall, China's largest C2C and B2C e-commerce platforms, where \$449 billion in merchandise changed hands in 2016. Selling both online and offline had dramatically increased his sales and now he was selling 30-40 a day and had some of his friends helping to shape the bicycles.

Beyond stopping to say 'hi,' I also wanted to buy one of the small wire bikes for a friend, but when I went to hand the money to him, he waved me off and pointed to two large printed QR ('quick response') codes, and asked me to pay using Alipay or WeChat Pay, China's two leading mobile payment providers. I unlocked my mobile phone, scanned the Alipay code and a few seconds later, I had paid and was on my way.

In many ways, Mr. Wang's shift to digital is emblematic of the country as a whole. Every day across China, hundreds of millions of consumers and businesses use digital payments and digital finance for social and commercial uses. At a micro level, digital finance allows individuals like Mr. Wang to improve their own or their family's lives. At a macro level, digital payments have the

¹ Wharton Fintech, an organization of students and faculty at the Wharton School of Business at University of Pennsylvania

² World Bank

potential to dramatically improve living standards for large sections of the population, especially in developing areas of the country, through increased transparency, security, and lower cost.

'Internet finance,' as 'fintech' is commonly known in China, has enabled financial inclusion and economic empowerment in a way that had previously not been possible in China, largely because of its geographic, cultural, and economic diversity. China's internet finance boom started with digital payments, but has since expanded to include wealth management, credit, and lending. Digital finance has brought many people like Mr. Wang, into the financial fold.

While this has been good for the financial industry and the economy as a whole, risks remain. In 2016, more than 1,700 of China's P2P (peer-to-peer) lending platforms closed, leading to huge losses for investors and borrowers. Many claim that China's \$9 trillion in wealth-management products, which are now largely sold through digital platforms, are also a ticking time bomb.³ Traditional players also struggle to compete in the new digital finance landscape.

This innovation and stability paradox that fintech poses is a challenge for governments globally, but even more so in China where the financial industry is still relatively underdeveloped, yet remains a critical part of the nation's economic growth in terms of infrastructure and lending. Even as China's government and regulators continue "to cross the river by feeling the stones," and allow growth of new platforms and services like digital payments and P2P lending, they are also very cautious about creating any potential risks to continued economic growth.

Arguably, many of China's 2001 WTO agreement commitments were approached with the same intent. Industry reform was often delayed to protect the stability and growth of the domestic market. If the market had immediately opened to foreign banks in 2001 as per the WTO commitment, the sector would have likely collapsed along with the economy itself. Some WTO commitments still remain outstanding such as allowing foreign payment schemes like Visa and MasterCard to operate domestic RMB businesses.

Therefore, trying to influence the Chinese regulators to make changes on a schedule that does not match their own, is a fool's errand. Regardless of the comments, threats or negotiating tactics of foreign governments, China's regulators will reform at their own pace.

That is not to say that the U.S. should give up trying to influence China to further open its financial industry. I will argue the opposite, the U.S. government will be more successful through **deeper engagement** including setting up financial industry focused working groups with industry players from both sides, and a **refocus on the financial products of the future** like mobile payments rather than those of the past, like payment cards. In addition, the government should be **paying greater attention to the expansion of China's tech giants internationally**, which poses, among others, a specific challenge to America's national security.

Finally, although the discussion is centered on the openness of China's financial industry, that is not where all of the answers lie. The **U.S.'s internal regulations also limit the U.S.'s industry growth and development**, while at the same time providing foreign companies relatively unfettered access the U.S. domestic fintech market.

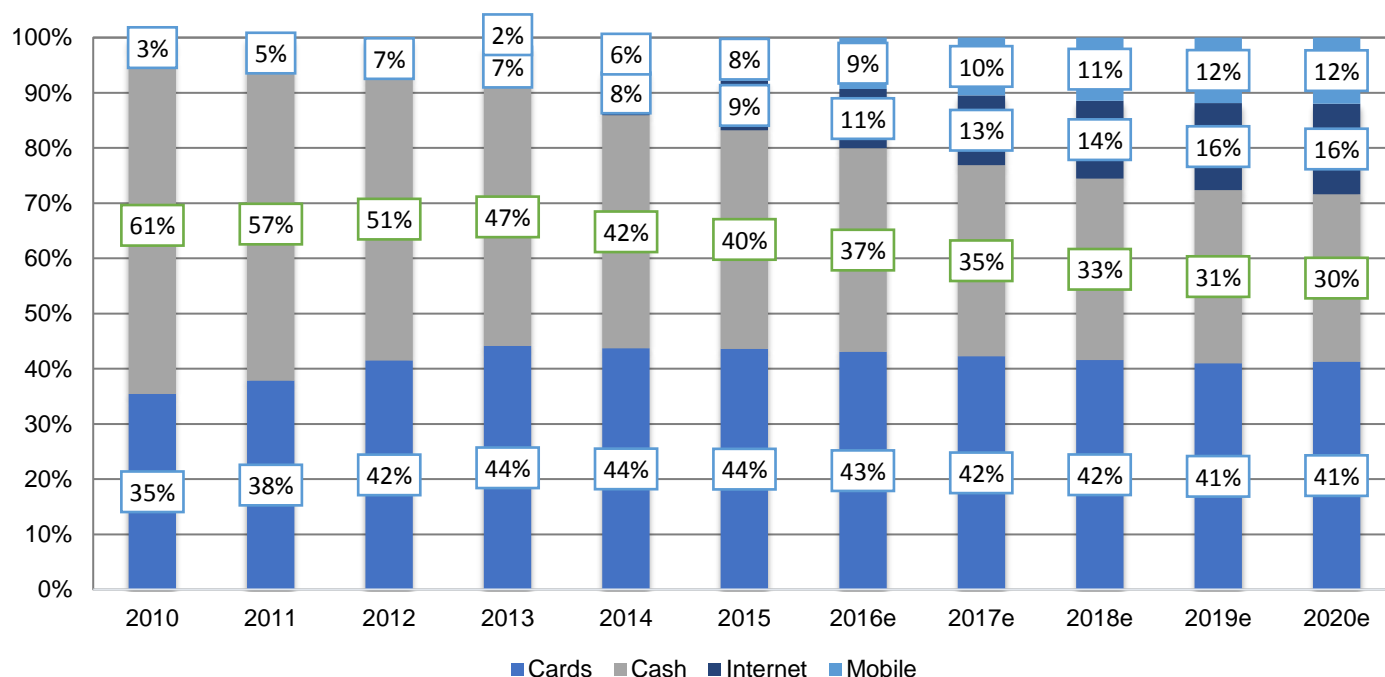
³ "China is playing a \$9 trillion game of chicken with savers," April 11th, 2017, Bloomberg

Setting the context – China’s shift from cash to digital

China’s history of physical currency is a long one. The country’s first use of cash can be traced back to as early as 770 BC where “coins” in the shape of cowrie shells were used to settle trade. These were replaced around 350 BC by actual metal coins that had either a round or square hole in the middle to allow them to be strung and carried. But carrying around strings of coins could be quite heavy for merchants, so eventually, by the 7th century AD, China pioneered the first use of paper money.

Until recently, China remained a heavily cash-based society. In 2010, nearly 61% of China’s retail consumption was still transacted in cash, even as debit card penetration reached about 1.8 cards per person.⁴ A number of factors account for this reliance on cash, including high levels of perceived trust and convenience for cash, and habit.⁵ However, the payment landscape is changing rapidly as cards and digital payments have grown in importance, with the proportion of retail consumption transacted in cash falling to 40% in 2015.⁶ Compare this to the UK where in 2016, cash accounted for 45% of all transactions.⁷ During that same 2010-2015 period, mobile and internet payments grew from 3% of retail consumption to 17% in China.

