



From Last Mile to First Touch

The Changing Role of Aggregators in
Digital Finance Ecosystems

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Executive Summary

Aggregators **serve as 'bridges' between financial service providers and their clients.** Around the world, aggregators go by a variety of different names such as broker, agent, community association, payment gateway, marketplace. They also take many different forms for different functions: they may be local merchants or chains of shops, government offices, technology companies or even employers.

Aggregators **play an important role in advancing financial inclusion** as they extend the reach of the formal financial system to vulnerable segments and remote areas that would otherwise be excluded. Being financially included may also promote financial health but this is not necessarily so. In societies with high levels of financial access and usage, **it is increasingly important to distinguish types of services by the effect they have on the financial health of their users** over time.

This report identifies **three common aggregation models** based on the motivation unique to each:

- *"Last-mile" solutions*, driven by cutting transaction costs to providers and clients
- *Risk pooling solutions*, driven by the need to assess and manage risk better
- *Workplace solutions*, driven by the desire of an employer to provide financial benefits to its workforce

Common examples from around the world illustrate each model with an explanation of how they work. China, too, has an abundance of these models, but with adjustments for local circumstances. For example, **shared service stations in China** may not only serve as agents for financial service providers, but also for e-commerce logistics. Equally, **cooperative guarantee associations** have emerged in recent years as a way to provide collateral replacement for longer-term borrowing by farmers who cannot mortgage farm land to access credit.

Conventional aggregation models depend on technology (such as a point of sale device or computer station) being mainly **in the premises of the aggregator** which then connects to the financial providers, rather than in the hands of the customer. However, smartphones in the hands of the customer enable a direct connection to a range of FSPs. More than 41 percent of Chinese use internet and mobile payments today on their smartphones, a number that has more than tripled since 2011. This large number is spawning new digital aggregation models.

Digital connectivity does not eliminate the need for aggregation, as might be expected, **but it does change it**. In each of the categories, there are examples from China of new digital ecosystems enabled by aggregators: **financial marketplaces powered by techfin companies like Ant Financial, e-commerce sites operated by banks like the Baihe Life platform of Lanzhou Bank and peer-to-peer (P2P) leasing platforms that reach rural farmers like Creditease's Yixin**. All of these examples currently serve people who would not be reached by the conventional delivery of financial services.

Digital marketplaces are also **changing the nature of employment worldwide**; gig platforms connect independent workers to contractors to provide services. Here again, China has large-scale examples of workforces that are widely-distributed and digitally-managed, such as the two million-strong group of delivery riders connected to the Meituan Dianping platform. These people have volatile and relatively low incomes. Their connection to a contracting platform provides an aggregation point from to test a range of financial services suited to gig workers. An example of potentially relevant services is provided by Even, a US fintech company that offers low-wage workers a chance to smooth their income, receive advances, and get planning support for their finances.

Conventional last-mile models of aggregation remain relevant worldwide, especially in rural China. Equally, last-mile local groups remain important in assessing and intermediating local risks. There is great scope to experiment further, and to scale already successful approaches from experimental zones to other parts of the country.

However, aggregation in **digital ecosystems will become increasingly important** in China as the majority of people connects to financial services via smartphones. In part because they are new, and in part because the concept of financial health is relatively new, there is as yet limited research and evidence of how new forms of digital aggregation affects the financial health of users. The increased choice and easy access offered by digital ecosystems have the potential to improve financial health, but this is not self-evident. Rather, forms of curation of digital ecosystems will become important for them to serve the needs of particular segments well. This curation will likely happen in part through the application of artificial intelligence (AI). Various hypotheses are proposed for further investigation in this area.

China offers a natural laboratory for this research, given the large scale of digital financial adoption, yet the implications of this research would be highly relevant in other parts of the developed and developing world.

Glossary

Platform: There are a variety of types of digital platforms. In this white paper, we refer specifically to two-sided platforms as digital matchmakers that link buyers and sellers of a good or service, rather than the narrow sense of a technology platform such as Android operating systems.

Superplatform: An entity or group of entities that orchestrates more than one digital ecosystem by providing and managing online platforms for transactions and engagement. Well-known examples of superplatforms include Amazon and Facebook in the US, and the Alibaba Group, Tencent Holdings, and JD Group in China.

Aggregator: An individual or entity which has a business case or purpose to provide services as an intermediary between a large financial provider and a target segment of users, either by reducing the transactions costs on either or both sides or the risk. Aggregators may take the form of tech companies, agents, or even local merchants.

Financial health: A concept related to household economic welfare or wellbeing that measures outcomes from using financial services, taking into account how the consumer is able to meet day-to-day and long-term needs and handle financial shocks. Financial health should be an outcome of financial inclusion but may not necessarily be, if the services used are not appropriate or if they are abused.

Acronyms used in this paper

AI	Artificial intelligence
API	Application programming interface
CBIRC	China Bank and Insurance Regulatory Commission
DFS	Digital Financial Services
MMO	Mobile money operator
O2O	Online to offline
P2P	Peer to peer (as in lending)
PBOC	People's Bank of China

Table of Contents

Acknowledgements.....	2
Executive Summary	4
Introduction	9
1 The Landscape of Financial Aggregation	14
Shared service centers.....	16
Risk transformation models.....	18
Employment-based models.....	20
2 China’s Aggregator Landscape	21
Segmenting the Chinese Market	21
Last-mile models	22
Risk pooling models	26
3 Aggregators in Emerging Digital Ecosystems	27
Changing distribution models	30
New risk pooling models	32
4 Implications	37
China	37
The Rest of The World	38
Conclusion	40
Annex A: Organizations Interviewed in the Course of this Study	41
References	43



Introduction

Aggregators are ‘bridges’ between financial service providers and their clients. Around the world, aggregators go by a variety of different names such as broker, agent, community association, payment gateway, marketplace. Aggregators also take many different forms: they may be local merchants or chains of shops, government offices, technology companies or even employers. In this paper, we define an aggregator as an individual or entity with a business case or a public mandate to provide services as an intermediary between a large financial provider and a target segment of users.

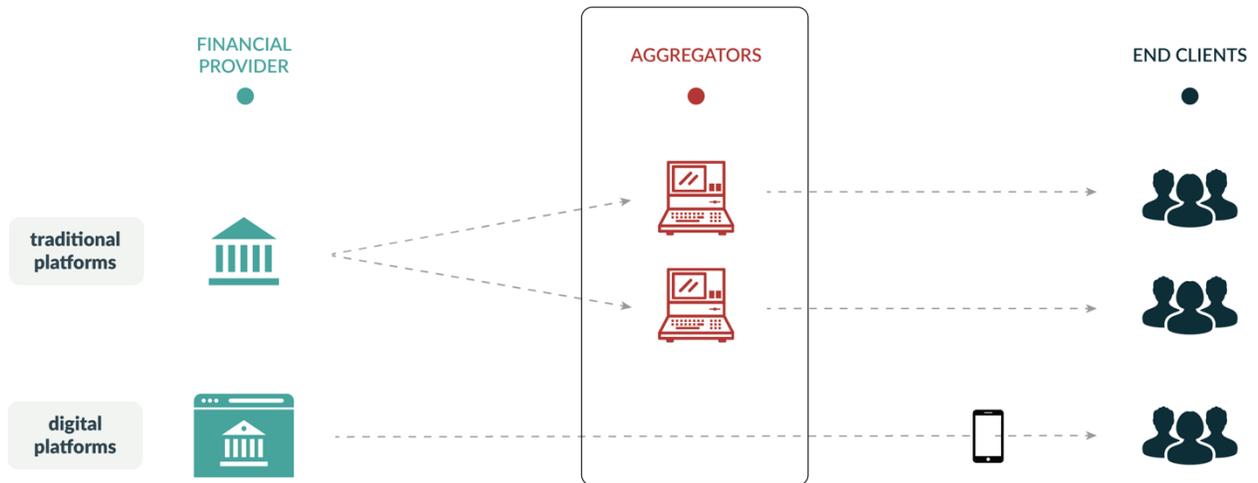
The fixed costs of distributing products and servicing clients, and risk asymmetries faced by formal financial services, create barriers for financial service providers. Aggregators reduce the transactions costs or the risk on either or both sides of a transaction. As a result, they are able to reach a particular segment of customers and can serve them in ways that financial services providers cannot or will not directly. By overcoming these barriers, aggregators have come to play an important role in financial inclusion, extending services to the “last mile” of customers who lack access—most typically found in rural or remote areas.

