

# 18-1 China Needs Better Credit Data to Help Consumers

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Private citizens in China have been lending to each other informally for centuries, making loans that the formal financial sector is either unable or uninterested in providing. Indeed, out of a population of approximately one billion adults, more than half lack the personal credit history needed to borrow formally from financial institutions<sup>1</sup> to cover unexpected expenses or pay for cars and other durable goods. China's financial system in many ways remains far behind

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1. Author interview with Shanghai Credit Information Services Executive, August 2015. About 300 million individuals have sufficient information to provide a score, out of 830 million total records, but estimates of potential borrowers could range up to one billion.

that of other countries—even some developing countries. As a result, the Chinese economy—despite its envied growth rate—is not serving its citizens well. Reforms are needed to allow Chinese citizens to share in the prosperity through dependable access to credit at reasonable cost.

This Policy Brief argues that one way to improve China's financial system is not to create new institutions but to establish a vast number of missing credit histories—and more easily share existing ones—by upgrading financial information systems. Chinese access loans and savings tools from a variety of lenders: banks, internet firms, consumption loan companies, and peer-to-peer platforms. But since many of these lenders tend to share either no borrower data or only “negative lists” of delinquent borrowers with each other, responsible borrowers who have consistently repaid their loans are unable to prove to potential lenders that they deserve credit. Without better credit data infrastructure, the current boom in consumer credit will squander a rare opportunity to make the financial sector more efficient and expand access by establishing credit histories for hundreds of millions of Chinese.

Not having a credit history makes formal loans hard to obtain, thus perpetuating the difficulty in establishing such a history. Unable to assess the credit risk of potential borrowers, lenders will either not grant loans or impose heavy interest costs on those they do grant. Here, data beyond past credit can help. If an existing database of loan performance can be matched with other databases that include consumer payments, mobile phone usage—an indicator of the strength of an individual's social network—and administrative records, lenders can estimate the creditworthiness of new borrowers based on their similarity to past borrowers. The resulting data would likely be noisier than those from models based primarily on past borrowing data, like those most often used in the United States, but alternatives to credit data exist at great scale in China.

Unfortunately, considerable barriers stand in the way of assembling these data and leveraging them for financial inclusion. Laws and regulations on data protection are unclear, unenforced, and often inconsistent. Cybercriminals and unethical firms thrive in this chaos, and data holders or users mindful of their reputations are stymied in their attempts to create an orderly data sharing market. Economic incentives lean against data sharing between firms, as each sees their

hoard of data as a unique competitive advantage. The costs of surmounting the technical barriers to integration can also be prohibitive.

But two policy changes can help overcome these difficulties. First, the Chinese government should enshrine in legislation the right for consumers to access and share the data that firms are collecting on them, as part of a comprehensive data protection law that creates consistent principles across industries. To preserve security and privacy, standards should ensure that individuals can also revoke the right to access and use their data, giving them more control than is possible at present. If consumers can share their own data with potential lenders, firms with large datasets will not be able to hold that data hostage, and consumers can then use their data to shop around for the best credit offer.

Second, regulators should encourage more partnerships between traditional financial institutions and newer financial technology players. Each has a comparative advantage for lending to new groups of people: Banks have the lending capital tech firms lack, and tech firms have new forms of data on the many consumers who lack the traditional credit data banks use to evaluate creditworthiness. The economic and social value of banks' capital and technology firms' data are higher when combined through partnership than if each try to lend separately.

These changes would establish a more orderly, efficient mechanism for creating consumer credit scores using new sources of data. At least for now, such changes would maintain the current financial information system in which traditional credit data is primarily housed at the central bank's credit registry. Nevertheless, the long-term vision should be a decentralized system that is both more difficult to hack and puts individuals in control of who can access their personal information.

This Policy Brief also describes the gaping holes in the consumer credit market and the reasons why these data are not shared today. It recommends laying the legal foundation for and proposes key aspects of an information system that gives consumers more control of their data and how they are shared, expanding access to credit while increasing privacy and security. The result will have deep implications for China's economic rebalancing, efficiency of the financial sector, and the security of Chinese citizens living increasingly online lives.

The scope of this Brief is limited to issues surrounding data that are useful for credit evaluation. While existing data systems are likely to eventually serve as inputs for the far more ambitious government-run social credit system that aims to integrate social and financial data across China—a system to evaluate individuals on a far broader set of criteria for everything from jobs to government contracts and loans—analysis of social credit will be reserved for future work.