Figure 1 - China Retail Consumption by Payment type
(% of total payments)



Source: Kapronasia Analysis

⁴ Kapronasia Analysis, Euromonitor, World Bank

⁵ David Barboza, “Chinese Way of Doing Business: In Cash We Trust”, New York Times, May 1st, 2013

⁶ Kapronasia Analysis

⁷ Paul Hastings, Centre for Economics & Business Research (Cebr), YouGov, “The Future of Payments,” Dec 2016.

Traditional Financial Services

Since the 1970s, China's financial sector has played a major role in the country's economic development. China's "Big Four" banks are predominantly government-owned and serve as an essential tool for the government to allocate resources to public and private sector projects. Initially, because there were only four large banks and interest rates were government-controlled rather than market driven, industry competition was limited.

However, shortly after China's accession to the World Trade Organization in 2001, new segments of domestic banks started to appear, including "city commercial" banks like the Bank of Shanghai, and "joint-stock commercial banks" (also known as "shareholding banks"), as well as foreign entrants, such as HSBC and Citi. The increased competition pushed Chinese banks to adapt their business models, products, and service offerings, yet improvements to the overall customer experience were modest. The competitive size advantages enjoyed by these traditional players created an environment in which innovation and differentiation were not a high priority. Even if the new "traditional" competition pushed the industry forward a small step, it was by no means a giant leap.

Despite a lack of competition and product diversity in China's financial industry, the underlying technology is quite robust. Most of China's big banks employ modern core-banking software and many are embracing cloud computing to reduce costs and increase agility. In addition, China has a domestic real-time payments system for both retail and commercial payments and, in 2015, launched the China Interbank Payments System (commonly referred to as CIPS) which supports the development of the renminbi (RMB) as an international trade currency.

China's retail, non-cash payments market is also quite well developed. China UnionPay is the country's main domestic payment card clearing and settlement system, enabling the use of UnionPay-branded credit or debit cards at the estimated 26.7 million merchants that have electronic point-of-sale devices installed to accept card payments.⁸ Debit card penetration stands at 3.1 cards per person and is increasing. In addition, every new point-of-sale device sold in China must come equipped with Near-Field Communication (NFC) technology to enable mobile payments.

Similarly, China's internet and mobile infrastructure is very robust.

⁸ Kapronasia Analysis

Internet and Mobile Phone penetration

As of January 2016, China had 688 million internet users,⁹ which is more than twice the size of the entire population of the United States. Even with such a large pool of users, China's internet penetration rate is just over 50% of the population. This compares with the US rate of 84%.¹⁰ There is massive potential for future growth.

Relatively cheap, full-function smartphones are also widely available in China through many Chinese manufacturers. The result is a significant difference in average selling prices, which are at least \$50 less in China than globally.¹¹ Lower prices have spurred the adoption of smartphones in China, where penetration is about 20% higher than the global average.

Figure 2 - Major shift towards smartphones in the last five years

Smartphone as % of all phones in China vs Globally

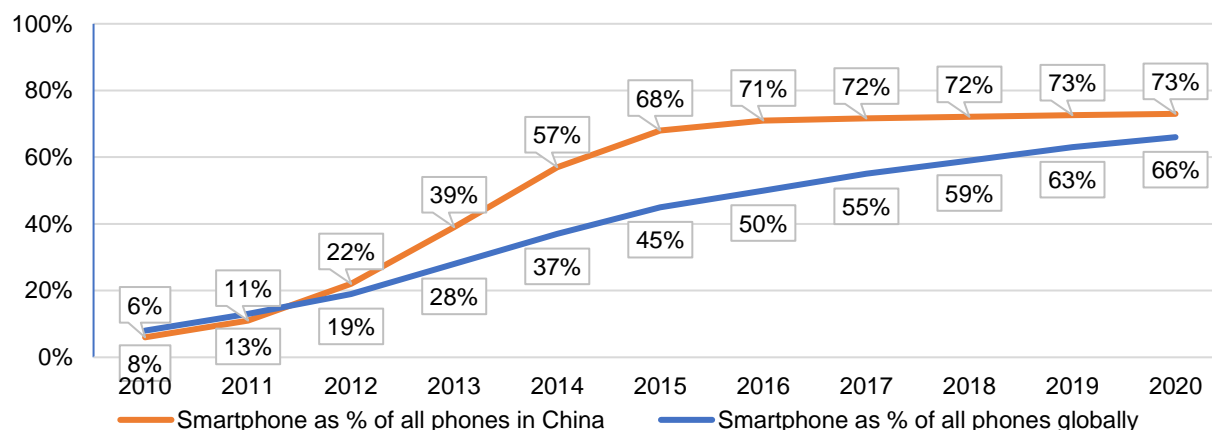
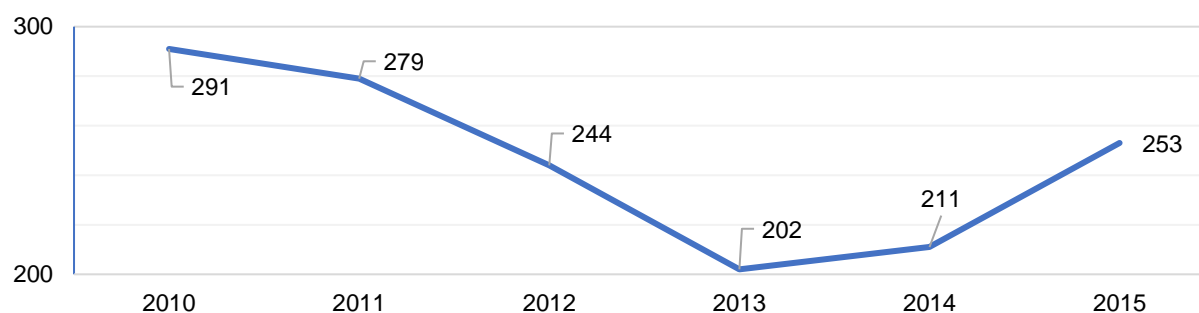


Figure 3 - Average smartphone price rebounded in 2014 as consumers were ready to spend more on their devices

Average smartphone price (USD)



⁹ China Internet Network Information Center, "Statistical Report on Internet Development in China," January 2016, <http://cnnic.com.cn/IDR/ReportDownloads/201604/P020160419390562421055.pdf>

¹⁰ Americans' Internet Access 2000-2015, Pew Research Center, June 26, 2015, <http://www.pewinternet.org/2015/06/26/americans-internet-access-2000-2015/>

¹¹ This gap has narrowed in 2014 and 2015 with the popularity of the iPhone which raised average sale prices.

Mobile data in China is also cheaper than other countries. For instance, a pay-as-you-go 2 gigabyte data package from China Mobile is 120 RMB (US\$17.40). A similar data package from T-Mobile in the US would cost US\$20.50.¹² These smartphones are able to use a 4G telecommunications network that covers 76% of the population, which is comparable to the US where 4G coverage is 81%.¹³

Finally, China's millennials are particularly active users of mobile phones. For many of them, their smartphone is their first, and often only, avenue for accessing the internet. Smartphones are cheap and provide easy access. In 2015, only about 49.6% of China's households had a personal computer,¹⁴ this contrasts with the United States where household computer ownership stands at 87.3%.¹⁵ This characteristic is another one that China may have in common with other geographies where mobile penetration is high and computer penetration is low.

With relatively little competition in the traditional financial industry, and very good technology infrastructure, the sector was ripe for disruption. Digital finance just lacked one thing: trust.

¹² China Mobile and T-Mobile websites

¹³ Opensignal.com

¹⁴ The World Bank, World Development Indicators, "States & Markets: The Information Society, Table 5.12," <http://wdi.worldbank.org/table/5.12>

¹⁵ Ibid.

Digital Payment Development

Alipay

Alibaba Group's first e-commerce platform, Alibaba.com, was launched in 1998 in Hangzhou, China. The site was originally designed as a business-to-business (B2B) platform to match foreign buyers with Chinese sellers. In 2003, the company launched Taobao, a consumer-to-consumer (C2C) platform, which proved highly successful.