While most aggregators already link to financial service providers using digital channels, the rising adoption and use of smartphones literally reduces the gap from last mile to the moment a consumer’s fingers begin tapping a screen; in other words, the “first touch”. This shift also affects traditional models of intermediation. Smartphones enable consumers to enquire, enroll, and then transact directly with a wide range of remote financial providers, eliminating traditional aggregation roles, other than exchanging physical cash, which needs a physical interface. However, as cash use declines, this role for aggregators also diminishes. Will traditional models of financial aggregation disappear altogether as entire societies connect digitally and new digital ecosystems form?

To answer that question, we need to look back, and then to look forward. A scan of history shows that digital payment platforms are not new. Since the 1950s, multi-sided payment platforms like Visa or MasterCard, or more recently China Unionpay, have connected merchants' banks with consumers' banks in order to receive payments. In these large, global networks, aggregators have become a common feature, especially by linking merchants to a range of payment options. In more recent times, newer types of multisided digital platforms have grown and proliferated. Some of these new platforms, such as Uber or Didi, have become global brands with massive reach that have disrupted urban transportation models in many cities. Within the broad category of digital platforms is an elite subset called "superplatforms."¹ A superplatform is an entity that orchestrates more than one digital ecosystem. Well known examples of superplatforms include Amazon in the US and, in China, the Alibaba Group and JD Group. Superplatforms can leverage advantages in one digital ecosystem to provide services in another.

Unlike their US counterparts, digital financial services have been an important part of the offering of Chinese superplatforms for much longer and they play a bigger role. Alibaba's e-commerce platforms needed low cost, efficient, and secure online payments and the Alipay digital payment service was created to fulfill this need. Alipay, now a service of the Ant Financial Group, which spun off as an affiliate of Alibaba, has become widely accepted for in-person shopping as well. Tencent's social network WeChat added payment functionality in 2013, initially to support P2P payments, but it too is now widely accepted for small payments of all types. From these beginnings in digital payments, Chinese superplatforms have broadened their financial offerings to cater for many categories of financial services: wealth management, digital credit of various forms (including P2P lending), and also digital insurance for a wide range of use cases. In many instances, these products are offered by other financial providers, not the platform itself. In this way, superplatforms in China reveal an emerging picture of financial aggregation in the digital age.

Figure 1 Aggregation in the era of digital platforms



The evidence from China already shows that superplatforms can spawn rich and diverse new digital ecosystems. But what effect do they have on existing financial aggregation models, and what does this mean for financial inclusion or for financial health of consumers? Box 1 considers the meaning of these two terms, which are important to policy debate in China and the rest of the world.

Box 1 Financial Inclusion & Financial Health

Financial inclusion has become a widely accepted societal goal around the world. China is no exception; advancing financial inclusion is one goal in the current five-year plan which runs to 2020. In practice, financial inclusion has evolved to apply to promoting access and usage of financial services by all adults who can responsibly use them. This is measured by headline indicators such as the percentage of adults with a formal financial account, for example. However, in societies where access to and usage of financial services is already high, it is clear that greater inclusion does not necessarily translate to the benefit of all users. In particular, it is clear that overborrowing can be dangerous to the financial health of both the borrower and, if it at large scale, even to the financial system and ultimately the society.

Other types of financial services may carry other risks if not used wisely and in proportion. For this reason, US-based research group the Center for Financial Services Innovation (CFSI) developed the concept of financial health as a measure that transcends access or usage or even income or wealth. Using a set of basic indicators, their measures have shown that even high-income people may be financially unhealthy and, conversely, that people may be financially healthy even on low incomes. While the concept has been furthest developed and applied in developed economies, it has also been tested for relevance in emerging markets; a recent research report by CFSI (Ladha et al 2017) has tested the concept further by applying it to focus groups in India and Kenya. They find the concept to be relevant in emerging markets too, with some modifications.

Purpose and structure of this white paper

This White Paper uses the specific lens of the emerging experience in China where digital financial ecosystems have started to reach critical mass to contrast experiences outside China. It aims to identify and highlight how traditional models of aggregation are changing, what this means for financial inclusion, and ultimately for the financial health of the consumers who use digital finance.

The paper is structured in this way. In Section 1, we describe the landscape of aggregation based on clustering three commonly-observed types with different incentives and features. We illustrate these existing models of aggregation with case studies from outside of China. Then in Section 2, we apply the landscape to understand current models in China, using case studies of existing approaches which have achieved inclusive outcomes. In Section 3, we consider how the spread of

digital ecosystems is changing the current models, using examples from within China, where they are generally much more pervasive, as well as from outside.

This evidence allows us then to consider implications for financial inclusion in China and the rest of the world in Section 4. The White Paper also proposes hypotheses for further research in China. The emerging environment there offers a vast laboratory in which to innovate new aggregation models for the purposes of financial inclusion of all adults, and for their financial health.



1 The Landscape of Financial Aggregation

Why do financial service providers use aggregators to reach and service their clients, as opposed to relying on their own infrastructure or capabilities?

Financial service providers (FSPs) are more likely to use aggregators when:

- They face high fixed costs in the acquisition of new customers and in servicing existing customers, while aggregators with existing premises and/or a lower cost structure are willing to offer services at lower marginal cost to the provider.
- They lack the ability to collect the information needed to assess client risk in a cost-effective manner, or else they may have the information but face risks that they can neither price or manage. Aggregators that are closer to customers may be able to cost-effectively collect the information needed and may specialize in transforming risk through forms of risk pooling.

These two factors—the ability of aggregators to transform transactions costs or risk pooling—constitute the main drivers of financial aggregation. However, for aggregation models to work well, aggregators must themselves have a business case to function in this role. The business case for aggregation differs with the nature of the aggregator:

- General purpose aggregators have an existing business (such as a local grocery store or pharmacy with fixed premises) and are willing and able to offer additional products in order to earn marginal revenue income and to benefit from cross-sell opportunities

created by having additional customers in the store (especially if the customers also have more disposable cash as a result of the service).

- Special purpose aggregators do not have a separate business but rely on fee or commission income from providers to cover their costs; they earn a return as their costs are typically lower than for providers given that they are subject to less direct regulation and may have less expensive premises and branding.

In addition to aggregators who offer their services for financial return, some aggregators may perform the service for non-financial reasons. Apart from government agencies, the most common example of this type worldwide may be employers. Employers primarily have an interest in a stable, productive workforce. They may also have to compete to attract and retain staff through their benefits packages. Consequently, employers may enable their employees to access a range of financial services on a group basis. The natural aggregation of the workplace creates opportunities for reducing transaction costs and for forms of risk pooling which are not available to individual employees. Given that it blends the other two drivers of aggregation, we highlight employer-based aggregation separately in the third column of table 1.

Table 1 Landscape of aggregation

	LAST MILE SOLUTIONS	RISK POOLING	WORKFORCE SOLUTIONS
Driver	Transaction costs	Information asymmetry & risk management	Employee retention & productivity
Conventional categories	Shared service points	Mutual guarantee schemes	Employer supported schemes
Case examples	Kenya: <i>Pesatransact</i>	South Africa: <i>Burial societies</i>	USA: <i>Bank & Fund Staff Credit Union</i>

Under each driver in table 1, we name a particular type of aggregator that has played a role in financial inclusion together with an example to illustrate it, which we will discuss below.

In table 1, we have labelled these types “conventional” but that does not suggest that there is no use of digital technology—rather, the distinction here is that the technology is typically in the hands of the aggregator, rather than the customer. For example, the customer may present a payment card at a shared service center (column 1), but the transaction is processed using a device at the premises of the local aggregator that is connected directly or indirectly to the financial

provider. In section 3 we describe how the role of an aggregator changes when the device is in the hands of the customer.

