

In collaboration with the
Shanghai Advanced Institute
of Finance (SAIF)



At a Crossroads: The Next Chapter for FinTech in China

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Foreword

China has been more affected by technology-enabled innovation than any other jurisdiction globally.



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The Chinese financial system has come a long way since the People's Bank of China was separated from the Ministry of Finance in 1978. While large state-owned banks continue to dominate the traditional banking sector, Chinese technology firms now play an important role in the delivery of services to individuals, corporates and institutions. Technology-enabled innovation has transformed system evolution in China more than in any other jurisdiction globally.

The COVID-19 pandemic further accelerated this transformation process as lockdown measures and contagion fears gave technology providers a unique opportunity to prove their relevance once and for all. The reliance on digital or contactless payment methods – already prevalent before the pandemic – further intensified. FinTech was critical for facilitating access to financing for liquidity-starved micro-, small- and medium-sized enterprises, and even took on the role of verifying an individual's health status.

Technology-enabled innovation is not a uniquely Chinese phenomenon; it is transforming financial systems globally. However, system evolution is playing out somewhat differently in China: the adoption of technology is taking place at an unparalleled rate; large technology firms are playing a significant role in the retail market, while Chinese corporates are continuing to depend on bank lending for financing. Equally important, given that the modern financial system in China is younger than the systems in Europe and North America, regulation continues to develop at a different pace as well.

Globally, stakeholders are paying close attention to developments in China: some see an enormous business opportunity; others study China in the hope

of getting a glimpse of what the future of financial systems globally might look like, as well as an insight into the role of large technology firms and how existing inclusion and literacy challenges might be solved.

Given the unique nature of the Chinese financial system, the outsized role of technology in the delivery of financial products and the deepening global geopolitical tensions that increasingly affect financial markets, the World Economic Forum was asked by a group of senior industry leaders to explore the evolution of the Chinese financial services system with the expectation that dialogue between Chinese and global stakeholders will build and deepen trust. The role of technology firms and FinTech proved a particularly important point of discussion, as developments over the past couple of months have highlighted. The Shanghai Advanced Institute of Finance (SAIF) collaborated with the Forum in this effort, and this report presents the initial findings from a workshop hosted in Shanghai, discussions at the Forum's China Business Roundtable and expert interviews.

Industry leaders and experts representing relevant Chinese institutions have contributed to the discussions reflected in this report. We hope that you find this exploration insightful and look forward to your comments. The World Economic Forum, through its Platform for Shaping the Future of Financial and Monetary Systems, and SAIF will continue to facilitate dialogue between industry and public-sector leaders. We welcome new perspectives and we hope to make a small contribution to ensuring the Chinese financial system continues to balance innovation and system stability effectively, and that further transformation remains aligned with the evolution of systems globally.

Executive summary

The evolution of China's FinTech industry has entered a critical third development stage.

Innovation is no longer orchestrated by regulatory agencies and merely implemented by financial institutions (top-down), as it was during the first stage; nor is it driven by technology companies (bottom-up), as it was during the second stage. Current innovation dynamics reflect a complex interplay of collaboration and competition between traditional service providers, big tech firms that have moved into financial services, independent FinTechs and regulators. As these players continue to find their places and roles in the newly emerging business environment, the future make-up and characteristics of China's financial industry remain to be determined.

The approaches chosen by China's financial regulators will be decisive in setting the future direction. FinTechs managed to grow faster and influence the interaction between individuals and service providers more deeply in China than in most other jurisdictions. The industry's success enabled hundreds of millions of individuals who were previously underserved by traditional institutions to access financial products. It also greatly enhanced user experience and operating efficiency and reduced transaction costs. The industry was able to deliver these benefits because Chinese regulators took a "wait and see" attitude during the early stages of its development that allowed innovation outside the traditional regulatory perimeters to blossom, and then adjusted rulebooks only over time in a process of "regulatory catch-up".

As financial innovation has gained traction and the firms driving it have grown into sizeable players, the dynamic between innovators and regulators has begun to shift. Regulatory agencies have started to be more proactive in supervising the activities of technology firms after realizing that the size of many technology firms and FinTechs means they could threaten financial stability and peace in society if their innovation efforts and business practices were overly aggressive. But the regulators and policy-makers also understand that overly restrictive regulatory approaches could stifle future innovation and economic growth.

What is needed is a thoughtful approach to innovation and regulation that enables the many benefits FinTechs can provide while controlling – and ideally eliminating – the potential risks. Regulators and the industry face a delicate balancing act and need to consider questions about the use and protection of data, potentially monopolistic practices, and alignment with global methodologies and standards.

Only a collaborative approach among all stakeholders – including smaller, independent FinTechs – will ensure China's FinTech industry and the country's financial system continue to prosper, delivering benefits to society at large and leading the world in financial innovation and inclusion efforts.



1

Introduction

FinTech in China has reached a crossroads.

FinTech's rise in China has been facilitated by a complex interplay of cooperation and competition among technology companies, traditional financial institutions and regulatory agencies. The strategies and positions adopted by these three players will

continue to shape the role of FinTech in China's financial system, set the pace of the industry's development and determine the eventual make-up of the broader financial ecosystem. FinTech in China has reached a crossroads.

Definition of FinTech



The Financial Stability Board (FSB) defines FinTech as technology-enabled innovation in financial services that can result in new business models, applications, processes or products with an associated material effect on the provision

of financial services.¹ This definition has been adopted by the People's Bank of China (PBOC) in its FinTech Development Plan (2019–2021). Prior to this, FinTech was often referred to as internet finance in China.

The numbers behind FinTech's evolution in China are nothing short of amazing: today, more than 1 billion consumers are enjoying the benefits of FinTech in areas such as mobile payments, banking, insurance, investment and consumer lending.² FinTech has also enabled more than 30 million micro and small enterprises (MSEs) to access loans.³ Thanks to the application of technologies such as big data and blockchain, companies across supply chains can now benefit from more inclusive and affordable financial services.