Taobao is a multi-merchant e-commerce platform where individuals or small merchants can set up a storefront and sell products. Alibaba does not actually sell products directly, but provides the marketplace infrastructure for the merchants on the platform, including the technology, payments, and logistics, like an eBay in the U.S. or Amazon Marketplace.

Five years later, in 2008, Alibaba launched Taobao Mall (now known as Tmall), a business-to-consumer (B2C) platform that achieved similar growth and popularity. The two platforms quickly became China's largest e-commerce sites.

Most of the transactions in the early days of Taobao and Tmall were cash on delivery, where the customer would pay the courier when the product was delivered. This approach worked, but it was not the most efficient. Many internet payment services were available, but they were primarily used for paying bills or charging phones. None were not designed with e-commerce in mind. A consumer could make a payment online, but there was no recourse if the transaction was fraudulent; the money would have been transferred instantly, with no built-in chargeback mechanism typically found in a credit card or PayPal-like transaction today.

As a result, Alibaba decided to create its own payments mechanism, Alipay, in 2004. Using Alipay, users can hold money in a digital wallet that can be topped up using debit cards, physical prepaid cards, or by receiving money from others in a P2P or B2C transaction.

Alibaba then introduced Alipay into Taobao, its already well-established, e-commerce platform. Shoppers on Taobao were given the option of setting up and using Alipay instead of cash during the checkout process, although "cash on delivery" remained an option. To address the challenge of building trust among users and potential users, Alipay was designed as an escrow system so that the merchant would not be paid until the customer was satisfied with the purchase.

In doing this, Alibaba addressed the key payment challenges of trust and scale, giving consumers more confidence to make transactions with vendors that may have been thousands of miles away. The payments service rapidly gained in popularity thanks to its use on Taobao, and in 2015, Alipay accounted for nearly 50% of all internet payments in China.

The initial Alipay service launched in 2004 was internet-based. The company introduced a mobile version in 2009. By 2016, Alipay was processing 175 million transactions per day, 60% of which were completed through a mobile phone.

Still, its market share in internet payments has since been eroded slightly by a similar product from rival Tencent Holdings.

Tencent: WeChat Pay

China's other popular mobile payments service was established by Tencent, founded in the Southern Chinese city of Shenzhen in 1998. Tencent has two major social apps, QQ and Weixin, or WeChat as it is known in English, which had a combined monthly active user rate of 846 million as of Q3 2016.¹⁶

WeChat is similar in some respects to Facebook and WhatsApp, two popular social networks launched several years before WeChat. WeChat allows users to chat with contacts one-on-one via messaging, audio, or video, facilitates communication among large groups, and has a functionality called "Moments" that is like Facebook's "Timeline." Moments allows subscribers to post images, thoughts, popular news articles, and other material that can be viewed by selected members of the user's contact list. Most of its users spend a considerable amount of time in the app, logging into it multiple times per day to keep up with their friends and to post and review messages, thoughts, and pictures.

In 2005, Tencent had developed a digital payment platform called Tenpay, which was launched nine months after the initial internet version of Alipay was released. Tenpay allowed users to pay for Tencent's products and services, such as its online gaming and music offerings, and was also interoperable with many e-commerce platforms (except for Taobao or Tmall, the two Alibaba e-commerce properties).

In 2013, Tencent integrated the Tenpay payment app into WeChat. This function, known as "WeChat Pay", allowed users to setup a digital wallet contained within the WeChat app and access a variety of products and services on WeChat. Linking the wallet to a debit card or credit card enabled the user to transfer value over to the WeChat Pay wallet and store it there for later use.

It was less obvious then, but in no time, digital payments pushed Tencent and Alibaba into the financial industry. Such payments created the basis for a much larger business opportunity: for the two companies to leverage data collected to offer additional products and services to consumers and small businesses, and create one-stop financial service ecosystems.

¹⁶ 56. Press Release, "Tencent Announces 2016 Third Quarter Results," Tencent Holdings, November 16, 2016, <http://www.tencent.com/en-us/content/ir/news/2016/attachments/20161116.pdf>

Figure 6 - Comparison of Key Mobile Functionalities

| Platform | Functions | | | | | |
|---------------------------|--------------|-------------|---------------|-------------|--------------------------------------|--|
| | Launched | Video Calls | Voice Calls | Payments | Monthly Active Users (Millions 2015) | Mobile Payments Processed (US\$ Billions 2015) |
| WeChat | January 2011 | July 2012 | July 2012 | August 2013 | 697 | 396 |
| PayPal | 1998 | None | None | 1998 | 180 | 50 (est.) |
| Alipay | 2004 | None | None | 2004 | 450 | 1,316 |
| WhatsApp | 2009 | April 2015 | November 2016 | None | 1,000 | Not Applicable |
| Facebook Messenger | August 2011 | April 2013 | April 2015 | March 2015 | 1,000 | Not Available |

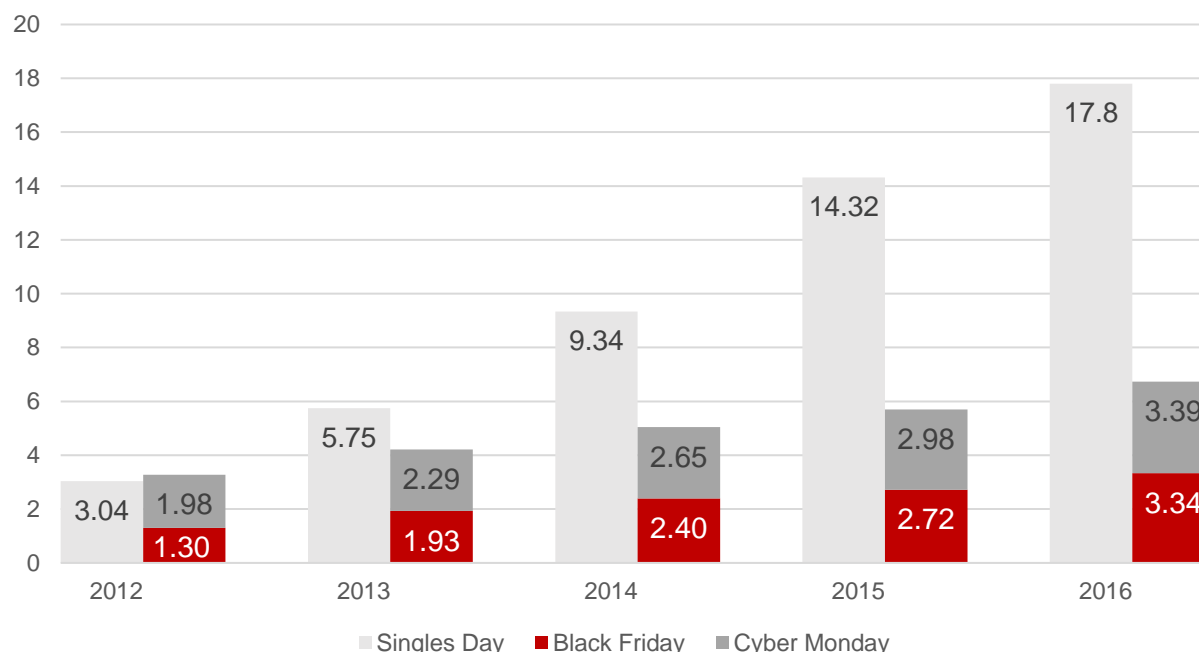
Wealth Management

As Alipay grew, the company realized that customers were leaving money in their Alipay wallets. In 2013, liquidity was tight in the banking market, so interbank deposits were in high demand. To capitalize on this, Alibaba worked with Tianhong Asset Management and launched the Yu'e bao (meaning "leftover treasure") product, a low-risk money market account like a bank savings account.