Of course, to be viable and successful, the aggregation model must work not only for financial providers and aggregators, but also for the end clients. For clients, using an aggregator to access a provider’s services makes sense when:

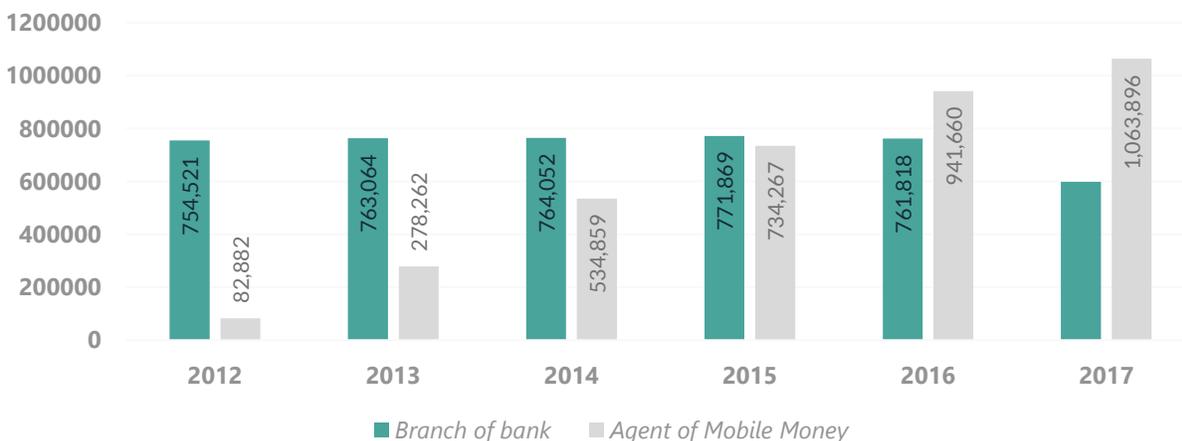
- It is cheaper or more convenient to do so, measured either in total financial cost of a transaction or in time foregone; or
- When the aggregator is able to improve the terms or pricing of a product as a result of its scale or special position.

These considerations become important when considering whether aggregation is likely to contribute to financial health of the end clients or not.

Shared service centers

Perhaps the most common form of last-mile aggregation in the financial sector in new emerging markets today is the cash-in/cash-out agent. Typically, a local shopkeeper or merchant, this type of aggregator accepts cash from customers of a payment service provider in return for digital credit, or vice versa for a withdrawal. Figure 2 shows that while the number of bank branches worldwide has increased slightly in the past five years, the number of mobile money agents has increased more than tenfold to exceed 1 million.

Figure 2 Bank branches and mobile money agents worldwide



Note: Bank branches: IMF FAS accessed 2018;. Mobile money agents; GSMA State of the Market 2018.

Mobile money agents are particularly common in parts of Africa (especially east Africa) and south Asia (notably Pakistan and Bangladesh) where mobile money services have achieved large-scale adoption. They may act as agent for one or more providers, depending on local regulations regarding exclusivity and on the degree of interoperability. In some countries, agent network managers have emerged to coordinate networks of subagents. Agent network managers introduce another layer of aggregation that makes it easier for financial providers to connect to multiple agents. In turn, they offer sub-agents a specialized proposition in managing their liquidity. This can be a challenge for an agent handling cash during a busy day when it is hard or costly to leave the premises to visit a bank branch to deposit or withdraw cash to service clients.

Mobile money and bank agents reduce total transaction costs for customers using formal financial services, making the services more accessible and convenient. The effect of agents on the financial health of customers has not been isolated from the effects of the mobile money services themselves, but robust studies have shown that greater access to liquidity when needed improves welfare and may reduce risks of carrying excess cash (Suri and Jack 2016). Also, since agents accept cash deposits when most automated options do not, they serve as cash conversion points, easing the transition to 'cashlite' societies in which the role of cash declines sharply.

Box 2 Kenya's Pesatransact

Pesatransact is a joint venture between Kenya's payment switch operator Interswitch and Pep Intermedius, a network of cash merchants in Kenya, which operates an agent network under the retail brand 'Pesapoint'. Pep states that it "serves as a bridge for unbanked customers and the financial system". Riding the success of the M-Pesa mobile money system, Pep became one of the largest agent aggregators in Kenya. Pep specialized in solving the liquidity problems that agents faced in managing their cash floats, taking a commission out of the fees earned by agents for the service (For more see Bridges to Cash: The Retail End of M-Pesa by Eijkman et al. 2009).

Today, using a smart phone app, Pesatransact agents offer a range of transactions to customers including cash withdrawals and deposits to bank and mobile money accounts, airtime sales, bill payments, and ticketing. Agents receive a fee for each service from issuers or payees from which Pesatransact deducts its commission. Pesatransact offers to its agents the convenience of having a single float account as it is able to manage the digital liquidity necessary to connect a range of payers of different schemes with payees. Pesatransact reports 12,500 touchpoints across Kenya in 2018, making it the largest independent agent network in the country. Pesatransact is now considering building on its relationship with agents to offer them other financial services, including loans and insurance. In this way, Pesatransact is seeking to leverage its knowledge of each agent's transaction volumes and patterns to expand its offering into new forms of risk products.

Risk transformation models

There are various types of financial aggregation based on risk transformation. Here we choose to highlight one: member-based groups, which may serve as aggregators for larger, formal financial service providers. The members of these groups likely share some form of common bond. It may be geographic, with members coming from, living in, or working in the same area. Groups range from small and informal accumulating or rotating savings and credit associations (ASCAs or ROSCAs) to large, regulated institutions, like some credit unions.

In each case, the group offers its members a chance to save and/or borrow, transforming the risk of individual borrowing through information available to the group and also through the sanctions that the group can bring to bear on members who default. In addition, group-appointed treasurers may open formal group accounts with financial institutions to deposit unused balances

for safekeeping. Even in societies with widespread access to bank accounts, informal groups like these may endure. In South Africa, a middle-income economy in which formal funeral insurance is quite widely available and 75 percent of adults have bank accounts (similar to China), around 10 percent of the adult population continues to rely on informal funeral insurance options known as burial societies.² These bodies have endured given the relatively high cost and urgent nature of payout. To be sure, many burial societies operate simply as group savings schemes, but larger ones have become more sophisticated and secured group-based underwriting from formal insurers to manage their risk exposure. Box 3 cites this example as an active form of risk transformation that meets a pressing need for finance at a vulnerable time, as shown by Financial Diaries studies.³

Box 3 South Africa's burial societies

Members of burial societies pay a regular premium and receive a defined payout on the death of a family member that covers some or all of the costs of the burial in cash or, partly, in-kind. These costs can be as high as seven months' income for people on low incomes given the costs of the funeral parlor service as well as the hospitality that family members are expected to provide to mourners. Burial societies vary considerably in size and in level of formality: from small, unregistered groups that effectively function independently, beneath the radar of formal insurance regulation to large, cooperative type bodies, which may become regulated. The larger ones are able to buy formal insurance policies for members on a group basis from insurance providers, offsetting the group risk, while maintaining the communal functions. Given the size of this market, several large, formal life insurance companies offer policies that appeal to burial societies, effectively treating them as another form of group, alongside churches or employers. The difference however is that some societies are not merely group channels for the sale of formal insurance, but also transform the risk through underwriting the benefits themselves and offsetting part of the risk.

The core value proposition of the burial society to its members is not only the financial benefits, with which it must compete with formal funeral insurance providers and even funeral parlors who offer forms of informal insurance. It is also the speed to payout after death and the nature of the benefits provided (including as discounted funerals and member help to arrange the funeral).

Burial societies appear to fill a gap in the financial portfolios South Africa's poorer households, contributing to their financial health (at least relative to the absence of cover for those who cannot access formal providers directly). Those who use them are considered as informally financial included in the 'Access Strand' measure of inclusion.