FinTech has gone through three stages of development in China: computerization, "internetization" and "intelligentization" (the terms used for the latter two stages are still new and unfamiliar, and may develop over time). The marriage of information technology and finance at these three stages has improved financial business efficiency, created new service models, transformed the original ecosystem and presented new opportunities and challenges to regulatory agencies.

A brief history of China's financial system



China initiated the reform of its financial system and adoption of its opening-up policy in 1978, when the People's Bank of China (PBOC) was separated from the Ministry of Finance. The modernization of its financial system started in 1984, with the separation of the Industrial and Commercial Bank of China (ICBC) from PBOC. Since then, ICBC has been recharacterized as a commercial bank and PBOC as a central bank. Since 1977, 43 years ago, China's economy has been growing rapidly alongside its financial system to reach a GDP of RMB99 trillion in 2019 (\$15.85 trillion),⁴ with an M2 money supply of RMB199 trillion.⁵ China's financial intermediaries own combined assets worth RMB370 trillion, including RMB290 trillion's worth of assets owned by 4,607 banks⁶ (99% of which are controlled

by the government). Another RMB80 trillion's worth of assets are owned by more than 70,000 other financial institutions – including 60 firms managing non-performing assets,⁷ 240 insurance companies,⁸ 129 mutual fund companies, 24,494 private equity companies,⁹ 12,130 financial leasing companies,¹⁰ 7,551 microfinance companies,¹¹ 8,397 pawn shops¹² and 13,338 factoring companies.¹³ In 1990, two stock exchanges were launched, in Shanghai and Shenzhen respectively, setting the stage for direct finance, with the combined valuation of companies listed on these two exchanges currently standing at RMB59 trillion.¹⁴ Bonds traded in interbank markets and exchanges are valued at RMB99 trillion.¹⁵ China also has four futures exchanges, 133 securities firms¹⁶ and 149 futures companies.¹⁷

2

Three stages of industry development

China's FinTech industry has gone through three stages of development, each exhibiting defining characteristics.

1984–2003

The computerization of China's banking sector was completed to provide the country's financial system with a modern payment infrastructure. Notable events in this stage included the Golden Card Project launched in 1993 and the Data Centralization Project initiated in 1999. Innovation

dynamics during this stage were top-down, which meant that the process was dominated and planned by regulatory agencies and was implemented by traditional financial institutions (which were state-owned and licensed).

2004–2014

The internet began to play a crucial role in financial businesses, particularly in personal banking, and the launch of Alipay in 2004 marked the defining event of this second innovation stage. Alipay was the first company in China to offer online payment services and later to enable mobile payments. In 2007, China's first peer-to-peer (P2P) lending company, PPDAL, went online. In 2013, Yu'eobao, an

internet-based money market fund sales platform, was launched. These financial innovations triggered a new wave of FinTech progress, and innovation dynamics during this stage were bottom-up, driven first by technology companies (which were usually not licensed, at least in the beginning) and then embraced by traditional financial institutions, with regulatory authorities gradually catching up.

2015 until today

Intelligentization, meaning the comprehensive and penetrative use of D-BASIC technologies (see Section 6, The third stage: intelligentization of finance) to replace manual labour in financial businesses, is the defining characteristic of the third and current innovation stage. D-BASIC technologies helped financial institutions lower costs, improve efficiency and disrupt old business models while creating new businesses and products. Notable events during this stage included the selection of eight pilot companies

for personal credit reporting licences in 2015, the rise of internet-based microlending companies in 2017 and the rapid growth of the online mutual aid market in 2018. Dynamics during this stage can be characterized by a hybrid of top-down and bottom-up innovations. Technology companies, traditional financial institutions and regulatory agencies continue to attempt to find their respective places within the new ecosystem, while competing in some areas and collaborating in others.

The impact of information technology on finance



Finance requires a wealth of information for its operation. Further progress in information technology will result in new financial innovations that will have an impact on, in particular:

Ledgers: Ledgers serve as infrastructure for the financial system. FinTech can make payment and settlement more efficient, thus enhancing the user experience. Moreover, blockchain offers an alternative form of ledger and can help promote collaboration.

Customers: The use of technology to reach and profile customers online can improve the efficiency of selecting, acquiring and serving them.

Processes: Through the use of networks, data, algorithms and computing, nearly all financial business processes have been reorganized to become more accessible, efficient and smart.

3

Three kinds of innovation dynamics

The direction, nature and role of future innovation will depend on how actors will compete and collaborate going forward.

A close examination of the three innovation dynamics that have defined FinTech's evolution in China is required to understand the accomplishments made – and difficulties encountered – by the industry in the past and to make predictions about its future direction. Technology-enabled innovation has played a

major role in the transformation of China's financial system so far. The direction, nature and role of future innovation will depend on how technology companies, traditional financial institutions and regulatory agencies position themselves vis-à-vis each other, and how they compete and collaborate in the future.

Top-down

This innovation model, led and planned by regulatory agencies, dominated the first stage of development, and traditional financial institutions simply implemented regulatory instructions. The strengths of this model lie in its ability to concentrate a great abundance of resources to upgrade strategic infrastructure and enable smooth

coordination between industry and regulatory agencies in the process of implementation. It is, however, unfit for spontaneous and constant innovation, as regulators can struggle to stay on top of constantly evolving industry needs and are less technologically literate than industry players.