The idea was simple: Customers could take the money "sitting" in their digital wallets and invest it on the Yu'e bao product. Consumers could invest in the Yu'e bao product, which at the time paid a high interest of between 6-7% annually as it was based on interbank lending, and have the freedom to withdraw their funds at any time. This was a significant change from the rules of typical time-bound deposit products offered by banks, where there are early withdrawal penalties. Although it seemed as if Alipay was acting as a fund manager in providing this product, from a regulatory perspective Alipay was a distribution service, while Tianhong was treated as the fund manager, making it easier for Alipay to offer Yu'e bao.

Yu'e bao was a hit, with customers valuing the ease with which they could shop online, pay bills, and now, easily and flexibly invest their savings. Yu'e bao grew from 0.2 billion RMB (US\$29 million) in assets under management (AUM) in the second quarter of 2013 to more than 810 billion RMB (US\$117 billion) with more than 152 million customers three years later. Consumers are also allowed to use funds on Yu'e bao to complete e-commerce transactions directly. On November 11th, 2016, known as “Singles’ Day” and also the biggest online shopping day of the year, 11% of all Alipay transactions were made using Yu’e bao.¹⁷ All of this has made Tianhong Asset Management one of the largest money market funds in the world.

Figure 4 - Comparison of China's Singles Day Spending to America's Black Friday and Cyber Monday (US \$ Billion)



In January 2014, about seven months after Yu’e bao was launched, Tencent launched a nearly identical product called Licaitong. Within one year, the Licaitong product had over 10 million users and AUM had reached RMB 100 billion (US\$14.5 billion).

Prior to these two offerings, wealth management products (WMPs) in China were only available to those with significant assets. For instance, most WMP required a minimum investment of RMB 10,000 (US\$1,450), which was out of reach for many of China’s consumers. Yu’e bao and Licaitong, however, needed only a minimum investment of one RMB. This helped to “democratize” wealth management, making it more inclusive and accessible to more sections of the population. Indeed, China’s banks have followed suit and now have a range of WMPs that can be purchased for as little as one RMB.

¹⁷ Ant Financial, January 2017 Ant Financial Data Sheet.

Digital Credit Rating

One of the challenges China's financial industry has faced is a lack of accurate and complete credit information. According to World Bank estimates, although 79% of China's adults have had a bank account at some point, only 10% of these have ever borrowed in the formal financial system,¹⁸ which means that there is little information available on potential borrowers' credit histories. In addition, China only established a nationwide commercial credit database in 2005 and a consumer credit database in 2006.¹⁹ As a result, as of 2015, the PBOC had data on 880 million people, about two-thirds of the total population, but only maintained credit histories on 380 million people, less than one-third of the adult population. In comparison, 89% of Americans have a credit score.²⁰

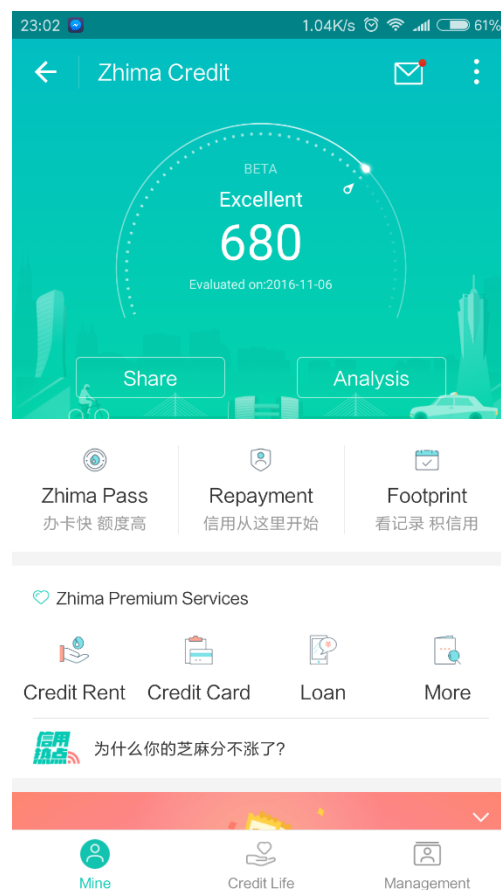
This situation has made it difficult for lenders to accurately assess credit risk and make lending decisions for either retail or commercial lending, a problem further exacerbated by the fact that China's government has so far been reluctant to allow international credit reporting companies to set up their businesses in China.

In January 2015, the People's Bank of China (PBOC) selected eight technology companies to set up consumer credit scoring businesses including the Alibaba affiliate Ant Financial. Shortly after that, Ant Financial launched its Sesame Credit product, which now has 190 million users.²¹

Sesame Credit assesses user creditworthiness through five metrics: the credit history of the user, financial behavior, contractual capacity, identity, and their social network. The service also looks at consistency and preferences in their history for shopping, money transfer, and wealth management. They can tap into over 350 million real-name registered users and 37 million small businesses that buy and sell on Alibaba Group marketplaces, including Taobao Marketplace and Tmall.com and reportedly use over 100 million data sources.²²

When users sign up for Sesame Credit they agree to terms and conditions that allow Ant Financial to use their transaction data to assess their credit worthiness and use

Figure 5 - Sesame Credit Screenshot



¹⁸ World Bank, Financial Inclusion Index

¹⁹ Credit Reference Center, Peoples Bank of China

²⁰ "Credit in China: Just Spend", The Economist, November 19th, 2016

²¹ Ibid

²² Sesame Credit, "芝麻信用大数据实践", 08/2016, http://wenku.baidu.com/link?url=o33srR3T5xQ4nSr-oNFkYs4RFUxM1e2uzDJb8-7-WbSfDZvS3BGC1ms_nzKzsn6WDnMit7-M5_j7K-22XeA-3FI6ZB0cEAjD9YZZHwHnGAa

it to come up with a credit score. This score is also shared with Ant Financial's partners. For instance, a program was set up in June 2015 with the Luxembourg Government to allow Sesame Credit scores to be used in place of bank records in securing a visa for the Schengen travel area in Europe. Also, third-party non-bank financial companies like China's many peer-to-peer (P2P) lending companies are not allowed to access the PBOC's credit databases, so many have chosen to integrate Sesame Credit into their credit rating systems. At the Hangzhou train station, if your credit score is above 600, you can even borrow an umbrella.

Sesame Credit can also play a constructive role in terms of financial inclusion in China. One of the biggest challenges for financial institutions is lending in second- or third-tier cities. Firms like Sesame Credit that provide reliable credit scoring services, could potentially help lenders to provide financing to people who otherwise may be deemed ineligible.

In July 2016, Sesame Credit launched a similar credit checking and rating system for SMEs called "Ling'Zhi" – which means "Smart Sesame" in Chinese. The system is designed to better assess the credit of SMEs and could potentially open new funding channels for a segment of the market that has been, until recently, starved of bank credit.

Lending

Before launching Sesame Credit, Alibaba had been providing micro-credit to merchants on the Taobao and Tmall platforms since 2010. Because Taobao and Tmall work on the escrow model, being able to borrow small amounts to cover short-term financing needs is useful for a merchant who would otherwise potentially need to wait up to two weeks to receive payment for a product they have already shipped.

In addition to lending to companies, In December 2014, Ant Financial started lending to individual consumers through a service called Huabei or "Just Spend." Tied into the Taobao and Tmall e-commerce platforms, shoppers can take out month-to-month loans of up to RMB 30,000 (US\$4,300) and are expected to repay loans one month after receiving the product. The option to use Huabei to pay for purchases is available at check-out and advertised throughout the site. On Single's Day 2016, Taobao and Tmall consumers spent a total of RMB 26.8 billion (US\$3.9 billion) using the Huabei platform.²³

In many cases, Alibaba was lending its own money as part of its lending arm, which is now part of Ant Financial. In 2016, Ant Financial even went so far as to underwrite its consumer lending by selling asset-backed securities (ABS) against the loans. Institutional investors could purchase the ABS through Chongqing Alibaba Small Loan, which provided the underlying loans themselves.²⁴ Effectively, people were "investing in Singles' Day" and Ant Financial was able to tap a large source of funding for its loans.