## CONSUMER CREDIT IN CHINA

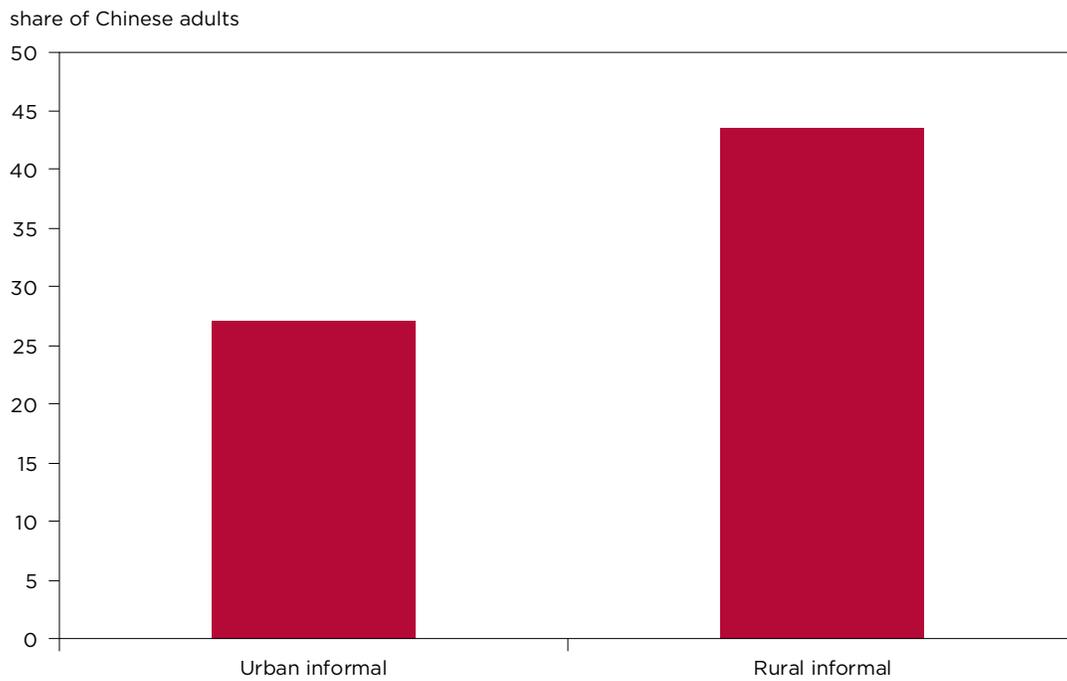
Consumer credit through China's formal financial sector only effectively appeared in the 2000s and has a long way to go. The data on the share of adults engaging in formal sector borrowing are highly inconsistent across data sources, ranging from 10 percent in the World Bank Global Findex Database in 2014 (World Bank 2014) to 38.4 percent reported in the International Monetary Fund's Financial Access Survey in 2016 (IMF 2016). The true figure probably lies between these estimates nearer to the higher figure, as 10 percent would imply far fewer borrowers accessing credit than the number of Chinese who have generated a borrowing history, and 38.4 percent is higher than but close to the share of adults with scorable borrowing histories. Either way, over half of Chinese adults are not accessing formal credit. This is true even though China's financial system and outstanding credit frequently make headlines as among the largest in the world relative to its economy.

Some may argue that the high proportion of citizens outside the formal credit system is not a problem, and that China's high savings means that its individuals have less need to borrow. But the high overall credit outstanding combined with a low share of individuals engaging in formal borrowing point to a problem with distribution and access. The China Household Finance Survey found in 2011 that 50 percent of Chinese households consumed as much or more than their income, thus having either zero or negative savings rates (Gan 2012). In addition, people in middle and lower income brackets save for precautionary purposes, because they cannot count on access to credit in an emergency (Orlik and Chen 2015). The credit needs of these individuals shows up in the informal sector instead: 43 percent of rural adults and 27 percent of urban adults use expensive informal credit (figure 1), which does not help them establish a credit history at the central bank's credit registry. This evidence suggests Chinese borrowers lack an on-ramp that allows them to enter the formal credit system.