Employment-based models

Employers have long been aggregation points for offering financial services to their employees as a form of benefit. Employers differ in the financial services they may offer or enable their employees to access, but a common list would include contribution to a retirement savings fund, group life and/or disability insurance, and access to salary advances (either directly from the employer or via an agreement with a lender to deduct repayments from payroll). Employers can facilitate these services as they aggregate demand to sufficient scale to become viable for financial providers to offer products at the 'last mile', whether the last mile is physical (one plant location) or virtual (across far-flung work sites). In addition, the aggregation of employees of different ages and jobs pools the risks of accident and death in ways which makes risk underwriting easier and cheaper than it would be to cover these employees individually. There is emerging evidence that financially healthy employees are likely more productive: one in three US employees report that issues with personal finances have been a distraction at work, and workers with high financial stress are twice as likely to use sick time when not ill.⁴

In many countries, workplace aggregation has created the basis for a workplace credit union, in which employment is the common bond. In the US, some workplace credit unions offer products and services similar to banks while still focusing on the needs of own membership base for whom they claim to offer more competitive costs and rates.



2 China's Aggregator Landscape

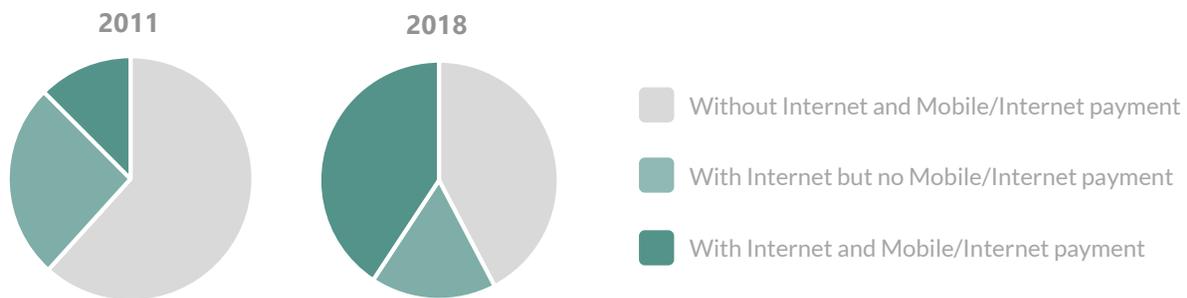
Segmenting the Chinese Market

Having considered international examples of aggregators that have promoted forms of financial inclusion, we now turn to China. China has already reached a high level of financial inclusion similar to other upper- and upper-middle income countries: around 80 percent of adults already had a formal financial account, usually a bank account, in 2017. Not all of these use digital payments, although Global Findex survey data also shows that around two-thirds of Chinese adults had made or received a digital payment in 2017. In certain areas, it may be even higher: a CAFI survey of the Zhejiang province shows that 74.2 percent of adults used their bank accounts through mobile phones in 2017 (Bei and Mo 2018).

Another way to depict the segments of users is shown in figure 3 based on national surveys by China Internet Network Information Center, the administrative agency responsible for Internet Affairs under the Ministry of Information Industry. The proportion of people in China who both have internet access and use internet payments⁵ has more than tripled to reach 41 percent in the eight years since the surveys began. The segment of those with access to neither (shaded in blue) has shrunk from almost two-thirds to 42 percent today. According to these figures, the digital financial divide is shrinking fast. Of course, it is larger in rural areas where infrastructure is not yet evenly distributed or accessible and where education levels are lower; in rural areas in 2018, just 36 percent had access to the internet, half the proportion in urban areas (72 percent). However, when looking at the 569 million who conducted internet payments, the penetration rate among rural internet users was 57 percent, implying that when they have internet access, people are quite likely also to use mobile payments.

Figure 3 Segmentation over time

Source: CNNIC



countries, the digital divide remains more pronounced in rural areas. Joop Roest of CGAP has commented:⁶ “Data like these suggest that neither Alipay nor WeChat Pay has hit on a proposition for converting rural users, who are typically older than the people drawn to cities for work. It is increasingly clear that digital financial services providers will have to adapt their successful urban approaches to expand into more remote places.” In this section, we therefore highlight certain Chinese models of aggregation that are serving rural areas in particular, summarized in table 2.

Table 2 Chinese case studies

	LAST MILE SOLUTIONS	RISK POOLING	WORKFORCE SOLUTIONS
Conventional category	Shared service points	Mutual guarantee schemes	Employers
Case examples	China: <i>Shared service points (Lishui; Ant Financial)</i>	China: <i>Voluntary Guarantee Association (Lishui)</i>	-

Last-mile models

Last-mile models such as local level agents or financial service stations are also common in China. The Chinese Banking Regulatory Commission (CBRC) first authorized the use of agents by banks in 2010 and their numbers have since swelled rapidly. According to the “General Situation of Payment Business Development in Rural Areas in 2017” issued by People’s Bank of China (PBOC), there were 914,000 rural service centers (of which 139,800 offered e-commerce functions), covering 515,600 or 97 percent of village-level administrative districts by the end of 2017.

As a financial aggregator, the village-level financial service station provides the most basic financial services for excluded people (such as farmers, poor households, women, and the elderly)

and others most in need. The range of services on offer may be quite wide, as is the case in Lishui, a city with a large rural hinterland in Zhejiang province of eastern China. Agents are not legally authorized to accept bank deposits in China, although there are ways to exchange cash for transfer into an account

In the Lishui case, a public agency, the PBOC, has played an active role in creating and subsidizing service points as part of its mandate to promote financial inclusion. However, China also has widespread examples of privately-established service stations, many of which have been also set up as logistical points for e-commerce goods to be ordered and collected. The large Chinese e-commerce platforms Alibaba and JD Group both have rural strategies that promote the establishment of service stations. Local and provincial governments provide support or subsidy for the establishment of shared service stations. Ant Financial, the financial affiliate of Alibaba, has specifically included financial services in these offerings as mentioned in the case.

Box 4 Ant Financial

Ant Financial was established in 2014. Both directly & through affiliates, it offers a range of its own services including Alipay (third-party digital payment), Yu'ebao (money market fund), MyBank (internet-based banking services), Hua Bei (consumer loans), Jie Bei (cash loan) & Sesame Credit (individual credit scoring).



Ant's rural business line began with exploring "online-to-offline" (O2O) models of delivery. In 2014, it first cooperated with Rural Taobao projects and village Taodian stations to promote financial services such as payments, wealth management, and financing for rural borrowers. According to statistics from Rural Taobao, 20 million rural people started to use Yu'E Bao for savings, accruing investment income of more than RMB 700 million.

By end June 2018, the number of individual rural users of Ant Financial services in payment, insurance, and credit services reached 237 million, 195 million, and 109 million, respectively. Among them were nearly 4 million rural small and micro-enterprises. In April 2018, Ant and the International Fund for Agricultural Development signed a strategic cooperation pact to promote inclusive digital finance to "belt and road" countries and the world. After nearly five years of exploration, Ant believes that it has found the best solution for financial services to reach the last-mile customer through this combination of online and offline.

In its rural business strategy, Ant works with different financial and non-financial institutions including insurance companies, rural enterprises, county governments, & local financial institutions to build an aggregator network to reach customers with financial products.

Although Ant Financial offers its own products, it is in reality both a financial service provider and a technology company. Ant has developed different algorithm models and data dynamics for different agriculture sectors to better serve the needs and risks of rural customers better. It has also worked with local governments to create a regionalized special credit scoring model which can support the offering of customized loan products to rural customers in different counties. In this model, the local government provides data while Ant employs its "big data" technology to develop customized risk models to serve the local rural customers. By August 2018, Ant had established a relationship with more 30 local government entities.

Box 5 Bank-shared service stations in Lishui

Since 2006, the PBOC Lishui City Center Branch has led various rural financial projects, such as the disbursement of finance for agriculture and the building of a rural credit system, including loans based on forest tenure common in the area. In March 2012, the PBOC and the Zhejiang Provincial Government jointly issued the “Notice on Piloting Rural Financial Reform” in Lishui City. As a result, Lishui officially became China's comprehensive pilot zone for rural financial reform.