²³ Ant Financial January 2017, Ant Financial fact sheet.

²⁴ "You Can Now Officially Invest in Alibaba's Singles' Day," Reuters, November 28, 2016, <http://fortune.com/2016/11/28/alibaba-singles-day-securities/>

A Brief on Quick Response (QR) codes

Although mobile payments have existed in China since 2009, the mobile payment industry faced many of the same teething challenges in China that it faced elsewhere around the world: poor device interoperability, conflicting technology standards, and unclear customer / data ownership. By 2010, all three of China's telecommunication companies (China Mobile, China Telecom, and China Unicom) were pursuing mobile payment pilots.

In early 2010, a wave of quick-response of "QR" code startups emerged in China. A QR code consists of black squares of varying sizes and positions arranged in a square grid on a white background. The code can be read by an imaging device such as a phone camera or a simple hand scanner.

Although Alipay and Tenpay were making inroads in online payments, they had yet to break into proximity offline payments because of the monopolistic control of China UnionPay and the mobile operators, but QR codes offered a viable solution. QR codes were secure, easy to use, and were already familiar to customers.

Yet, the key advantage is that they are hardware agnostic. To get UnionPay or a handset manufacturer to embed an Alipay technology would have been incredibly difficult and costly, as would attempting to penetrate the NFC payments market. However, with an app-based QR code, Alipay and Tencent only needed consumers to download the app to their smartphone to gain access to the payment functionality.



Alipay was actually the first to use QR codes for payments when it launched QR payment in December 2011. WeChat followed in September 2012 with QR codes for both exchanging contact details and for payment. By May 2016, Alipay QR code payment acceptance reached 600,000 brick-and-mortar merchants across China. Each has their own set of QR codes that users can scan with their phone and pay, or by using 'quick-pay' functionality, a user can display a dynamic (changes every 30 seconds) QR code to a merchant who scans the code with a device to complete the transaction.

QR-code based mobile payments seem to have caught on in China for a number of reasons:

- Platform agnostic - Both the Alipay and WeChat pay app work across the Android and Apple iOS platforms, which account for 99.3% of China's smartphone market in urban areas.
- Easy to use - Users unlock their phone and click on an icon to show an auto-refreshing QR code that can be scanned by the merchant.
- Inexpensive - Users make transactions for free and receive points that can be exchanged for gifts or credit. On average, merchants pay 0.6% to process digital payment transactions through WeChat Pay or Alipay.
- Ubiquitous - Over 600,000 merchants accept Alipay payments. On a promotional day where WeChat charged no merchant fees for using its network, 700,000 accepted WeChat Pay in China.

Today, millions of stores across China accept QR-code based Alipay and WeChat Pay mobile payments and the technology is being trialed in many other countries across Asia.

China Fintech Today

The breadth and depth of the digital financial products and services available in China today is impressive. As detailed above, mobile payments provided the basic foundation on which many of the subsequent products and services were built including wealth management, credit rating and lending.

In addition to Ant Financial and Tencent, many other players have gotten into finance including Xiaomi, one of China's largest smartphone manufacturers, JD.com, another e-commerce platform and Baidu, China's largest search engine. Xiaomi itself has payment, wealth management and lending platforms.

New industry segments have grown rapidly as well. P2P lending started in China in about 2007 and has since grown to be a \$60 billion industry.²⁵ In fact, China now boasts 4 of the world's top-5 fintech unicorns.²⁶

Functional Comparison of Key Digital Finance Functionalities

| Functionality | Participants | | | | | |
|---|--|-----------------------|-----------------|-------------------------------------|------------------|--------------------|
| | Alibaba | Tencent | Baidu | PingAn | JD.com | Xiaomi |
| Payment | Alipay | Tenpay, WeChat Pay | Baidu Wallet | 1qianbao | JD Payment | Xiaomi Pay |
| Lending | Ant Micro Loan, Huabei | Weilidai, Renrendai | Baiduxiaodai | Chengyi, Puhui | JD IOU | |
| Bank | MyBank | WeBank | Baixin Bank | PingAn Bank | | |
| Insurance | ZhongAn Insurance, Cathay Insurance | ZhongAn Insurance | BaiAn Insurance | PingAn Insurance, ZhongAn Insurance | JD Insurance | |
| Securities | Tebon Securities | Futu, Huatai | | PingAn Securities | | Tiger Securities |
| Wealth Management and Distribution | Tinahong, Yu'E Bao, Ant Jubao, Shumi, Taojin 100 Index | Howbuy.com, Licaitong | Baifa, Baizhuan | Lufax | JD Xiaojinku | Jijinbao, Huoqibao |
| Credit Score | Sesame Credit | Tencent Credit | | Qianhai Credit | | |
| Crowdfunding | Taobao Crowdfunding, Antsdaq | Tencent Lejuan | | PingAn Haofang | JD Crowdsourcing | Duocaito |

²⁵ "A Brief Look at the current state of China's P2P industry," March 10th, 2017, Technode

²⁶ Defined as a private company with a valuation over US\$1 billion

Platform Ecosystem

Since their launch, both the Alipay and WeChat products have become what could essentially be considered lifestyle platforms, allowing users to buy anything from movie tickets to taxi rides and flights, to wealth management products.

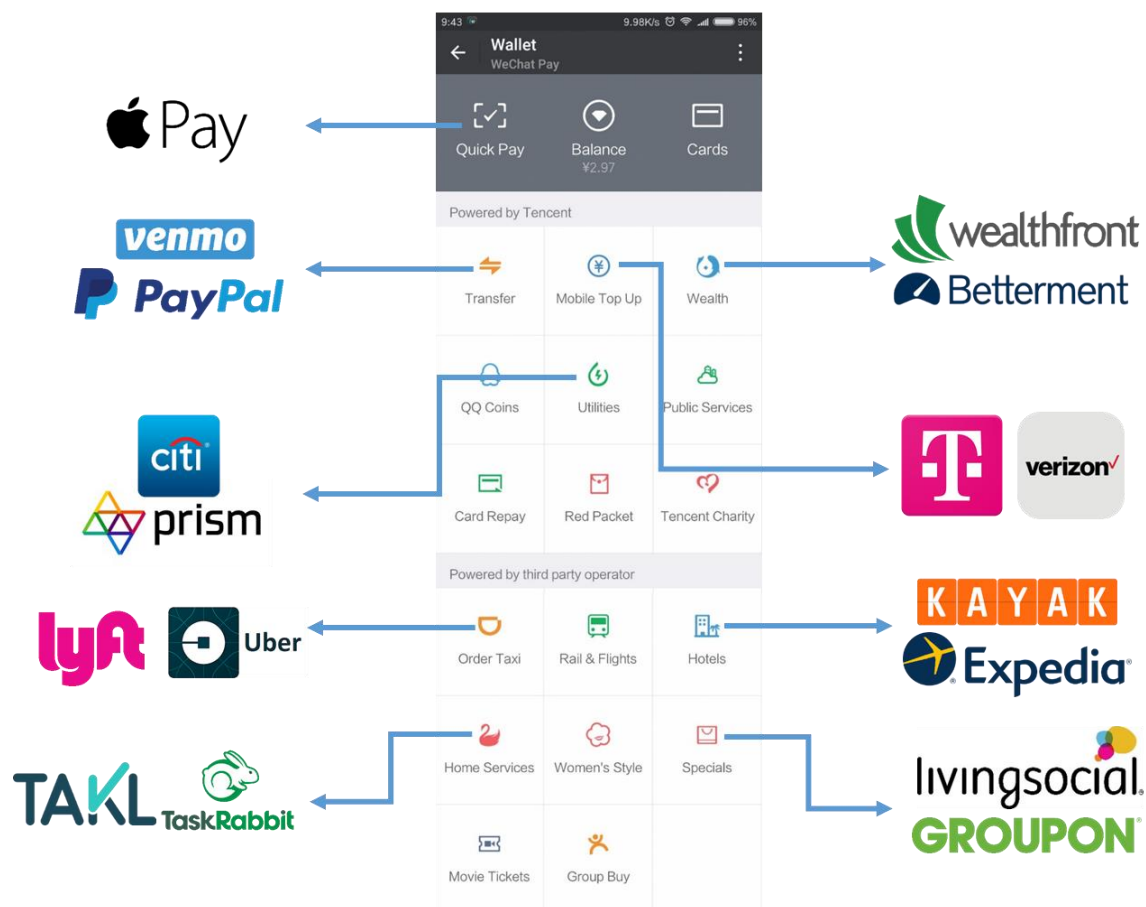
This distinction between similar products and services in the U.S. is important one when trying to understand China's fintech market and market dynamics. Although WeChat at its core is very similar to WhatsApp: they both are chat apps, the similarities end there.