Bottom-up

This innovation model, which dominated the second stage of development, is driven by technology companies that use IT to transform financial services delivery and processes. Technology companies, most of which are privately owned, are encouraged to innovate and thus drive the transformation of finance. At the same time – either because some technology firms were seen as less perceptive of, or sensitive to, financial risks, or as a result of financial regulators generally being less familiar with risk-management innovations advanced by technology firms – perceptions of systemic risk arose. These were fuelled by some

companies, in their early stages, innovating ahead of existing regulatory frameworks, thus creating probable sources of risk. Regulators will accordingly adjust their positioning towards innovators over time. Moreover, the entry of technology companies into the financial services space may threaten the interests of traditional financial institutions and lead to turf wars. Since some technology companies do not have the required licences when they first make inroads into finance, or because of an absence of applicable licences, incumbents often tend to be well positioned in such confrontations.

Hybrid

This innovation model, which has been gradually evolving in the third stage of development, is marked by collaboration between technology companies, traditional financial institutions and regulatory agencies. This model remains experimental and immature. Whether it can combine the strengths and avoid the weaknesses

of the previous two models will depend on the cooperative and explorative efforts of the three parties. The previous innovation dynamics seem unfit for the long-term development of FinTech. Therefore, whether the hybrid model will succeed will have profound implications for the future of FinTech in China.

Traditional financial institutions embracing change

The China Construction Bank Corporation aims to build its financial supply system into a “new finance” business environment that takes data as its key factor of production, technology as its core instrument of production, and platform as its main method of production. Initial experiments and new finance practices have made the bank fully aware of the following facts: technology reshapes customer behaviour and drives financial services; the traditional role of technology as an affiliate of banking businesses and processes must be changed; and a FinTech mindset should be adopted to transform financial technology into a product, a service and a value-creation activity.

Based on this understanding, in 2018 the bank established CCB FinTech, which has become China’s first financial technology company restructured from the internal research capabilities of a large bank and which has since expanded

its business footprint to a dozen provinces and municipalities. As part of CCB’s TOP+ Strategy, CCB FinTech is accelerating the development of an intelligent, inclusive and boundless “new finance” system, while contributing to the upgrading and transformation of China’s financial industry by providing “finance-level” digital capabilities for the whole of society. As a pioneer of China’s FinTech industry, CCB FinTech is serving the bank at one end and enabling the market at the other. With leading systems, products and services, open platforms for technology sharing and inclusive digital operations, the financial technology firm is supporting the industry to improve a full range of offerings, serve the real economy, build an inclusive society, benefiting all, and contribute to the country’s effort to go digital.

Yan Liu, Director of Strategic Ecosystem and Investment, China Construction Bank



The first stage: computerization of finance

The primary focus of the first stage of FinTech-driven transformation was upgrading the banks' ledgers and payment system.

Driven by top-down innovation dynamics, China's financial sector completed the computerization of its payment system and its banks' internal business management system by adopting computer and network technologies between 1984 and 2003. Important events marking this first stage of industry development included:

- 1986: The Zhuhai branch of ICBC pioneered the use of computers to process transactions. In 1993, computers were universally used by banks and outlets nationwide for bookkeeping.¹⁸
- 1987: The Zhuhai branch of Bank of China installed the first automated teller machine (ATM).¹⁹
- 1993: The Golden Card Project was launched. In 1996, Bank of China (BOC) issued the country's first RMB debit card.²⁰
- 1999: ICBC became the first bank to centralize data through a project called 9991, which was completed in 2002. Other banks quickly followed suit and finalized the undertaking

nationwide in 2005.²¹ In 2007, China introduced arrangements that enabled interregional and interbank deposit and withdrawal.

The primary focus of the first stage of FinTech-driven transformation was upgrading the banks' ledgers and payment system. In parallel, banks automated their business processes and enhanced the customer experience, including the ability to withdraw and deposit cash and make transfers at ATMs, make purchases on credit cards, and make deposits and withdrawals across banks and regions.

Computerization laid a critical foundation for the future rapid development of FinTech. The top-down innovation model was a natural choice for the country at that time. This stage of development was also marked by the absence of any regulatory friction due to the dominant role of regulatory agencies and the implementing role of traditional financial institutions. The second stage of development would look very different.

CASE STUDY

The Golden Card Project

In 1985, the first credit card in China was issued by the Zhuhai branch of Bank of China (BOC) in Guangdong. The credit card could be used only in Zhuhai and was available only to local residents and those who were formally employed in the city. Any applicant who had deposited more than RMB300 with BOC and submitted a form affixed with the seal of his/her employer was eligible for a credit card, which offered a line of credit of RMB300. Those who had deposited more than RMB1,000 could apply for a golden credit card, which extended a line of credit of RMB1,000.²² In

June 1993, China officially launched the Golden Card Project, which, as a currency electrification project, was designed to promote the use of information cards and cash cards. By the end of 2000, China had preliminarily established a national interbank exchange system and a national information exchange centre that covered 18 cities nationwide. As a significant milestone in the history of China's payment industry, the Golden Card Project helped expand the use of bankcards and accelerated the technology-driven modernization of the financial sector.²³

The second stage: internetization of finance

Tech-savvy internet companies set the pace throughout the second innovation stage.

The launch of Alipay, a third-party payment product, in 2004 marked the beginning of a new era in China's financial industry: over the course of the next 10 years, almost all financial activity went online. Alipay was the first online payments service and opened the door for other financial businesses to move online. It is noteworthy that, when Alipay was launched, third-party payment licences were not available in China. Instead, PBOC gave special approval for Alipay's operations in the form of registration, reflecting the relatively tolerant attitude of regulatory authorities towards financial innovation at the time.

Technology companies driving this second stage of innovation through the bottom-up innovation model used the internet, mobile devices and cloud computing technologies to support financial businesses. Traditional financial institutions also caught up at this stage after gradually realizing the enormous potential of internet technology. They embraced, imitated and kept pace with the innovations of technology companies. In the beginning, regulatory agencies were tolerant, adopting a "wait and see" attitude in the face of this wave of innovation. However, when the risks of P2P lending surfaced, regulators began to intervene and displayed a more proactive attitude to exploring how best to regulate FinTech.