Under the framework of overall rural financial reform, the village-level financial service station set up by the Lishui Center sub-branch not only provides the most basic payment and settlement services for deposits and withdrawals in rural areas, but also functions as credit information collection points, E-commerce station, logistic station, and financial products consultation service center. These village-level financial service stations have become an effective means for all kinds of financial service providers in Lishui to reach the last-mile population.

The village-level financial service station serves as a financial aggregator, linking villagers with various financial service providers including local Rural Commercial Bank (transformed from Rural Credit Cooperative) and the local Postal Savings Bank branch. At the beginning, different financial institutions set up financial service stations in different villages or communities and deployed point-of-sale (POS) machines to provide farmers with the most basic payment and settlement services such as deposit, withdrawal, and remittances. However, now a village-level financial service station can offer a range of services such as credit information collection, transfer, customer education, and financial product advice, and can accept payment cards from more than one issuer. The service station owner can even accept cash deposits by making a corresponding payment transfer from his or her account to the bank account of the recipient. The service stations can also offer non-financial services such as logistics points and high-speed rail ticket purchases.

The Lishui PBOC Branch selects local shops (such as supermarkets, convenience stores, etc.), clinics, or village committees to establish village-level financial service stations. They look for a certain economic strength, good reputation, and a high level of public recognition. These institutions have several advantages, among them that they can contact villagers directly and they are relatively familiar with the villagers and farmers, as well as village rules.

At present, Lishui City has built 2010 village-level financial service stations, of which more than 70 percent are based on individual commercial households (such as supermarkets, convenience stores, etc.), and more than 800 also serve as e-commerce logistics centers. By the end of 2017, the village-level financial service stations of Lishui had handled a total of 4.7 million small-value cash withdrawal or transfer transactions for local farmers with a value in excess of RMB 2.45 billion, and more than 1.5 million farmers and rural citizens have used them.

Risk pooling models

As with the rest of the world, China has a variety of risk pooling schemes, which also range in size and level of formality. Keeping our focus in the rural areas, box 6 describes how a formal, member-based guarantee scheme has evolved from its informal roots to cover particular risks linked to rural land tenure that would otherwise deter long-term lenders from extending credit to farmers.

Box 6 Lishui voluntary guarantee scheme

In March 2014, Longquan Rural Commercial Bank began establishing village-level mutual guarantee cooperatives in Huaqiao village of Sancha town under the rural financial reform framework developed in Lishui City, Zhejiang Province.



These village-level mutual guarantee cooperatives solved one of the main problems of rural lending, namely that rural land cannot be attached or transferred and hence is not suitable as collateral for long-term lending. Also, reliable guarantors are scarce in rural areas because of the vulnerability of farmers and the risks of agriculture. Instead, villagers themselves contribute capital of RMB 600,000, supplemented by RMB 150,000 from the forestry department, and RMB 50,000 from the village committee. This capital is deposited in Longquan Rural Commercial Bank.

When member villagers need loans for their farming businesses, they submit the relevant documents to the guarantee cooperative. It evaluates their land and farming activities and issues a guarantee letter. With this letter as collateral, the villagers can go directly to the Longquan Rural Commercial Bank. In the event of default, the guarantee cooperative will pay the loan to the financial institute and deal with the collateral. In return for providing the guarantee service, the cooperative charges a commission of 1.8 percent of the loan amount. This income, together with interest on the capital deposited, covers the limited costs of operation (three part-time staff) and also provides for a dividend to be paid to members out of a surplus if loan losses are low or zero, incentivizing performance on the loan.

As of September 2018, the Longquan Rural Commercial Bank had lent to 733 households in Huaqiao Village with a total loan balance outstanding of RMB 7.3 million. The annual interest rate was around 7.2 percent and there were no non-performing loans.

The Longquan Rural Commercial Bank is cautious in promoting the establishment of village-level guarantee cooperatives. One of the most important risk factors is cooperative leadership. At the same time, the guarantee cooperative is required to have sufficient understanding of the villagers in the coverage area and their credit standing and risk profiles.



3 Aggregators in Emerging Digital Ecosystems

In the previous section, we illustrated the evolving range of conventional aggregation models in China. These cover especially the segments of consumers at the “last mile” of digital infrastructure and of available digitized data. In this section, we want to consider how the uptake of smartphones in the hands of consumers changes the nature of aggregation. This considers how financial services that have reached this last mile actually generate the “first touch” on the customer’s smartphone screen.

China affords a particularly interesting view on this global phenomenon for two reasons: The first was clear in the previous section; the number of consumers who now have access to and use their smart phones for digital financial services is already very large, and still growing fast. According to the Global Findex 2018, 67 percent of Chinese adults had made or received a digital payment in the past year, up from 45 percent in 2014.

The second reason is that the business models of the digital finance platforms, often connected to superplatforms, have especially accelerated the pace of development in China. While we see similar trends emerging elsewhere, the speed and scale of development in China provides a picture for most countries of one possible digital future when these business models are present.

What makes superplatforms especially pertinent here is that they combine two functions: they are both direct product providers, offering a wide range of financial products from within their groups of directly affiliated companies as shown in the table 3; and at least some of them are also promoting financial marketplaces in which a wide range of financial services (in addition to their own) are available to customers. In the first model, there is limited or no need for aggregation; the platform connects directly to its customers with no interface beyond the phone. In the second,

the platform becomes the aggregator, offering a single place, via its app, where the end user can access a wide range of services, then seamlessly and instantly send or receive funds using the embedded payment service.

Table 3 Digital financial services offered by Chinese superplatforms today

Fintech Player	Payment	Wealth Management	Financing	Insurance	Credit Rating/ History
 蚂蚁金服 ANT FINANCIAL	Alipay 870MM (Mar 2018)	Yu E Bao 556MM	MyBank 8.5mm SME borrowers	Ant Insurance Service 380MM	Zhima Credit 130MM
 Tencent 腾讯	WeChat Pay 800 MM	Wealth management 100MM (Jan 2018)	Webank 34 mm	-	Tencent Credit Invite only for Tencent QQ users
 JD 京东 .COM	JD Pay: 150 MM	JD Golden Wallet >20MM	JD IOU (consumer financing product) 120MM	JD Finance Insurance 168MM	JD Credit >35MM

Source: Porteous and Moraczynski 2017, drawing from Meeker, Mary. May 31, 2017. "Internet Trends 2017". Presentation. Accessed at <https://www.kleinerperkins.com/perspectives/internet-trends-report-2017> and updated with 2018 data from various direct sources.

Ant Financial is a leading example of creating a diverse online financial marketplace, although the others listed above also offer their own. The business models for creating and sustaining a financial marketplace vary. The aggregator may receive commissions from the financial providers and the aggregator is able to compile valuable data on interest in - and usage of - a wide range of services that can improve risk modelling. This is an important business model for 'techfins' that regard themselves as tech companies first, curating access to a wide range of services on which they do not need to take the operational, credit, or even regulatory risks of being a provider.

Aggregation in these new digital ecosystems is a powerful and active role, not a passive brokerage function. It is likely that the data acquired from end clients will enable digital aggregators to develop artificial intelligence-powered advisory services that can recommend new services to fit clients' changing needs or strengthen their portfolios.

However, the landscape of superplatforms in China is dynamic, with new superplatforms rising to prominence. In box 7, we consider the example of Meituan Dianping, which listed on the Hong Kong Stock Exchange in September 2018. Meituan owns and operates a cluster of large e-commerce platforms focused in the hospitality and travel sector of China, which has introduced financial services to its clients based on its ability to collect data and understand their risk.

Box 7 Meituan Dianping

The Meituan Group started in 2010 with a group discounted buying model, similar to Groupon in the US, which gradually extended to cover all kinds of life services such as hotel, travel, takeaway food, taxis, homestays, and catering services. In 2015, the Group acquired Dianping, China's own Yelp-style platform for restaurants, and changed its name to Meituan Dianping. In 2017,



the platform's gross merchandise value was RMB 357 billion. Daily demand peaked at around more than 27 million orders from a customer base of 310mn users connected to 4.4 mn merchants.