When you open the mobile wallet, the true breadth of the WeChat ecosystem is apparent. A user can execute many functions on one app, something that would take several apps in the US to do. As an example, from within the WeChat app, you can:

- Book a car or taxi, similar to Uber
- Invest in wealth management products, like WealthFront or Betterment
- Pay utilities like you would with Citi or Prism

Figure 7

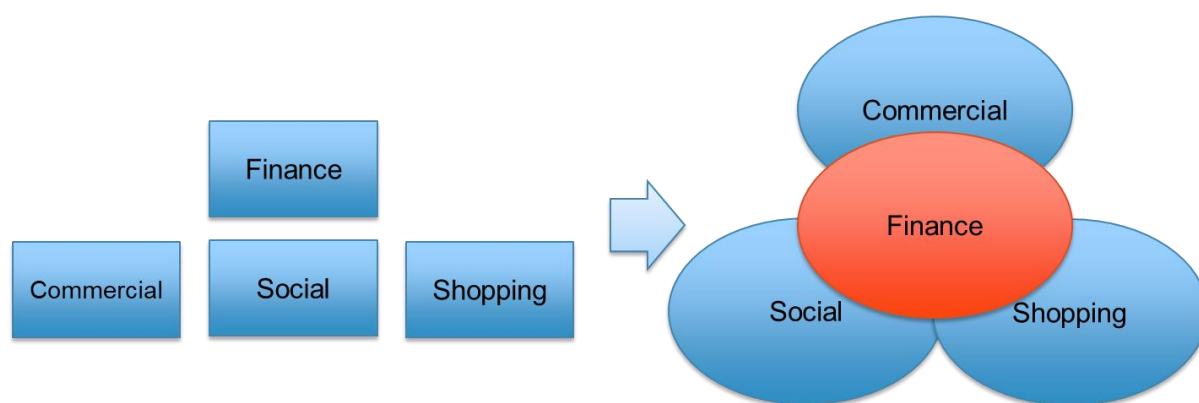
Comparing WeChat Wallet to Equivalent US Apps



So, although mobile payments were the entry point for China's large technology companies into enter the Chinese fintech market, they have now become the plumbing to a wide variety of other products and services which allows a significant amount of cross-selling. When everything is contained on one app, why do you need to look elsewhere?

More importantly, the platform approach leads to an incredible amount of transactional data. Knowing what consumers are purchasing, where they are taking taxis, etc., allows you to move closer to the idea of 'situational finance' where financial providers can provide the right product at the right time to the right person.

Figure 8 - Situational Finance



This combination of payments, platforms and data have put China's big tech companies in a very strong market position, both in the context of tech companies in general as well as the financial industry.

This is having an impact. Banks' traditional business of payments and investment products is decreasing and they are scrambling to find a response. In 2016 alone, over \$30 billion in payment fees were lost to the mobile payment platforms of Alipay and WeChat Pay.²⁷

²⁷ Kapronasia Analysis

The Response of the Traditional Financial Industry

China's traditional financial industry including banks, asset managers, payment providers and payment networks (e.g. UnionPay), have struggled to respond to the growing threat of digital finance. One bank manager that we spoke to told us: "Forget about payments, that battle is lost. Help us with the rest of our businesses." There are few reasons for this:

- **Lack of Agility** – China's Industrial Commercial Bank of China (ICBC) is the largest bank in the world with 22,000 branches and over 400,000 staff. That is not only a huge organizational footprint, but also technology. Making changes to the core systems is challenging and has prevented many banks like ICBC from competing effectively with the tech giants.
- **Business focus** – Alibaba and Tencent are technology companies and are judged by the market and as such are measured by gross-merchandise value and other metrics related to payments and digital businesses. Traditional banks are measured by return on assets or equity, which hinders their ability to engage in 'moonshot' projects or activities.
- **Technical ability** – Although running a technology platform that can support millions of customers is impressive, many of the big banks have IT teams that are geared towards operational stability and efficiency rather than innovation. They also struggle find the right talent. Ten years ago, top college graduates would have eagerly jumped at a job in banking. Today, they are more likely interested in an Alibaba, Tencent, or one of the millions of start-ups in China.
- **Regulations** – Regulation on domestic banks is just as onerous as regulation on foreign banks. Even for using online banking, USB-keys and multiple maker/checker accounts are required. China's tech firms have enjoyed access to what could be considered as the world's biggest fintech sandbox.

There are some traditional players that have managed to position themselves well. Ping An Group is known to be at the forefront of fintech in China and has done a good job in making technology and innovation a key part of their business strategy. Where allowed, data is shared across the organization that can help to cross-sell products and leverage data analytics to improve the customer experience.

Banks are also setting up centers and groups within their organization to foster innovation, mimicking many of the initiatives of other banks like Singaporean lender DBS, which was one of the first banks globally to hire a Chief Innovation Officer.

Despite these efforts, China's traditional financial institutions are unlikely to be able to catch-up with the digital giants at this point, not without some help from the regulators, which they are starting to get.

The Role of China's regulators

As China's financial services industry is less developed than that of many other countries and is a key lever for the country's economic development, industry regulators have always focused on maintaining stable industry growth. This has so far meant relatively slow and measured reform, and openness to foreign firms than many had hoped.

As an example, as part of the 2001 WTO commitment, China agreed to open the domestic banking industry to foreign banks, but much to the chagrin of foreign players, it was only in 2006 that they finally accepted applications for local licenses. HSBC was one the first to receive a license in 2007. Up until a few years ago, if a foreign bank opened a branch in a rich city, they had to do so in a poorer one. Also until a few years ago, foreign banks establishing branches in China could do foreign currency (USD) business but were prohibited for 3 years to do local RMB business.²⁸ Imagine a Chinese bank coming to the US and being told they could not do USD business.

Although they were technically committed to the WTO agreement, realistically, if China had immediately fully opened the financial industry to foreign players in 2001, or even shortly after, the sector would have collapsed along with the economy itself. The measured approach allowed both the regulators and the existing players to prepare for the entrance of foreign competitors.

Wait and See

Despite the relatively closed industry, China has become the world's biggest fintech sandbox as home-grown 3rd-party players like Ant Financial and Tencent have been allowed to thrive.

These players grew in industry segments that were previously very lightly regulated. Mobile payment companies were licensed in 2011, but regulations on business scope and operations were promulgated in 2015-2016. So, licenses were needed a full eight years after the platforms were launched in 2003-2004, and specific regulations only came 4-5 years after that. Similarly, the first P2P lending platform launched in China in 2007. The government then did not regulate the industry until 2016.

This "wait and see" regulatory approach allowed various segments of China's fintech industry to grow and develop within limits. As mentioned previously, mobile payments in China have helped to drive financial inclusion and economic empowerment across the country, a net benefit for the industry and the economy. It was only when the industry reached a substantial size that regulators started to ring-fence the behavior of the mobile payment companies.