Despite these challenges, the credit situation has been improving. More recent official data from the central bank, the People's Bank of China (PBOC), show that loans to households<sup>2</sup> as a share of total credit has more than doubled in the last eight years, up from 12 percent in mid-2009 to 26 percent today. But structural changes are even more quickly reflected in the data on new loans. The household share of new loans averaged around 35 percent from Q2 2010 to Q2 2016 but has risen to an average of 58 percent in the last year and a half (figure 2). However, around three quarters of

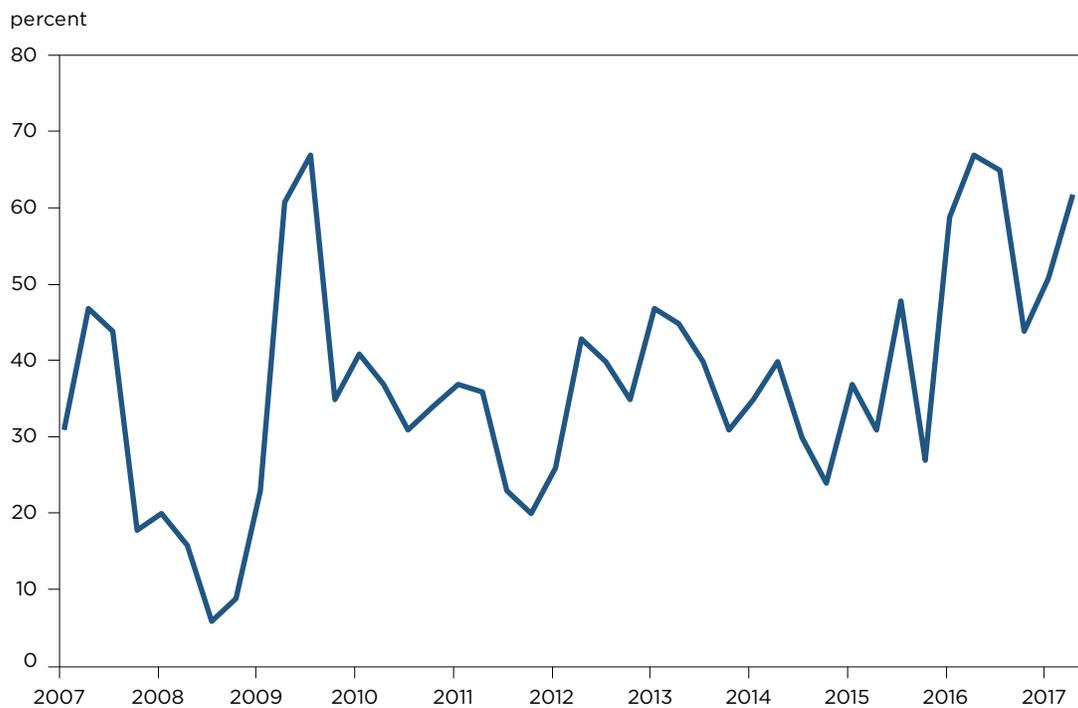
2. This share does not include what the PBOC calls operating loans to households, which are in effect loans to small businesses.

**Figure 1 Expensive informal borrowing is most common**



Source: China Household Finance Survey, 2012.

**Figure 2 Household share of new financial institution loans is ticking up**



Sources: People's Bank of China, Wind.

outstanding loans to consumers from 2012 to 2016 were for mortgages, leaving only a small share for purchasing durable goods, home improvement, education, cash flow management, and other needs.

## CREDIT REPORTING AND SCORING

Relatively low formal credit use stems from the difficulty of assessing the creditworthiness of those without borrowing histories. The United States has long dealt with credit reporting to alleviate this problem; even Abraham Lincoln, as an attorney prior to his presidency, provided information on the character and creditworthiness of individuals in Illinois for one of the earliest credit reporting firms in the 19th century (Olegario 2006). Credit reporting in the United States today is dominated by three private credit bureaus, known as National Credit Reporting Agencies (NCRAs): TransUnion, Equifax, and Experian. These bureaus aggregate data primarily from a variety of creditors, ranging from credit card issuers to collection agencies, that report on a voluntary basis, and most large lenders report their data to all three. Reporting to the NCRAs occurs through a standardized format and includes factors such as whether the account is past due, balances owed, received payments, and amount of available but unused credit (CFPB 2012, 14). The NCRAs make money by selling credit reports to potential lenders, but they also use the data to sell lists of potential consumers to lenders who can make pre-approved credit offers.