From 2016, Meituan Dianping added financial services in response to needs of its customer base, obtaining licenses for private bank, third-party payment, insurance brokerage, small Internet based loans, and commercial factoring. In this way, Meituan has come to offer an integrated platform of, as it declares, "daily life service plus financial services."

The "Meituan Loan" offers finance for expansion and new equipment to the merchants on its platform, which are mainly restaurateurs. Given that Meituan also runs an ordering service and a rating service on the merchants, this data allows it to evaluate and manage its risk. As of December 31, 2017, the micro-loan business of Meituan Financial Services covered more than 1,300 counties nationwide, of which more than 200 were poor counties. As of July 29, 2018, the number of women clients exceeded 30,000, accounting for more than 30 percent of borrowers.

As another example, Meituan also offers insurance, using its data on merchants to underwrite risk and manage premiums: in addition to more standard insurance to merchants and customers for accidents relating to purchases on its travel platform, it also buys specialized insurance for its force of delivery riders against accident and even delay in delivery. The delivery rider is usually a contractor to the Group, drawn from the middle- and low-income groups in a city. Meituan provides financial services to them because of their brand and to retain riders in a competitive market, but also to empower this vulnerable group economically.

Changing distribution models

Payment card ecosystems have long had aggregation points on both sides of the payment platform—these are the issuing and acquiring banks that specialize in linking end customers

and/or merchants to the core card platform. However, they may further 'outsource' their services to technical processors that handle parts of the process for them. In the mobile money sector, technical aggregators arose because mobile money platforms were initially only willing or able to manage a limited number of partner interfaces into their early transactional systems. Technical aggregators are tech companies that provide application programming interfaces (APIs) enabling the seamless submission of transactions to financial service providers. US fintech Stripe is an example of this new breed; it has no physical presence to service its merchant or developer clients but rather an extensive, in-house tech workforce that specializes in developing and maintaining an API, which offers better developer and user experience, as well as risk management for clients.

Financial service providers used to limit access to their systems to a select group of through partner APIs. However, in more recent years, banks and mobile money providers have started to move from offering limited partner APIs towards offering open APIs that any developer or user can integrate into their systems (BFA 2016). CGAP (Pillai 2016) undertook a survey of aggregators in east Africa that were largely spawned by the growth of mobile money usage. These aggregators typically offered both technical integration for third party systems (like bill recipients), and value-added services like payment notifications, reconciliations, and receipts to merchants. CGAP's survey noted a general trend toward mobile money platforms opening their payment APIs and starting to service directly categories of clients – such as corporates – previously served by aggregators. As a result, more aggregators were having to offer value-added services to retain their clients. In a world of open APIs, the need for specialized interfaces eases and changes, although it does not disappear.

Some tech aggregators are in fact a hybrid, combining technical focus with physical distribution. A prominent example is Selcom, a tech company based in Dar es Salaam, Tanzania, serving mobile money customers around the country through a variety of distribution systems, including its own agent networks. Grasser (2016) has documented how Selcom has evolved further to become itself a type of platform by enabling payments from multiple schemes (there is no single dominant mobile payment scheme in Tanzania) to be made to a range of corporate billers and banks.

While tech aggregators are usually businesses independent of financial providers, sometimes financial providers may create their own quasi-independent aggregator to attract and service new clients digitally. In China, several large banks including ICBC & China Construction Bank have set up their own online e-commerce platforms to integrate with their banking platforms. Building these platforms as aggregators for services offers merchants access to the banks' large, nationwide customer bases. Lanzhou Bank, the subject of the case study in box 8, is an example of a city-level commercial bank that has followed a similar strategy to promote outreach to local

merchants and the development of small business clients in its own region in China's western Gansu province.

Box 8 Lanzhou Bank's e-commerce platform

Lanzhou Bank started the Baihe Life E-commerce platform in 2014 and operates the platform using a team of dedicated staff within its fintech department based at its headoffice. Baihe Life is positioned as a new-age



e-commerce and financial service platform integrating community finance, O2O and Business to Consumer (B2C). At present, Baihe Life platform has three major business lines: finance, e-commerce, and convenience services. Lanzhou Bank offers a financial management portal on Baihe Life E-commerce Platform, which provides services for payment, deposit, loan, wealth management, and other financial services for business & individual customers of Baihe Life. Its e-commerce business mainly focuses on B2C. The platform also provides utility service includes e-banking, utility payments, housekeeping service, home improvement, and so on.

Baihe Life serves as an online aggregation platform that attracts all kinds of merchants and consumers to Lanzhou Bank services that it would not otherwise reach with its physical presence alone. Merchants and registered users of Baihe Life E-commerce platform are all customers of the Lanzhou Bank. By September 2018, Baihe Life had 4,003 merchants and 1.2 million registered users. By then, the e-commerce platform had processed 21.2 million orders, worth RMB 8 billion.

Most of the merchants on Baihe Life platform are small and medium-sized enterprises, to which Lanzhou Bank can provide financial services, even if in rural areas. In this sense, the financial services provided by Lanzhou Bank for such customers have obvious inclusive financial characteristics. To reach the farmers in rural areas, Baihe Life has worked with local merchants in rural areas, such as local farmers' professional cooperatives, to help sell local agricultural products.

New risk pooling models

Digital technology in the hands of consumers introduces new models of risk pooling, which are especially relevant for credit and insurance.

Digital technology reduces the costs and frictions of forming and maintaining groups for insurance purposes. New 'insuretec' providers have developed with business models built on enabling new forms of digital group aggregation and risk pooling. For example, companies like Friendsurance in Germany or Guevara in the UK combine policyholders in special risk groups to

effectively pool their policy deductibles.⁷ In these models, a group of people use their mobile phones to take insurance policies with the highest deductible possible. This secures them lower premiums while they co-insure against the higher deductibles. In the US, PURE is a new property and casualty insurer structured as a reciprocal insurance arrangement in which members' premiums are pooled. PURE has financed its capital requirements under insurance regulations by contributions from its members as well as private equity investment. Members benefit through lower premiums and rebates. PURE focuses on the high end of the insurance market but the principles of self-underwriting through creating new groupings can in principle apply across the market.

The case study in box 9 looks at another application of aggregation in China's credit market, specifically leasing. This approach benefits rural farmers who would not otherwise be able to access credit to buy new machinery. In this case, a P2P leasing platform connects to machinery dealers who act as aggregators of lessees, while mobilizing funding from individuals in other places who become lessors. Other microfinance entities like Chinese Fund for Poverty Alleviation (CFPA) are also experimenting with P2P platforms and with aggregating provision of insurance to its clients.

Box 9 CreditEase

CreditEase is one of China's largest P2P lending platforms. As a digital platform, CreditEase has explored different models of financial aggregation for inclusion since 2009. CreditEase now has two platforms focused on poor or rural areas: the public-purpose micro-lending platform called Yi Nong (similar to Kiva.org in

the US and uses microfinance companies and other groups as local aggregators) and the Yixin leasing platform, which is the focus of this case.



Yixin was established in 2012 and has developed two inclusive financial products that meet last-mile agricultural production demand: an agricultural machinery leasing product (NongZu Bao) and a livestock leasing product (Yiding Cattle). NongZu Bao uses agricultural machinery dealers as financial aggregators while for Yiding Cattle dairy associations, animal husbandry bureaus, and feed mills play this role. These local financial aggregators have close ties with farmers. They are better informed to evaluate farmer risk and also can intervene effectively when needed on default.

The Yixin process works like this. Agricultural machinery dealers first enter a relationship with the Yixin leasing platform, which screens them for risk. When a farmer wishes to buy or lease farm machinery, Yixin purchases the piece of agricultural machinery from the dealer, mobilizing CreditEase funds through its platform, and then leases it to the lessee. The farmer can use the agricultural machine by paying a small down payment and after full repayment the Yixin leasing platform transfers the ownership of the agricultural machine to the lessee. If the farmer does not repay, then the dealer has to buy back the machinery from the platform and would have to repossess and sell it.