Similarly with P2P lending. Shadow finance and lending has been a challenge for regulators in China. While shadow finance has helped borrowers that are not able to access traditional sources of funding, it is very risky as the loans are not tremendously transparent and often come with usurious interest rates. Yet, if the government seriously cracked down on shadow finance, there would be a significant dent to China's economic growth as the segment is so large.

P2P, although not a complete replacement for shadow finance, did help slow the industry growth. As borrowers realized they could access capital on the P2P lending platforms, some of the historically shadow-funded borrowing, moved onto the P2P platforms. Yet again, in 2016,

²⁸ This has now been shortened to a one year period.

after a number of P2P lenders closed down, the regulators issued regulations which will be in effect this August controlling the operational practices of the P2P platforms (e.g. usage of custodial banks) as well as the amounts that can be borrowed.

Future fintech regulation

Although the regulators and government have been very supportive of fintech's growth in China, they are starting to gradually take back some control in certain segments.

As an example, the market leaders Alipay and WeChat Pay currently run across their own 'payment rails' meaning that the transactions do not go across the China UnionPay or bank networks. Although this has resulted in a loss of fees for the banks and China UnionPay, the bigger issue is the data, which is becoming increasingly important as mentioned previously.

Earlier in 2017, the PBOC launched the 'WangLian' platform, which can be thought of as a China UnionPay network for digital payments. Whereas previously a mobile payment would have gone through just the Alipay network, it is expected that at the end of the 2017, most mobile and online payments will be required to go through the WangLian network.

While the WangLian platform should provide interoperability between payment platforms and may help to ensure the industry growth continues unabated, realistically it is an attempt by regulators to take back control of an industry that has gotten away from them. It may also be a saving grace to the banks, who have largely been left out of China fintech's development so far.

Previously the government has been very open to fintech's growth in China, but the regulations over the past few years as well as the setup of the WangLian platform may mean that the heady days of fintech growth are behind us. Should the government continue to regulate the industry, certainly some of the power will go back to the incumbent players from the disruptors.

Barriers to Entry for Foreign Fintech Players

Over the past decade, China's financial industry has developed rapidly and has gradually opened up to foreign players. Most of the large multinational banks, insurers, and asset managers have operations in China.

Still, there are some barriers to entry across the financial industry in all the sub-segments. For example, foreign companies have not been allowed to IPO on domestic Chinese markets and only a handful of foreign brokerages have been given licenses to operate in mainland China, and even then, mainly through JVs. Most well-known is likely the fact that Visa, MasterCard and their competitors are unable to operate domestic businesses in China. [See Appendix A. for more details.]

Within the fintech space, there are very few successful foreign companies. This lack of success typically comes from one of two reasons: operational mistakes by the fintech company or explicit regulations preventing foreign companies from operating in a segment.

PayPal originally entered China in the early 2000s. Its failure initially was due to a series of well-known and acknowledged missteps, and it was never able to capture significant domestic market share. PayPal was then not one of the 270 companies awarded a payments license in 2011-2012. In fact, to date, only two foreign companies were given payments licenses: Edenred and Sodexo, which both received pre-paid card licenses.

Beyond payments, there are some successful 3rd party foreign players in China's fintech industry, although they are mainly foreign entrepreneurs who have setup domestic businesses in China. Saul Hilte, one of the founders of Lending Club in the U.S., set up Dianrong, Shanghai's largest P2P platform. Greg Gibbs was part of the original management team at Lufax, which is set for an IPO later this year.

The other avenue of entry is through infrastructure. Companies like Intel, IBM, FIS, FirstData and Microsoft have been in China for years providing software and hardware to the financial industry. Yet foreign companies are not allowed to directly provide cloud services, so Amazon, Microsoft and others have joint-ventures in China.

China's 2017 Cyber-security ruling

In June 2017, China's new cyber-security regulation will go live. The regulations cover a number of items around Chinese customer data, code escrow and other topics that China has indicated they feel are important for internal security.

There have been numerous legal firms that have analyzed the rules in more detail. For the financial industry and fintech, the rules are not entirely new as for many years Chinese customer data was required to stay in China and code escrow was often a requirement in contract negotiations.

Recommendations

Despite the challenges in and around China's financial industry, the correct tactic is continued engagement, but with a slightly different approach. There are a four key elements of engagement around China and fintech that are critical for the U.S. government to focus on going forward:

1. Apply a more rigorous approach to bi/multi-lateral agreements
2. Focus on the new financial industry battlegrounds
3. Examine the implications China fintech's international expansion
4. Implement reciprocal domestic U.S. regulations on foreign fintech participants

1. Apply a more rigorous approach to bi/multi-lateral agreements

From all of the reporting and news, it would appear that the new U.S. administration has ramped up its engagement with China after the meeting at Mar-a-Lago and efforts since, and at least it appears a dialogue has started. Although this is positive, the details will be critical. For many of these agreements to move beyond talking points and PR exercises, the negotiations and agreements need additional detail to be effective as there are several examples of high-level agreements with China that did not lead to actual implementation.

The first example is domestic China market access for the card clearing and settlement systems of Visa, MasterCard and similar card schemes. Although China has agreed at a high-level to allow payment players to come in and launch RMB businesses, the reality on the ground is that they could be allowed to operate, but the operational requirements are challenging.

We were told by one of the card networks that the Chinese regulators told them they had the green light to setup the domestic core-systems needed for processing payments. The company implemented the required domestic core-systems and infrastructure, but then one of the regulators audited the system and found an issue around security. The finding was not entirely clear in the initial guidelines, but nevertheless, the card network was told to re-design significant parts of the system, costing them about 9 months and presumably a significant amount of money. The detail of the core-systems would have been a minute detail had it been included in the overall WTO agreement, but it needed to be included.

Similarly, although foreign banks are now operating in China relatively unencumbered, had the details around business requirements been defined from the outset, the time to market could have been shortened.

That is not to say that in either case the Chinese government was not justified in the regulations that they promulgated. They do have a vested interest in seeing the continued development in the industry, but had the details been discussed earlier, these situations could have potentially been mitigated.

Because of this, any future regulatory efforts need to 1. be very detailed, 2. have a team in-place to ensure both all of the details are covered in the text as well as correctly implemented, and 3. define consequences if guidelines are not met. It cannot just be assumed that if something happens at a high-level, it will be possible on an operational level. That level of detail, although tedious to implement, is critical.

The challenge with this approach is that most Chinese regulation, even purely domestic, is very high-level and somewhat grey, leaving a lot of interpretation around implementation. Further, the

Chinese government typically does not like foreign intervention in markets, but it should be considered if the U.S. government wants to make more than just noise around agreements with China.

2. Focus on the new financial industry battlegrounds

Most of the financial industry engagement with China has centered on traditional segments of the financial industry. The WTO agreement in 2001 focused heavily on the banking and payments industry and the more recent 100 day plan, on credit rating and electronic payments.

Although it is important to focus on these segments, the direction of the financial industry in China has shifted. Mobile payments through QR-codes, are already accepted at millions of shops and stores across China, rapidly replacing debit and credit card transactions. Similarly, companies like Ant Finance are redefining credit rating and reporting.

Engagement with China on access to the financial industry needs to look forward. The old battles around payments and credit rating are no longer as critical as those segments lose relevance to the future of the financial industry in China. Yes, there is huge market potential for Visa and MasterCard in China, but regulations and engagement needs to be more forward looking and including things like P2P lending, mobile payments and wealth management. Even if the card companies are allowed to set up, they may not be the future of finance in China.

3. Examine the implications China fintech's international expansion

As part of their overall strategy, we have seen a serious push from Alibaba, Ant Financial and Tencent to expand internationally and according to the latest numbers we have, over 300,000 merchants outside of China accept WeChat Pay and 80,000 accept Alipay.²⁹

The first countries that the tech giants focused on were the countries where the Chinese tourists go, so Thailand, HK, Singapore, etc. The second wave has included Europe and now the U.S.