Tech-savvy internet companies, including online shopping and social networking platforms, search engines, games companies, news portals and online-to-offline (O2O) service providers, continued to set the pace throughout the second innovation stage. Although traditional financial institutions had used computer and network technologies for a long time, they lagged behind technology companies due to their lack of understanding of internet applications. Important milestones in this second innovation stage include:

- 2004: The launch of Alipay.
- 2007: PPDAl, the first P2P lending platform in China, came online, signalling the internet application's expansion from payment to lending and other financial fields.

- 2011: The first third-party payment licence was issued, seven years after the first third-party payment platform began operations.
- 2013: Yu'eobao was born and enjoyed rapid and astonishing success, leading some to label 2013 as the "ground zero of internet finance in China".
- 2014: Large financial service platforms appeared in the wake of Yu'eobao's success and a variety of financial products moved online.

From a business perspective, ledgers, customers and processes were the three areas most affected by FinTech. The extension of payment services to the traditional and mobile internet greatly enhanced user experience. Internet payments and mobile payments quickly went mainstream and redrew the landscape of the payments industry. The third-party payment service providers that had secured first-mover advantages locked in a sizeable share of customers' access time and data. Reaching, selecting and serving customers offline became less of a priority for service providers. As physical proximity was no longer a critical factor in acquiring new customers, offline outlets became less important and customer screen time became a much more valuable asset. More services were moved online and soon customers could also process nearly all financial transactions over the internet, including investing in mutual funds and asset management products, trading stocks, buying insurance, seeking financial advice, making purchases and accessing after-sales services. With more business activity available online and mobile, a huge number of business processes were also reorganized, simplified and optimized.

Yet, despite this wave of transformation bringing universal benefits, the revolution in the provision of payment services and the rise of platforms with huge user bases had the most overall impact on the system. Interestingly, the disruptive innovators were mostly technology companies from outside the financial sector. At the same time, regulatory agencies played a major role in the success of these challengers. Generally, regulatory agencies followed the principle of encouraging innovation and

development, displaying a wait-and-see attitude while exploring creative regulatory measures to keep pace with innovation. This collaborative

attitude helped create a favourable climate for innovation and contributed to the huge success of FinTech at the second stage.