The advantages of this model are clear: agricultural dealers are able to sell more equipment without having to carry the leases on their own balance sheets, while they underwrite the risk of default. Since 2014, Yixin has issued over 10,000 leases worth RMB1 billion. Its affiliated agridealers currently cover the main agriculture areas including Heilongjiang, Jilin, Inner Mongolia, Liaoning, Shandong, Henan, Hebei and another 20 provinces.

Agricultural dealers have become the branches, enabling the Yixin leasing platform to accurately target farmers at the last mile. They recommend targeted customers to the platform, participate in risk management, and can also provide guarantees, repossess overdue equipment, and offer other services to the lessor to spread risk.

New employment models

The global rise of the so called 'gig' economy weakens the bonds between employer and workforce. Rather than employees, many workers have become known as "dependent contractors"⁸ in the UK or 'independent workers' in the US. These workers often fall between the cracks of benefits and services—they may be dependent on a single platform for most or all of their work, but they are not able to receive benefits since they are not employees. A Brookings Institute report has proposed a new approach to defining the nature of this relationship in order to address its risks, as well as its opportunities for flexible, self-managed jobs.⁹ As the employment bond weakens, so does the incentive for the employer to offer financial services changes. In some environments, contracting firms may even be constrained from offering such additional benefits, since they risk then being deemed as employers, undermining their business models.

China is no exception to these global trends affecting the future of work. While official statistics report employment of 776 million in China in 2017, and of these, only 410.4 million are considered formally employed.¹⁰

We consider in this section an example of new forms of digital aggregation that are emerging to fill the gap in financial services offered to this rising new class of worker. One app, named Even, was created by a US fintech startup in 2015 to target this segment of part time or gig workers. As outlined in box 10, Even offers a range of services designed to address volatile & uncertain earnings.

Box 10 Even (USA)

Even is a fintech company founded in 2014, based in Oakland California. It has developed a mobile app which helps low-income and part-time workers to plan and smooth their volatile incomes. The Even service has three main components:



Budgeting. The app links to consumers' bank accounts, accessing data about income and expenses, including upcoming bills, in order to predict (using machine learning) how much money consumers can spend. It then suggests budgeting strategies.

Automatic savings. This smooths income through transfers from paychecks to savings accounts, which users can access when pay falls short or sudden needs arise

Salary advances. Even offers an "Instapay" option whereby where workers can access their earnings in advance of the next pay date. For example, in an arrangement with Walmart, workers there can receive a portion of their earned wages in advance eight times a year free of charge or for a fee if they want even more. The offering to Walmart part time workers was featured in an article in The New York Times, available [here](#).

The app's business model is to charge a monthly fee per user of around US\$20/RMB 136. Employers may pay this fee as part of a benefit to aid employee financial health, or workers may buy the service directly online. Even receives no other commission or fee.



4 Implications

Having completed our review of this landscape, we can consider how the examples fit together into the framework presented earlier.

We can also view the implications of these changing models for financial inclusion and financial health. Given our focus has largely been China, we first consider China and then other countries before proposing further hypotheses.

China

The examples highlighted in this White Paper illustrate the breadth and diversity of efforts underway in China to promote what we have called ‘conventional’ models of aggregation. These efforts should continue, even as China rolls out the infrastructure that will eventually connect almost all of its population to digital services. New clients in rural and remote situations will likely continue to need a human touch.

This will take time, however. And even in places where people are already banked and using mobile payments, there is still scope to learn from the models that have been tested and refined parts of China, in particular:

- The policy regarding financial service points in Lishui, which encourages a broad range of services and interoperable card operations. Experience in Lishui shows that it is possible for shared service agents to receive cash in exchange for electronic value transfer to customers, therefore enabling ‘bridges to cash’ that can promote a ‘cashlite’ society—one in which the role of cash becomes marginal.

- The approach to collateral replacement seen in the formation and growth of Lishui rural guarantee associations, which have leveraged local capital with some external contributions to reduce the risk of bank or credit union lending to agricultural projects in the context of communally-owned land.

In the digital era, China's emerging financial marketplace models of aggregation deserve close attention from researchers and policy makers. The role of the orchestrator of the marketplace is crucial; their 'curation' of both the profile of financial providers and types of products is likely to become a key differentiator of these marketplaces in the future. Since the needs and life circumstances of customers are varied and dynamic, this will allow for a range of types of curation—much as music services curate lists of music for listeners with different tastes. However, the implications of using financial services are far more profound. There is a case to distinguish products based on their suitability for different customer types and on their outcomes. Much of this will happen algorithmically in future using "roboadvisors" that can make available personalized advice to hundreds of millions of customers as to how to optimize their financial portfolios. But the principle of algorithmic accountability¹¹ should apply here too; there is a need for active and independent surveying to establish those product types most likely to have a positive effect on financial health of defined groupings.

The Rest of The World

Aggregation models continue to address real financial inclusion needs and objectives in the rest of the emerging world, though often with less official promotion or subsidization than in China today. Since the transition to fully-digital financial models will likely take longer in most developing economies than it has in China, the case for continuing to enable and promote last-mile infrastructure to serve the excluded is even more pressing there. Much has to do with the business case to encourage aggregators; how to harness the efforts of those best-placed to provide services at low marginal costs to those who need them. Policies that limit initial agent fees and charges to artificially low levels in the name of affordability may limit the reach of these models.

These examples show how financial aggregation can serve financial inclusion objectives by making it more feasible to reach excluded groups sooner than would otherwise be the case. The case that aggregation necessarily improves financial health is harder to make, however, and the data is not yet available that would enable a full test of this hypothesis.

Even if users of digital finance in most developing countries have yet to reach the critical mass seen in China today, there is good reason to believe that digital ecosystems will advance rapidly

there too as connectivity improves. For one thing, China's new providers are themselves expanding internationally into lower-income markets even where smart phones are not yet prevalent; in 2018 alone, Ant Financial has announced deals to buy into local mobile money service providers in Pakistan and Bangladesh. However, while growing digital ecosystems clearly promote consumer choice, it is not clear that more choice will necessarily lead to improved financial health. In some parts of Africa today, there are rising concerns over the explosion of digital microcredit, for example.¹² Using mobile payment rails to disburse and collect, digital credit is easily available but without functioning mechanisms like credit registers or credit bureaus that enable assessment or measurement of over-indebtedness. For this reason, as more people become digitally active, there is a need to consider their financial health carefully. This is perhaps especially true for employers whose employees are often the prime target of digital lenders. While employers cannot stop negative advances, they may be able to mitigate the effects by providing access to alternatives that enable employees to budget better.

And of course, although the gig economy is in its infancy in much of the developing world outside of China, with the general rise of e-commerce it is now growing rapidly as platforms like Uber and Taxify expand swiftly in traditionally informal sectors like urban transportation. For this reason, the Chinese experience of how to serve modern independent workers better is especially relevant.

This review of aggregation models in inclusive financial services seen mainly through the lens of developments in China today leaves us with a series of hypotheses for which there is not yet adequate evidence to give answers. We frame these hypotheses in ways they could be tested through further research and development in China. This would be worthwhile in China alone, but learning from China would also likely be highly relevant in the rest of the world.

- **Last-mile aggregation models** may improve the financial health of those clients who use them, as well as promoting access and inclusion. This is more likely when the aggregator can address questions and intermediate in client problem-solving.
- **Financial marketplaces** will increase product choice for consumers and are more likely to improve users' financial health when they are carefully curated for customers' situations and needs, as opposed to not curated at all.
- **Work contracting platforms** are promising new aggregation points, much as employers have been. These platforms may have the incentives and the ability to offer and distribute financial services in ways which would improve the financial health, especially among those workers with low and volatile incomes.