This expansion has come in a few different forms: the first is investment into or acquisition of an existing player, as is the case with Alibaba's investment in PayTM in India and potentially MoneyGram in the U.S. The second is through partnership, as is the case with First Data in the U.S. and Ingenico in several European countries. Finally, they have also gone alone into particular countries like Alipay in Hong Kong.

Although the expansion into these countries opens up new opportunities for the tech giants to expand their userbase and revenue opportunity, it is also having a critical impact on the payment systems in those target countries.

In some cases, such as Hong Kong, there is very little mobile payment activity, so launching a mobile payment product augments the existing payments infrastructure. In many cases however, the payment infrastructure is not as robust as in other countries, or completely non-existent. Because of this, in places like India and Africa, Alibaba and Tencent are having an outsized impact as an increasingly large segment of the population is going digital and using mobile payments.

Given that payment systems are so critical to the development and growth of countries, having influence and sway over the payment system in a foreign country could potentially include political

²⁹ Kane Wu and Juro Osawa, "Alipay Mobilizes for Worldwide Expansion", WSJ November 1st, 2016

influence, especially in those countries with underdeveloped payment systems. As Ant Financial and Tencent are heavily Chinese government supported (formally through investment and informally through political networks), it also means that the Chinese government, by proxy, has a potentially outsized influence in those countries.

As the U.S. evaluates its foreign policy, this cannot be understated: the expansion of China's fintech giants into other markets' payment systems gives them, and the Chinese government, outsized influence on financial industry regulation and policy, and potentially, overall political policy. This in many cases will help the target countries as China continues to fund overseas development, but it also raises a potential challenge to the U.S.'s national security interests which may be weakened through this expansion. Particular attention needs to be focused on this market segment to ensure that the U.S. government is aware of and comfortable with the implications.

4. Reciprocal domestic US regulations on foreign participants

One of the advantages of the U.S. financial industry and specifically fintech, is the openness of the market. Not only does the U.S. have excellent home-grown fintech companies like Lending Club, Lemonade, and Prosper, the market structure is such that foreign companies can also enter the U.S. market. This applies across the board: the U.S. has one of the most advanced and robust financial industries in the world, populated by banks, brokers, asset managers and more from all over the world.

Although this has worked previously, it needs to be re-thought, specifically in the context of fintech for two reasons:

Firstly, for reasons mentioned previously, access to payment systems and the correspondent influence of the Chinese government in the tech giants represents a special case and affects national security and policy.

Secondly, even as there are few limitations on what Chinese firms can do in the U.S., American firms are very much limited in what they can do in China. I do not typically support tit for tat reciprocal regulations, but believe this to be a special case, where it should certainly be on the table for consideration: there is no reason why products like Alipay are allowed to expand and grow in the U.S. while U.S. firms, like PayPal, struggle to gain market access in China.

This review of reciprocal regulations and restrictions should apply not just to China, but any markets where this is happening.

Conclusion

Although the fintech industry globally is relatively young, the impact is nowhere greater than it is in China. By any measure, China's fintech industry dwarfs any market globally whether it is by assets under management, volume of transactions or valuation of the companies.

This has helped drive economic empowerment and financial inclusion in China as digital-finance becomes a way of life for Chinese individuals. Although there are risks, the benefits certainly outweigh any drawbacks, especially as the regulators walk the fine line of maintaining industry stability, while at the same time fostering innovation.

As these platforms expand internationally, it is a critical time for the U.S. government and regulators to re-evaluate their approach to fintech regulation, especially for China's fintech companies. The game has shifted and so have the players, a new approach is not just recommended, but required for the U.S. to maintain its position of importance on the global stage.

Appendix A: Financial Industry Foreign Barriers to Entry by segment

| | Banking | |
|--|--|---|
| | Investment Banking | Retail/Commercial Banking |
| Is the market open to foreign companies? | Yes | Yes |
| Are there restrictions on foreign companies? | Yes | Yes |
| What restrictions? | Foreign investment banks currently must partner with local brokerages in a joint venture to do business in China, permits are required for trading | Foreign banks have a foreign debt quota, required loans to deposits ratios, limited access to bond underwriting market, withholding taxes on offshore funding, and liquidity requirements, ceiling of ownership of foreign banks in domestic banks, waiting periods for RMB |
| U.S. Companies that have entered Chinese market | JP Morgan, Goldman Sachs, Bank of America Merrill Lynch | Citibank, JPMorgan Chase, Morgan Stanley, Bank of America, BNY Mellon, Wells Fargo, SDP Silicon Valley |

| Capital Markets | | |
|---|-----------------------------|---------------------------------------|
| | Bond Underwriting/Brokerage | Offshore Bond Trading (Dim Sum) |
| Is the market open to foreign companies? | Yes | For synthetic bonds, not retail bonds |
| Are there restrictions on foreign companies? | Yes | No |
| What restrictions? | Licenses required | |
| U.S. Companies that have entered Chinese market | JPMorgan, Citibank | |

| Capital Markets | | |
|--|--|---|
| | Onshore Bond Trading (Panda) | Equity Trading |
| Is the market open to foreign companies? | Yes | Yes |
| Are there restrictions on foreign companies? | Yes - file paperwork with PBOC | Yes |
| What restrictions? | Medium to long-term investors allowed, incl. foreign central banks, international orgs, foreign commercial banks, insurance companies, securities firms, fund management companies, etc. | Foreign investors can trade through Shenzhen exchange, can also trade equity for Chinese companies listed on NYSE |

| | Capital Markets | |
|--|---|--|
| | Derivative Trading | Asset Management |
| Is the market open to foreign companies? | Yes | Yes |
| Are there restrictions on foreign companies? | Yes | Yes |
| What restrictions? | Foreign companies are allowed to conduct forwards, FX trading, options trading, but most other forms of derivative trading are limited even for Chinese companies | Gov. approval/permits required, WFOE has to be created |
| U.S. Companies that have entered Chinese market | | Fidelity Investments |

| | Capital Markets | |
|---|--|--|
| | Listing equity on Chinese exchanges | Commodities Trading |
| Is the market open to foreign companies? | No | Yes |
| Are there restrictions on foreign companies? | - | Yes |
| What restrictions? | Foreign companies not yet allowed to list equity on Chinese exchanges, although discussions/planning have occurred and exchanges are expected to be opened at some point in the future | Futures are slowly being opened up for trade |

| | Infrastructure | |
|--|---|---|
| | Cloud Computing, Software as a Service (SaaS), Platform as a Service (Paas) | Network Products |
| Is the market open to foreign companies? | Yes | Yes |
| Are there restrictions on foreign companies? | Yes | Yes |
| What restrictions? | Foreign companies must partner with Chinese companies in order to provide cloud computing/storage services in China or obtain a license if they have server hardware located within Chinese borders | Foreign companies must partner with Chinese companies in order to provide network products in China |
| U.S. Companies that have entered Chinese market | IBM, Amazon, Microsoft, Oracle, Zoho | Cisco |

| | Infrastructure | |
|--|---|---|
| | Hardware | Software |
| Is the market open to foreign companies? | Yes | Yes |
| Are there restrictions on foreign companies? | Certain cases | Certain cases |
| What restrictions? | Foreign companies that supply hardware to Chinese banks/gov/military must turn over code, submit to audits, and build backdoors into hardware. Otherwise, companies may need approval from government to sell hardware. | Foreign companies that supply hardware to Chinese banks/gov/military must turn over code, submit to audits, and build backdoors into hardware. Otherwise, software must comply with Chinese data/software laws. |
| U.S. Companies that have entered Chinese market | Apple, Samsung, Dell, Intel, Qualcomm, etc. | Apple, Microsoft, Adobe, etc. |