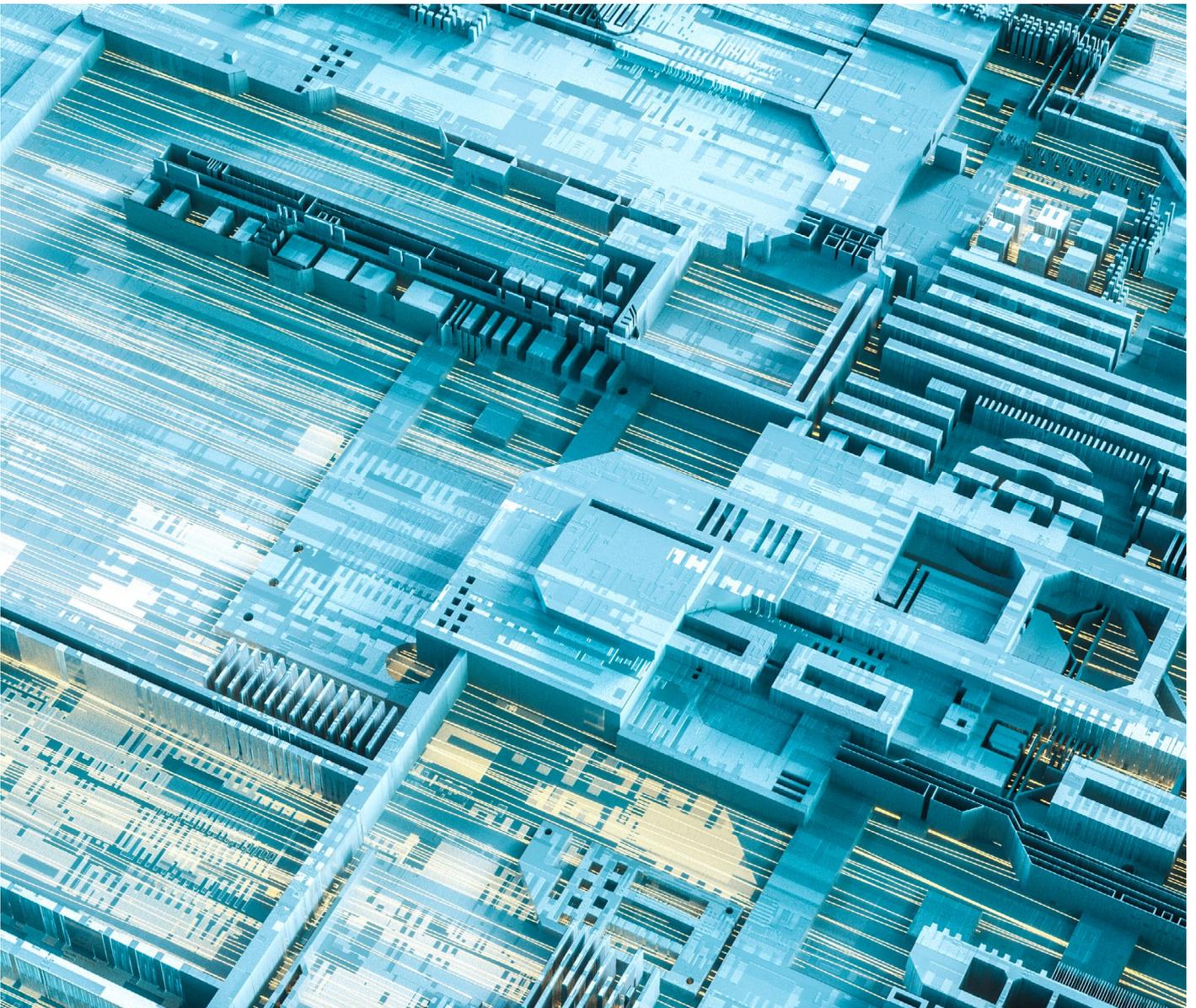
CASE STUDY

Getting to RMB1 trillion in four years

In June 2013, Alipay partnered with Tianhong Asset Management to introduce Yu'eobao, the first money market fund that was sold through Alipay. Although a number of funds were already being sold online, their growth remained unimpressive. Alipay (which did not own any stake in Tianhong) and Tianhong, on the other hand, committed considerable numbers of staff, resources and funding to allow for optimizations in areas such as system development, user experience, the lowering of entry barriers and provision of real-time liquidity. Thanks to these efforts, Yu'eobao became more intuitive and accessible, while not charging processing fees and allowing users to withdraw money whenever they wanted. As a result, Tianhong, which had originally been an unimpressive money market manager, soon

achieved phenomenal success thanks to the large traffic pool of Alipay. Its assets under management (AUM) exploded to more than RMB100 billion within a short period of time. In early 2017, its AUM reached RMB1 trillion.²⁴

Since then, financial institutions have realized that maintaining an online presence for product sales is a business necessity. This change in dynamics made large platforms more assertive when it came to the sale of funds, enabled retail investors to move to top-tier brokerage firms and caused a shift of deposits among commercial banks at times. As a result, a number of stakeholders have started expressing concern over these changes in the competitive landscape.



The third stage: intelligentization of finance

The ubiquitous use of technology has given rise to new financial service models.

The adoption of intelligent technology is the defining characteristic of the current innovation stage, with D-BASIC technologies becoming deeply embedded in finance. Many tasks that used to be performed by humans or that humans were incapable of undertaking are now automated, and the ubiquitous use of technology has given rise to new financial service models.

Compared with the previous two stages, service providers now make more comprehensive use of all of the D-BASIC technologies: big data, blockchain, artificial intelligence (AI), security technology, the internet of things (IoT) and cloud computing.

Big data technologies are widely used to enhance fraudulent transaction detection, targeted marketing, the fight against illegal cyber activities, consumer lending, credit risk measurement, supply-chain finance, stock market and share price forecasting, investing advice, insurance fraud detection and risk pricing. According to the *Report on the Development of China's Big Data Sector in 2019* by the China Industrial Control Systems Cyber Emergency Response Team, the country's big data sector was worth RMB850 billion in 2019 and will grow to more than RMB 1 trillion in 2020.²⁵

Blockchain technology has enormous potential to further transform financial services, and Chinese FinTech companies are operating at the forefront of the development of new applications as evidenced by the number of Chinese blockchain patents. According to the International Data Corporation's *IDC Worldwide Semi-Annual Blockchain Spending Guide*, the total blockchain spend in China reached \$160 million in 2018.²⁶

Artificial intelligence (AI), enabling data insights and real-time decision-making, plays an increasingly important role in risk management, forecasting, analysis and customer service. By a rough estimate, in the past five years China has invested more than RMB100 billion in AI-related sectors, which employ more than 100,000 AI scientists, engineers

and university graduates. According to the *Plan for the Development of New-Generation Artificial Intelligence* released by the State Council, China aims to expand the output of the core AI sectors to RMB400 billion by 2025 and become a global leader in AI theory, technology and application, with its core sectors worth more than RMB1 trillion by 2030. iResearch estimates that FinTechs will spend RMB58 billion on AI in 2022.²⁷

Security technology is one of the core technologies benefiting digital finance. It offers solutions for regulatory technology (RegTech), data security and privacy protection. Since April 2018, more than 10 provinces and municipalities have worked with FinTech companies to deploy RegTech systems that helped detect more than 12,000 risky companies and identified more than 1,400 platforms suspected of illegal fundraising.²⁸

The internet of things (IoT) can help improve the way financial institutions reach users, enhance the user experience and deliver financial services. By the end of 2020, China's IoT market exceeded RMB1.7 trillion, displaying an annual growth rate of 20% over the past five years. In 2019, there were 3.63 billion IoT connections (including 1.03 billion mobile IoT connections) in China, accounting for 30% of the world's total. This figure is projected to grow at a compound annual growth rate of 14.1% to 88 billion by 2025.²⁹

Cloud computing, mobile connectivity, data-based AI and blockchain are enabled by computing, the cornerstone of all digital technologies. The ability to process many concurrent requests, maintain a high level of consistency and business continuity and offer second-level disaster recovery and flexibility is the precondition for secure financial applications. According to the *China Financial Cloud Market Report* released by IDC, China's financial cloud market reached \$3.34 billion in 2019, \$2.35 billion of which came from infrastructure as a service (IaaS) led by public and private cloud services. The cloud solutions market was worth \$980 million.³⁰

Incorporating digital into a mid-sized bank's DNA

Bohai Bank embraces the concept of “technology-driven services, technology-driven business, technology-driven risk control, technology-driven management and technology-driven innovation”. With data and technology as the core driving force, it finds solutions for customer difficulties by acting swiftly and in a focused manner, delivering services that are intelligent, convenient and efficient.

By breaking the vertical division of traditional banking technology along business lines,

overcoming the divide of online and offline, building a unified application platform for payments, image processing, internet accounts and intermediate business management asset aggregation, the bank realized the standardization of system development and one-stop access to integrated financial products and incorporated digital concepts into its DNA.

Liang Xu, Head of Strategic Development and Comprehensive Research Team, Bohai Bank

“As a new business environment is being formed, both technology companies and traditional financial institutions are racing to secure their place and ensure their survival in this ‘new finance’. Regulatory agencies face the challenging task of strategically encouraging innovation while mitigating risks arising from the new innovations.

D-BASIC technologies now influence all aspects of finance and their impact goes well beyond ledgers, customers and processes. Most FinTech innovations are now driven by AI or have AI embedded within them. The combination of big data and AI is increasingly replacing humans; it is now computing power that makes professional judgements.