Credit scores in the United States, built on these credit reports and other data, constitute an essential piece of credit evaluation. Scores are typically quantified assessments of the risk of default by borrowers. Fair Isaac Corporation (FICO) has developed the most commonly used scores for consumer lending, but there are many players in this market, including the VantageScore jointly launched by the three largest NCRAs. Both the FICO score and VantageScore use only data from credit files, which can but rarely do include some alternative data such as payments on utility and cell phone bills.<sup>3</sup> US lenders, both newer financial technology—or fintech—players and traditional firms, often develop their own scoring methodologies that include data beyond credit

files. In addition, newer entrants such as ZestFinance and incumbents such as FICO are developing new scoring methodologies based on broader sets of “alternative data,” potentially increasing the number of consumers who can be given a credit score. However, even with this long history and ubiquitous reporting, one in five American adults is either invisible to the credit reporting system or lacks sufficient information to calculate a score (CFPB 2015). In China, the proportion of adults without a score is over three times that amount.

China established its first credit registry less than 20 years ago with a pilot program in Shanghai that has since developed into its main credit information source: the Credit Reference Center at the People’s Bank of China (CCRC). It is the largest credit system in the world, with records on over 830 million individuals as of May 2015,<sup>4</sup> but as noted above only around 300 million people have enough information in their files to generate a credit score. As the CCRC has developed, it has added reporting from beyond banks to include many types of licensed financial institutions and some administrative data centers. However, turf battles have made it difficult to convince other government departments to share their data.<sup>5</sup> The scope of included information remains limited today.

To facilitate the development of credit scores and add more types of data to credit evaluation, the PBOC issued eight provisional permissions in January 2015 for private companies, including affiliates of Internet giants Alibaba and Tencent as well as financial services giant Ping An, to set up credit evaluation services. The hope was that these firms would use their stores of data and technical prowess to provide credit scores for their customers and thereby encourage lending to those without credit access. Firms had six months to set up their systems and earn final approval, but almost three years later the permissions for these credit services remain temporary. PBOC officials have so far refused to give full licenses to these firms, arguing that they have not fulfilled the requirements, but the companies believe they are making progress. The existing players’ regulatory status is thus in a state of regulatory limbo, but the market is still expanding rapidly.

Of the eight firms that received permissions, Ant Financial’s Sesame Score is the most popular, with around 260 million users as of July 2017.<sup>6</sup> It uses data primarily from

3. Barrett Burns, “Avoid alternative facts about alternative data,” VantageScore: The Score Monthly Credit Scoring News, March 2017, <https://thescore.vantagescore.com/article/327/avoid-alternative-facts-about-alternative-data> (accessed on December 29, 2017); and Scott Zoldi, Andrew Jennings, and Brian Kinch, “Truth Squad: Does VantageScore Use Alternative Data?” FICO, January 16, 2017, <http://www.fico.com/en/blogs/risk-compliance/truth-squad-does-vantagescore-use-alternative-data/> (accessed on December 29, 2017). FICO reports that only around 2.5 percent and 2.4 percent of Americans have telecom and utility payment data in their credit files, respectively.

4. Author interview with Shanghai Credit Information Services, May 2015.

5. Author interview with former State Council Informatization Office official, December 2016.

6. Cate Cadell and Shu Zhang, “No More Loan Rangers? Beijing’s Waning Support for Private Credit Scores,” Reuters,

Alibaba/Ant Financial Services, evaluating users on their identity (information such as education history and multiple forms of contact information), ability to keep promises (bill payments), social network (primarily those sending and receiving payments on Alipay), credit history, and online shopping activity.<sup>7</sup> The service has aggressively expanded beyond credit provision to serve as a stand-in for an individual's trustworthiness, with uses for everything from online dating to shorter waits for security at Beijing's airport.<sup>8</sup>

## There is great potential in China to use alternative data beyond traditional information such as borrowing history for credit scoring.

Regulators, however, are not satisfied. Interviews with current and former PBOC officials suggest that the pervasive use of the Sesame Score as a proxy for trustworthiness, far beyond the intention to help in the provision of credit, is viewed as an overreach of the credit scoring authority. Another issue that applies to all eight firms is the siloed nature of the data used to generate their scores. PBOC officials found that scores for the same individuals were not consistent between the eight firms and could be associated more with the customer's use of the firm's other products rather than their underlying creditworthiness.<sup>9</sup> Furthermore, the PBOC is worried about market distortions from granting the right to give credit scores to companies engaged in lending, ecommerce, and social media businesses, rather than the international norm of independent firms providing scores. If the users of one Internet platform are able to obtain cheaper credit simply because they use that platform's other services, rather than because they are more creditworthy, then credit scores become distorted.