To test this last hypothesis, the 'dependent contractors' who work for China's e-commerce platforms provide a promising segment in which to explore further forms of product innovation

and service curation; they are increasingly digitally-connected and financially-included but are often vulnerable. As China's working poor, they often lack access to standard benefits of formal employment and other societal welfare benefits based on their original home location. This large and growing group presents opportunities for financial services to mitigate risks and improve their financial health; and to ask questions about the limits of market provision of these services that we will take up in the section on forward-looking research.

Conclusion

Even in the digital era, aggregation models remain relevant for financial inclusion in China and the rest of the world. As more and more people become directly connected to the internet, they will become financially included in new ways. Though the need for conventional last-mile solutions in the form of physical touchpoints will decline, it will not disappear soon given that vulnerable groups – such as the elderly – may always prefer them.

However, new models of aggregation are rapidly emerging within digital ecosystems that can connect both consumers and workers to a wider choice of financial services than ever before. These models hold great promise for improving their customers' financial health. However, the promise will not be realized automatically; not all patterns of usage of financial service improve the user's financial health. Today, concepts of financial health remain at a relatively early stage of definition and measurement. But it is important to do so in China and elsewhere, so that the new models that emerge after basic financial inclusion has been achieved can be encouraged and supported to improve financial health. They can also be held to account for the extent to which they do so.

China continues to offers a vast natural laboratory in which to promote innovative approaches to financial aggregation in the digital world. Lessons from China in this area will likely have great relevance for other parts of the world as they continue on their own pathways to greater digitization.

Annex A: Organizations Interviewed in the Course of this Study

Name	Organization
ANG Chaowen 昂朝文	Eco-finance Department of Meituan Group, Senior Director 美团生态金融事业部高级总监
HUANG Suna 黄素娜	Eco-finance Department of Meituan Group, Senior Manager 美团生态金融部小微信贷产品高级经理
CAI Ying 蔡颖	Public Affairs Department of Meituan Meituan Group, Senior Manager 美团公共事务部高级经理
CHEN Dianzuo 陈殿左	CFPA Microfinance, Senior Vice President 中和农信副总裁
KONG Qingyu 孔庆煜	Xiangxin Platform of CFPA Microfinance, Director 中和农信网贷业务主管
LI Qi 李琦	CFPA Microfinance, Manager 中和农信经理
ZHANG Lin 张林	Rural Finance Department of Ant Financial, Deputy General Manager 蚂蚁金服农村金融事业部副总经理
WANG Qiongyue 王琼玥	Rural Finance Department of Ant Financial, Expert 蚂蚁金服农村金融事业部专家
CHENG Zhiyun 程志云	Ant financial research institute, Senior Expert 蚂蚁金服研究院高级专家
LIN Shihan 林诗涵	Ant financial research institute, Industry Research Expert 蚂蚁金服研究院行业研究专家
KONG Zugen 孔祖根	Lishui Central Sub-branch of the People' s Bank of China, President 人民银行丽水市中心支行行长
CHEN Mingliang 陈明亮	Lishui Central Sub-branch of the People' s Bank of China, Deputy President 人民银行丽水市中心支行副行长

YE Yinlong 叶银龙	Credit Management Office of Lishui Central Sub-branch of the People's Bank of China, section chief 人民银行丽水市中心支行货币信贷管理科科长
YIN Sixia 殷斯霞	Credit Management Office of Lishui Central Sub-branch of the People's Bank of China, section member 人民银行丽水市中心支行货币信贷管理科副主任科员
CHEN Yida 陈义达	LONG QUAN Rural Credit Cooperative, President 龙泉农村商业银行行长
ZHENG Ziyou 郑自友	HUA QIAO Village committee, Director HUI NONG Guarantee Cooperative, person in charge 村委主任、惠农担保合作社负责人
WU Shiwen 吴世文	HUA QIAO Village committee, village secretary HUI NONG Guarantee Cooperative, staff 村支书、惠农担保合作社经办人员
ZHANG Yeman 张业满	Medical center, staff 华侨卫生室、丰收驿站工作人员
ZHENG Chenghai 郑承海	HUA QIAO Village committee, member 村委委员
CHEN Guangshi 陈广师	E-commerce Finance Department of Bank of Lanzhou, General Manager 兰州银行电商金融部总经理
LI Yanhui 李彦慧	commerce Finance Department of Bank of Lanzhou, 兰州银行电商金融部
YUN Peng 云鹏	Technical Director, E-commerce Finance Department of Bank of Lanzhou 兰州银行电商金融部技术总监
GUANG Jing 管静	Lanzhou Municipal People's Government Finance Office, Deputy Director 兰州金融办金融一处副处长
LIU Ruobing 刘若冰	Director, Financial Office in Lanzhou 兰州市金融办金融一处处长
WAN Chao 万超	Officer, CBIRC of Lanzhou 兰州市银保监局科员

HE Yankun
贺彦琨

Director, Payment and Settlement, PBOC of Lanzhou
人民银行兰州市中心支行支付结算处处长

References

Aveni, Tyler and Joop Roest. (2018). "China's Alipay and WeChat Pay: Reaching Rural Users", CGAP Brief available [here](#)

Bei Duoguang and Mo Xiugen. (2018). "Conquering the 'Last Mile' Issue in Financial Services -- the Report of Financial Inclusion Development in China (2018), China Financial Publishing House.

BFA (2016) "Implications, insights and guidance on use of Open Application Programming Interfaces (APIs) by financial services providers in emerging economies", FSDK Paper available [here](#)

Grasser, Matt (2016) "Where Aggregators – and Open APIs – Fit Into Financial Inclusion", available [here](#)

Eijkman, Frederik, Jake Kendall, and Ignacio Mas. (2009). "Bridges to cash: The retail end of m-pesa." SSRN Electronic Journal. 34. 10.2139/ssrn.1655248.

Harris, Seth and Alan Krueger. (2015). "A proposal for modernizing labor laws for 21st century work: The "independent worker", Brookings Brief, available [here](#)

Ladha, Tanya, et al. (2017). "Beyond Financial Inclusion: Financial Health as a Global Framework", CFSI, available [here](#)

Lyon, Ben. (2016). API best practices available [here](#)

McKay, Claudia and Rashmi Pillai. (2016). "Aggregators: The Secret Sauce to Digital Financial Expansion", available [here](#)

Pillai, Rashmi. (2016). "The Business of Aggregators" CGAP, available [here](#)

Porteous, David and Olga Moracynski. (2017). Inclusive digital ecosystems of the future, FIBR White Paper 2, available [here](#)

Smit, Anja, et al. (2012). "The nature and implications of informality in the South African funeral services and microinsurance markets", available via Cenfri.org

Suri, Tavneet and William Jack. (2016). The long-run poverty and gender impacts of mobile money, *Science* Vol. 354, Issue 6317, pp. 1288-1292

Bei Duoguang and Mo Xiugen (2018), Monitoring Report on the Development of Financial Inclusion in China (2017 Zhejiang Province)

NOTES

¹ Porteous and Moraczynski (2017)

² Finscope South Africa 2014 Consumer survey, available via www.finscope.co.za

³ Collins (2009) Financial Decisions and Funeral Costs available via www.financialdiaries.com

⁴ See Sohrab Kohli and Rob Levy. 2017. "Employee Financial Health: How Companies Can Invest in Workplace Wellness", CFSI, available [here](#)

⁵ In the 2018 survey, this was relabeled mobile payments

⁶CGAP Blog June 2018, available [here](#)

⁷ See Arjan Schutte et al (2015) Slicing Up the Gecko: How tech start-ups can disrupt a US\$5-trillion industry available [here](#)

⁸ Good Work: The Taylor Review of modern working practices, UK Government available [here](#)

⁹ Seth Harris and Alan Krueger (2015) A proposal for modernizing labor laws for 21st century work: The "independent worker" available [here](#)

¹⁰ China National Bureau of Statistics 2018

¹¹ The principle that algorithms should be auditable and held to standards for the use and testing—see a World Wide Web Foundation report on this topic available [here](#)

¹² See CGAP Blog 25 September 2018: "It's time to slow digital credit's growth in east Africa" available [here](#): after five years of rapid growth, surveys have found that loans are mainly used for consumption and that default rates on these loans among the poor are high.