Important events in this current stage include:

- 2015: PBOC's selection of eight private companies to pilot personal credit reporting.
- 2017: The rise of microlending practices.
- 2018: The rise of new lending models such as syndicated loans and technology-assisted lending.
- 2018: The success of online mutual aid.
- 2020: DCEP (Digital Currency Electronic Payment, China's state cryptocurrency) piloted by PBOC.

China's most impressive achievement throughout the first two stages was the introduction of mobile payments. As a by-product of the payment revolution, innovative business models also emerged in other sectors such as online shopping, gaming, live streaming, online movie and video streaming, food delivery, travel and self-ordering in restaurants.

While mobile payments were an important stepping stone, the ultimate target for FinTech innovators was capturing the crown jewel of finance: “money allocation” – that is, borrowing, equity financing, etc., which moves money from investors to money raisers. It is therefore no surprise that transforming money allocation has been the major focus of the current innovation stage. Although P2P lending models, tested during the second stage, ended in failure, other innovations undertaken during the third stage, such as microlending, syndicated loans, online mutual aid and blockchain-driven supply-chain finance, have so far produced promising results, with industry leaders seeing tremendous potential in these areas. The dynamic model powering the current innovation stage is a hybrid of top-down and bottom-up approaches, defined by an ever-changing interplay of cooperation and competition between technology companies and traditional financial institutions. Therefore, as a new business environment is being formed, both technology companies and traditional financial institutions are racing to secure their place and ensure their survival in this “new finance”. Regulatory agencies face the challenging task of strategically encouraging innovation while mitigating risks arising from the new innovations – particularly systemic financial risks and risks that would affect a large number of people. At the same time, they will have to balance the interests of technology companies and traditional financial institutions and referee any conflicts between the two groups – a demanding task.

Supply chain finance facilitated by blockchain technology

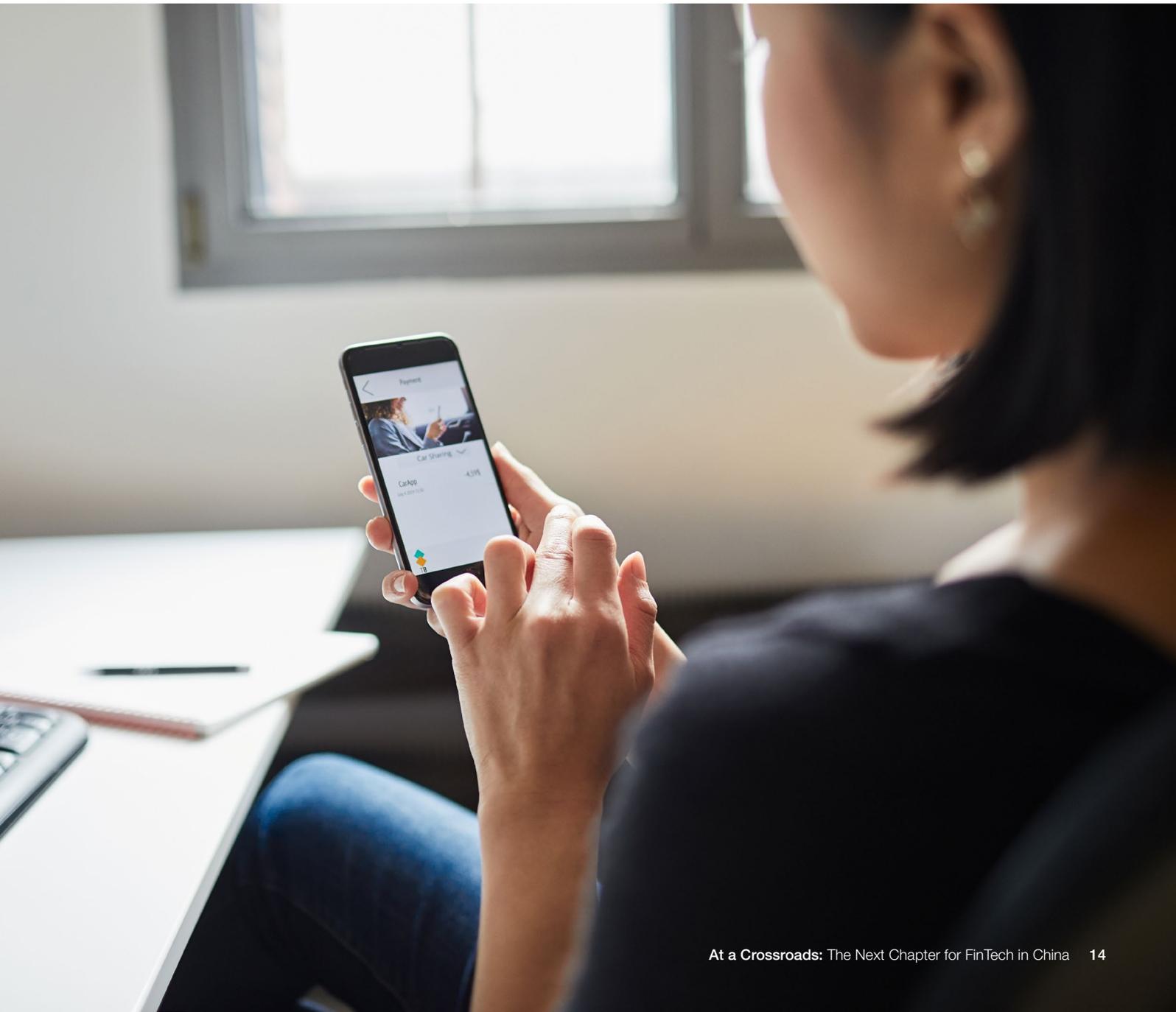
Blockchain technology is a powerful tool to help free up cash that in the past has been trapped along the supply chain. It allows service providers to tokenize a supplier's receivables against a credit-strong company on the same supply chain, thereby accelerating access to liquidity – this solution is particularly important for SMEs, which often struggle to access financing. Backed up by a bank or other institution, these tokens can then be used as a substitute for money to settle the payment obligations among the companies within the supply

chain. They can even be exchanged for cash. By charging a fee for holding the tokens, service providers incentivize companies on the supply chain to speed up payment to their suppliers. A distributed ledger proved to be the most suitable tool for tokenizing receivables and accelerating payment flow and this solution is now rapidly being adopted in China.