Officials have thus hinted that only a single final license may be granted to a new system called "Xinlian," which

July 4, 2017, <https://www.reuters.com/article/ant-financial-credit/no-more-loan-rangers-beijings-waning-support-for-private-credit-scores-idUSL3N1JO05W> (accessed on December 29, 2017).

7. "Personal Credit: Sesame Score," Zhima Credit, 2017, <https://www.xin.xin/#/detail/1-2> (accessed on November 29, 2017).

8. The airport program is no longer in operation.

9. Cate Cadell and Shu Zhang, "No More Loan Rangers? Beijing's Waning Support for Private Credit Scores," Reuters, July 4, 2017, <https://www.reuters.com/article/ant-financial-credit/no-more-loan-rangers-beijings-waning-support-for-private-credit-scores-idUSL3N1JO05W> (accessed on December 29, 2017).

loosely translates to "Credit Link," under the National Internet Finance Association (NIFA), an industry association that the PBOC tasked with some regulatory and standard-setting functions. Member firms like Ant Financial, Tencent, Ping An, and CreditEase are shareholders. Granting the single license to the NIFA would be consistent with PBOC objectives for market development and recent moves to increase government control over Internet finance firms. While ownership structure and a focus on data from microlenders and peer-to-peer and consumer lenders have been announced,<sup>10</sup> it is not yet clear what other types of data the reporting system will include or how it will work.

Despite these political economy issues, there is great potential in China to use alternative data beyond traditional information such as borrowing history for credit scoring. Alternative data are especially relevant in China, where people are increasingly leading online lives. Mobile phones are used by 724 million Chinese to access the Internet, leaving a digital trail of their financial situation and trustworthiness that can be used by lenders (CNNIC 2017). A lender using alternative data can provide credit to creditworthy customers whom banks may turn down for lack of a credit history. For example, the Entrepreneurial Finance Lab (EFL), based in Cambridge, MA, has facilitated over \$1 billion in loans around the world to 700,000 people, thanks to its credit scoring models based on psychometric information rather than solely relying on traditional metrics.<sup>11</sup> In Peru one test of the EFL's methodology found that adding its alternative metrics to traditional data can allow lending volumes to increase by 140 percent without increasing default rates, or can cut the default rate for the same amount of loans in half.<sup>12</sup>

A study by Bjorkegren and Grissen (2015) found that mobile phone data can predict loan default nearly as well as

10. Zhang Yuzhe and Lui Xiao, "China's First Centralized Online Personal Credit Database Takes Shape," Caixin Global, January 5, 2018, <https://www.caixinglobal.com/2018-01-05/chinas-first-centralized-online-personal-credit-database-takes-shape-101194124.html> (accessed on January 8, 2018). The PBOC announced Xinlian's application for a personal credit evaluation system license but has not yet made a decision.

11. Olga Kharif, "No Credit History? No Problem. Lenders Are Looking at Your Phone Data," Bloomberg News, November 25, 2016, <https://www.bloomberg.com/news/articles/2016-11-25/no-credit-history-no-problem-lenders-now-peering-at-phone-data> (accessed on January 3, 2018).

12. Entrepreneurial Finance Lab and Equifax, "EFL Case Study: Using the EFL Score to Enhance Credit Bureau Data," Entrepreneurial Finance Lab, 2014, <https://web.archive.org/web/20160624161540/https://www.eflglobal.com/wp-content/uploads/2014/09/EQUIFAX-Case-Study-2014.pdf> (accessed December 2016).

traditional credit scores, as such data can give a rich picture of potential borrowers' behavioral patterns, from whether their calls to others are returned (indicating potentially stronger social capital and thus entrepreneurial opportunities) to whether they keep sufficient airtime credit or often let it run to zero. A key benefit of alternative data is their usefulness in ascertaining the willingness, not just the ability, to pay. Many defaults in China result from a lack of willingness to pay, and a simple check of income or consistency of payments from past loans with collateral, such as mortgages, may not be enough to accurately evaluate the risk of a loan.