Ying Qiao, Chief Product Officer, Hao Kuai Tong Bao (Hangzhou) Technology

Online microlending: Data-based credit analysis has boosted the development of microfinance. Weilidai is a product launched by Tencent's WeBank, China's first internet bank, and allows individuals to seek microloans online. From 2015 to 2019, Weilidai extended RMB3.7 trillion in loans to more than 200 million people and 900,000 companies.³¹ Loan applications are easy and simple, and a loan may be granted in three minutes. The borrower can pay the loan back before maturity and keep the credit line. Ant Group, similarly, helped merchants go digital and has been using algorithms and technology to rate their credit. Through this model, MyBank, an internet bank owned by Ant Group, has extended loans to nearly 30 million MSEs³² since 2015 – serving the largest number of MSEs in China and, in fact, the world. In 2019 alone, MyBank lent RMB1.7 trillion to MSEs.³³ Due to their technological prowess, these two online banks have a non-performing loan ratio of less than 1.5%,³⁴ lower than that of traditional banks.

Mutual aid: Online mutual aid was created in 2011 to offer mutual protection against critical illness. Members in the online mutual aid plan pay periodically for claims they have already received. This is different from an insurance plan where a participant pays a predetermined premium whether or not any claims are filed. In 2016, a number of notable internet platforms made a foray into the sector and introduced innovative processes and services that accelerated its development. In October 2018, Ant Group launched Xiang Hu Bao, an online mutual aid platform, which reached 100 million participants in 13 months. At the end of 2019, the number of participants in online mutual aid programmes reached 150 million. The sector has become an important supplement to China's basic government health insurance and commercial health insurance systems.



7

A balancing act: The role of the regulator

Chinese regulatory agencies possess an impressive track record, having created an orderly and favourable environment for innovation and thus facilitated the growth of the FinTech industry.

In theory, the regulators' mission is to protect non-professional borrowers and non-professional investors and provide a level playing field for all industry participants, while mitigating systemic financial risks and any risks that may affect the general public.

In practice, however, regulatory authorities face trade-offs among multiple – at times competing – objectives. Some of the most prominent include: 1) encouraging and promoting innovation; 2) identifying and taking precautions against risks associated with innovation, particularly those that might have systemic implications and affect large swathes of the general public; 3) discovering, banning and punishing harmful activities that are conducted in the guise of innovation; 4) controlling

the pace of the financial ecosystem's evolution to prevent systemic imbalances that might result from overly aggressive innovations; and 5) balancing the interests of traditional financial institutions and technology companies.

While it may seem impossible to effectively balance these objectives, Chinese regulatory agencies possess an impressive track record, having created an orderly and favourable environment for innovation and thus facilitated the growth of the FinTech industry. China's booming FinTech sector owes part of its success to this regulatory foresight.

However, regulators also made miscalculations on this journey: the failure of P2P lending platforms lingers as a particular sore point.

7.1 A bitter memory

“ The ban [of P2P lending] in 2020 presented a lose-lose situation: lenders suffered financial losses, entrepreneurs were dealt severe blows and some even faced legal consequences despite their initial good intentions, and the private lending sector's experimental online efforts ground to a halt.

In 2007, the first P2P lending platform began operations in China. Regulators first displayed a tolerant wait-and-see attitude towards this new business model. Similar platforms began springing up nationwide and, at the peak of the sector, thousands of platforms offered these services. Most P2P lenders did not possess capabilities in data collection and credit analysis and, as such, were poor risk managers. Their business model was largely flawed.

As the problems these platforms were presenting became obvious, regulators implemented corrective measures. However, because the platforms were numerous and scattered, the task of implementing new regulations was assigned to local regulators in municipal governments, which were understaffed and lacked the necessary know-how. Thus, they were too slow in identifying and handling the problems presented by P2P firms in their jurisdictions. Consequently, small problems started

growing into big ones, local problems turned into nationwide ones; one example, among the hundreds of P2P firms going down, was Tuandaiwang (www.tuandai.com), which had investment from a number of well-known venture capital funds but eventually went bankrupt in disgrace.

P2P lending posed little systemic risk; it was always a small sector. At its peak, outstanding loans barely reached RMB2 trillion, and hovered just below RMB1 trillion for most of the industry's existence.³⁵ The main challenge the P2P sector presented was that each platform involved numerous investors, often to the order of tens of thousands or even millions. Therefore, bad loans led to social problems as investors took to the streets demanding their money back, and regulatory agencies decided they had to intervene. After several rounds of back and forth, P2P lending was finally banned at the end of 2020, 13 years after its launch.

The ban in 2020 presented a lose-lose situation: lenders suffered financial losses, entrepreneurs were dealt severe blows and some even faced legal consequences despite their initial good intentions, and the private lending sector's experimental online efforts ground to a halt.

Following the downfall of P2P lending, regulators have become more cautious about potential risks resulting from FinTech innovations and are now quicker to intervene. The balance of encouraging innovation and preventing risks now seems to be tilting towards the latter.

7.2 The balance is tilting

In late 2014, the first internet bank in China, WeBank, was granted a licence. In 2015, another internet bank, MyBank, obtained approval for operations. The two banks are not allowed to open physical outlets and can only develop their businesses online, including accepting deposits and extending loans. Their approval shows that the use of FinTech to create new business models in commercial banking is being encouraged by regulatory authorities.