### CHALLENGES TO SHARING CONSUMER DATA

The key reasons for the limited information exchange to date in China involve the economic incentives of data holders, legal concerns, and logistical challenges to integrating data from many small lenders. On the economic side, financial firms wary of competition elect not to share data except as required by PBOC regulations. Among the ecommerce, social, search, and Internet finance giants, data sharing is virtually nonexistent because each entity considers its data and users as essential to its competitive advantage. Alibaba Group CEO Daniel Zhang remarked that “data is the blood of the new economy.”<sup>13</sup> But high-ranking officials assert that it is difficult to get this blood to flow between systems that currently function as if they were isolated data islands.<sup>14</sup>

From a market structure standpoint, the Chinese Internet market is an oligopoly: Tencent, Alibaba, Baidu, and to some extent Ping An dominate distinct but often overlapping sectors of the online economy, and each is expanding into new territory to raise the value of its network. Data and users gathered in one market serve as leverage to gain traction in another, increasing the private value of holding onto that data and reducing the probability that the market will be able to generate the beneficial effects and social returns that come from sharing data between the disparate platforms that these companies control.

On the legal front, China lacks a unified legal framework to define what kinds of data on individuals can be collected and by whom, how it can be processed, and with whom it can be shared. Even the powerful National Development and Reform Commission, which has a clear mandate from China's State Council to gather government

and third-party data to implement a “social credit system” to evaluate citizens,<sup>15</sup> seems paralyzed in some of its data gathering and merging efforts by the legal uncertainty.<sup>16</sup> Ant Financial has reported difficulty in getting telecom firms to share data that would be helpful for credit scoring, citing legal uncertainty.

Part of the difficulty lies in the legal classification of data gathering firms like Ant Financial that cross industry boundaries. Internet and ecommerce firms fall under many of the data restrictions of telecoms, but they also share data with their finance subsidiaries. These fall under a different data privacy regime determined by financial regulators.<sup>17</sup> The National People's Congress has debated a draft of new privacy legislation for years, but the draft will need to be finalized and have implementing rules to have teeth. Uncertainty about the final form of privacy legislation will stymie efforts to create any durable data-sharing agreement, as it will be difficult to get clear guidance on legality from the multitude of regulators operating under disparate legal frameworks until the overall legislation is finalized. For now, such legal uncertainty has resulted in a dichotomy: Smaller firms, operating under the radar of the authorities, are able to buy up enormous sets of leaked or stolen data on the black market, but larger firms, more mindful of their reputations, are cautious with data sharing.

Logistically and technically, it would be relatively simple to integrate data completely with telecom firms, since the market is highly concentrated and contains data already linked to individuals' national identification numbers. Data from microloan companies and peer-to-peer lenders present a logistical challenge, however. There were 8,610 microloan companies and around 2,000 peer-to-peer lenders in China at the end of September 2017, together holding over RMB 2 trillion in outstanding loans.<sup>18</sup> If the data these companies and platforms hold could be aggregated and integrity assured, they would be highly valuable for calculating credit scores. But as of now, a separate data-sharing deal would need to be made with each of these companies, as they are primarily regulated at the local level (Du 2010, 7–8). To make matters

13. “Five Reasons Why Alibaba Is a Data (Not E-Commerce) Company,” Alizila, October 17, 2016, <http://www.alizila.com/five-reasons-why-alibaba-is-a-data-company/> (accessed on December 29, 2017).

14. Xiaoling Wu, “吴晓灵：大数据征信应坚持独立第三方 否则行为扭曲,” *Caixin Media*, December 3, 2016, <http://topics.caixin.com/2016-12-03/101022700.html> (accessed on January 27, 2017).

15. The system also aims to evaluate enterprises, professionals, and government officials, with a scope far beyond a typical financial understanding of creditworthiness.

16. Current and former officials at the National Development and Reform Commission, State Council, and PBOC who are familiar with the efforts support this assessment (multiple author interviews during 2016–17).

17. Hudson Lockett, “In-depth: Chinese e-commerce's rush into online finance could put countless users' data at risk,” *China Economic Review*, September 2015, <http://www.chinaeconomicreview.com/chinese-e-commerces-rush-online-finance-could-put-countless-users-data-risk> (accessed on January 3, 2018).

18. People's Bank of China 2017 and Online Lending House.

worse, peer-to-peer lenders have a high failure rate and are not yet effectively regulated. Therefore, they cannot guarantee reliable data, and it is not clear if they can be trusted with the sensitive data they would acquire in a reciprocal data-sharing system. These challenges would require an approach based on aggregating data from the largest, most proven players first, possibly with the cooperation of local regulatory authorities eager to reduce the risk of lending in their jurisdiction. The cost to put such a system in place, however, would probably be unworkable for most of the smaller lenders and peer-to-peer lenders in the short term.

## A WORKABLE SOLUTION

There is no ideal credit reporting structure internationally or in other countries that China could simply emulate. For example, the system in the United States relies on three centralized private credit bureaus over which consumers have virtually no control.<sup>19</sup> It is error prone, misses 20 percent of the adult population, and has suffered data breaches exposing about half of the population to severe risk of identity theft. China has the potential to leapfrog the shortcomings of existing systems and become a pioneer in credit reporting.

The Chinese system should incorporate not only traditional credit data but also alternative data such as telecom and rent payments to move those who lack a traditional credit history into the reporting system more quickly. It should simultaneously increase security, break down barriers to sharing data that could be combined, and preserve privacy, in part by permitting analysis of a person's data solely at that individual's request. It should leverage the enormous stores of data on consumers and the low-cost capital of banks for financial inclusion. A longer-term ideal would include data ownership for consumers, helping them to profit from the myriad uses of data they currently cannot control, which would benefit them far beyond gaining credit.

The ideal system should begin with EU-type laws that require that consumers have access to data on themselves. Such laws should be part of the data protection legislation that emerges in the coming years from the National People's Congress. A unified legislative basis would provide for more consistent treatment of data across industries, something sorely lacking in today's hodgepodge of rules and regulations by departments with often overlapping jurisdictions. The laws should ensure that data is available to consumers

and third-party applications through industry-based standardized application programming interfaces (APIs), an approach used across the world in financial sector data integration efforts. Consumers could then give or revoke explicit permission to data holders to share specific types of data temporarily with potential lenders through an online portal or application on their phone.

For data sharing to become more secure and less tangled in the black market, officials will need to massively step up enforcement of these laws. Such a move is long overdue, as even the most conservative estimates for losses due to theft of personal information in China, based only on reported crimes, run over US\$13 billion and are likely many magnitudes larger.<sup>20</sup> If effectively implemented and enforced, these laws and standards would help individuals combine the various data islands that hold information on them to get a better deal on credit by shopping their data around for loans across credit providers. A lender could request access to a borrower's record at the central bank's repository, their deposit records from their online banking, income records with the local government, social data from Tencent, payments data from Ant Financial, and any applicable borrowing history from a small lender, all through the same system.

Less comprehensive versions of such systems already exist for some types of government data. For example, individuals can request online access to their central bank credit reports and accounts like social security contributions. Evidence suggests that individuals in China are willing to engage in such sharing when they trust the lender. In a 2016 survey of Chinese millennials, only 17 percent were concerned with sharing data when interacting with a financial institution known to them.<sup>21</sup> Since no industry player would have a stranglehold on the data they amass, competition would rise in the financial sector and other sectors in which data play a key role. However, individuals will need a great deal of education on how to avoid sharing their data with malicious actors, and whatever technical systems result will require significant investments in cybersecurity to ensure they are not used as gateways to attack companies' systems. But this kind of education and concerns over cybersecurity are not new; they are essential to ensuring that the increasingly digital, data-driven future is secure.

To design the technical aspects of these systems, Chinese officials should explore promising models for customer data

19. The US credit bureaus gather their data in many ways but primarily through reciprocity. One must report data in exchange for being able to see the data from other providers. The numerous credit reporting regulations provide for consumer input mainly for disputing claims and accessing their credit reports but not on what types of data are included.

20. Adam Minter, "Chinese Learning the Value of Privacy," *Japan Times*, March 25, 2017, <https://www.japantimes.co.jp/opinion/2017/03/25/commentary/world-commentary/chinese-learning-value-privacy/> (accessed on January 3, 2018).

21. Kapronasia and The Disruption House 2016.

ownership, many of which rely on blockchain technology. Blockchains permit individuals to provide limited access to applications or firms that request their data, store it in a decentralized manner, and even to charge for this access. One of the most important benefits is that unlike traditional credit bureaus, blockchains do not store data on all users in one central location that serves as a honeypot for hackers. The decentralized design can reduce the risk of cyberattacks like the Equifax hack in the United States that exposed

## Chinese officials should explore promising models for customer data ownership, many of which rely on blockchain technology.

almost 150 million individuals' personal information and put them at risk of fraud for the rest of their lives. The user interface could resemble the privacy settings of an iPhone, which allow the user to control access of specific applications to specific data under certain conditions rather than the unclear and excessively long user agreements that tend to accompany Internet services today.

The difficulty of implementing such data-sharing systems—and the distributed nature of the costs to do so—will require years of building capacity. But governments around the world have decided to undertake the effort. The US Consumer Financial Protection Bureau (CFPB 2017) recently released principles to make data held by financial services providers available to consumers and parties such as data aggregators and fintech firms that individuals can authorize to access their data.<sup>22</sup> The European Union's Revised Payment Services Directive now has a set of technical standards for implementation of similar ideas, the United Kingdom is promoting an open banking standard, and Japan's recently revised banking law pushes banks to open their data to certain authorized parties through open APIs. These efforts remain fraught with inconsistencies, with some banks openly embracing data availability for developers of fintech products and others dragging their feet over legitimate issues of data security and liability. Once these data policies in other countries enter into force, China should carefully watch their effect on fintech players, traditional financial institutions, and consumers. It can then incorporate lessons drawn from international experience with various approaches into its own system.

In the near term, regulators should continue to encourage deeper collaboration between traditional financial

intermediaries and the technology and fintech firms aiming to capture a piece of China's enormous financial market. Each has a complementary competitive advantage. The traditional firms have the most access to cheap, stable capital in the form of their depositor base and strength in capital markets. Technology and fintech firms have the most access to the alternative data that can help reduce borrowing costs and credit rationing for the people yet to be fully integrated into the formal credit system.

Such partnerships could also help with a key risk once loans are granted: tracking the funds to ensure they are used for the intended purpose rather than for risky or illegal purposes such as funding part of a mortgage down payment or engaging in speculative investment. Since the funds can pass through multiple payment providers before ultimately being used, tracking their usage would require different types of financial intermediaries to collaborate closely. The recent move to process nonbank payments such as those through Alipay with a central clearinghouse run by the central bank could facilitate this tracking because the data for such payments would be in one place. Systems built on collaboration and tracking could even allow for the direct transfer of funds from lender to the seller or service provider in a sort of escrow arrangement with the borrower's confirmation and consent. The corresponding reduction in risk after the loan has been granted could lead to further reductions in financing costs beyond that achieved from the previous recommendation that lowers risk by evaluating borrowers more effectively.

Another beneficial step would be to further develop the market for asset-backed securities, allowing the fintech firms to originate loans to consumers and sell these loans to traditional financial institutions. To avoid the obvious incentive problems of the subprime crisis of the late 2000s in the United States, originators should have skin in the game, for example through holding significant shares of the equity tranche of any securities issued. This method leverages the capital and portfolio management tools of incumbents and maximizes the impact of including the data and scoring methodologies that fintech firms are developing.

Some may argue that such models hold back innovation by entrenching certain advantages of incumbent financial providers, but the risk of excessively rapid growth and new players in the financial services sector, more so than in other areas of electronic commerce, can have economy-wide implications. Partnerships between incumbents and newcomers allow learning on both sides: Through market forces, incumbents increase their efficiency, and newcomers learn how to better manage risk. As the market adapts, those who raise their efficiency most consistently should see their market share rise accordingly.

The addition of consumer data access and increased

22. The Dodd-Frank Act's Section 1033 charged the CFPB to formulate rules to ensure consumer access to financial data.

partnerships would allow more people to participate in the financial system while maintaining the building blocks of the current system. As banks and other licensed financial institutions use alternative data as a basis to give new people credit, more people will have a scorable traditional credit file at the PBOC's credit reference center. Meanwhile, private firms should continue to be able to provide credit evaluation services that bring in outside data and build on top of this system, if the user agrees to share it. No matter the distribution between public and private, the long-term goal even beyond finance should be to give consumers more control over and the ability to benefit from their own financial data.

## CONCLUSION

Formidable barriers stand between the modern financial system and the hundreds of millions of Chinese citizens still using costly informal credit. For many, the financial data

that could be used to give them a credit score that would lead to a fairly priced loan exist; they are just not being used. This analysis finds that the most formidable barriers cutting these data off from their potential use for greater financial inclusion are the legal and political restrictions on data sharing and use, economic and competitive concerns from data holders, and the technical difficulty of integrating disparate systems. Policy interventions involving coordination between public authorities and private actors in finance and technology can go a long way towards making these data available and driving access to credit in China. This shift would not only help borrowers: It would also encourage the needed economic rebalancing towards consumption, increase competition in the financial sector, raise efficiency through better credit allocation, and contribute to sustainable economic growth and social welfare.

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