However, at the end of 2015, PBOC subsequently released its *Notice on Improving Personal Bank Account Service and Strengthening Account Management*, which imposed strict limitations on bank accounts opened online. These limitations resulted from the argument that funds in remotely opened bank accounts might cause legal and security concerns. Such concerns may not be well supported by the experience of around 270 third-party payment companies, though – the clients opened their accounts online and are free to use funds available in these accounts, without excessive legal risks or security hazards. Ultimately, the PBOC stance towards internet banks limited their sources of funds, thus slowing down their development.

In 2019 and in 2020 regulatory agencies intervened again, this time displaying misgivings about the outflow of bank deposits. Since 2018, internet banks and similar institutions, particularly small and medium-sized banks, have been competing for deposits at interest rates that were close to the ceiling set by the Market Interest Pricing Self-Discipline Mechanism administered by PBOC. Regulatory agencies called a halt to this practice in 2019, puzzling industry experts because the interest rate competition did not violate their rules: in October 2015, PBOC had initiated the market-oriented reform of deposit interest rates by announcing the removal of the deposit interest rate ceiling for commercial banks and rural cooperative financial institutions.

Perhaps it was the memory of the astonishing success of Yu'eobao in attracting customers online

in 2013 that caused panic and unease among traditional financial institutions and regulatory agencies. Policy-makers have an interest in ensuring that the evolution of the commercial bank ecosystem is a step-by-step process and financial stability is maintained. The shifting of bank deposits is a natural result of competition, thus further consideration must be given to ways of balancing the promotion of healthy competition with the need to safeguard financial stability.

Another example of how regulators are supervising the activities of technology firms more proactively is the case of syndicated loans. A syndicated loan is financing offered by two or more financial institutions (banks or microfinance companies), with each contributing expertise, customers, information, risk-control models and funds. Regulatory guidelines require each participant in a syndicated loan to provide no less than 30% of the loan amount. This rule is unfavourable for new entrants, such as internet banks and online microlending companies, as their balance sheet capabilities are usually weaker. Meanwhile, they tend to be more competitive in customer acquisition and credit analysis.

Regulatory agencies seem to appreciate that the potential exclusion of technology companies from lending would cause losses not only to the tech firms but also to small and medium-sized financial institutions, many of which are unable to access customers on their own and do not possess the necessary data and analytical capabilities. One approach to solving this is the developing field of technology-assisted lending in which one of the participants provides no capital and instead contributes customer acquisition, credit analysis and pricing management. For now, regulatory agencies seem willing to keep the door open for technology-assisted lending. Open questions about the roles and responsibilities of each participant and compensation structures remain, however, and regulatory uncertainty will linger in this space for a while to come.

7.3 The evolution of the regulator: open questions

“ It is necessary to build a new regulatory framework that allows for a shift from entity-based regulation to activity-based regulation. This new model will enable regulators to oversee all of the financial businesses, strengthen the consistency of regulation and pilot ‘sandbox regulation’ to increase the interaction between regulators and innovators so that regulators can remain responsive to new technologies.

China’s FinTech industry has entered uncharted waters. How technology firms, traditional financial institutions and regulators interact will decide whether FinTech in China can maintain its strong momentum, solve the bottlenecks lying deep in China’s financial system, address the long-established deficiencies caused by mismatched financial resources and thus inject new blood into China’s real economy.

As stakeholders shape a newly developing financial ecosystem, they need to address a number of important questions:

Are technology companies troublemakers? The collapse of the P2P online loan business may suggest that financial innovation by technology companies is a source of trouble in the finance world. At times, innovation can go too far and cause concern. Plenty of case studies and data show, however, that financial innovation driven by technology firms benefits the financial industry overall. And while the P2P loan business episode indeed created some societal risks, it has not triggered systemic financial risks.

Can large technology companies become weak nodes for systemic risks? Although they enhance the efficiency of capital flow and allocation, technology companies are also likely to expedite the shifting of deposits among traditional and internet banks. Should they indeed cause a quick and massive restructuring of the financial system, they might introduce systematic financial risks. Meanwhile, these companies have a large user base, and their products can reach numerous small customers, thus exposing broader parts of the general public to financial risks. The new challenges introduced by technological advances require further research and understanding.

What is the driving force behind FinTech innovation? There are three categories of innovators: traditional financial institutions; BigTech companies; and small and medium-sized technology firms. Ensuring the further growth of FinTech in China requires all three groups to flourish and remain committed to innovation. Regulators should continue offering these innovators room to expand. While operating with the proper licences is important to ensure safe delivery of financial services, regulators should not indiscriminately impose limits that might discourage innovation. In particular, unnecessary barriers must be removed, and small and medium-sized technology firms should be encouraged to engage in innovation and the transformation of the financial industry. There is a worrying trend that the intensifying rivalry of traditional financial institutions and BigTech firms leaves little breathing room for small and medium-sized innovators. Yet, these smaller players are often the prime drivers of innovation.

If they do not find a way to survive and thrive, China’s FinTech industry as a whole will suffer.

How can data use and protection be balanced?

Solving this question is not only a challenge for China, it is a test for societies globally. It is also a challenge that goes beyond financial services. The increasing prominence of arguments over how to balance the benefits of data while addressing privacy concerns in recent years can be attributed to the data explosion brought about by the use of internet technologies. Workshop participants convened by the World Economic Forum and SAIF allocated significant time to exploring and discussing the role of data, and in particular three specific areas: 1) how to address the conflict between data use and privacy protection; 2) how to define and classify data collection rights, data usage rights and data ownership; and 3) whether data accumulation by a company necessarily leads to predominant market power and how do we set boundaries for the uncontrolled use of market-dominant positions that may trigger anti-trust regulation?

Data has become the most important means of production. Experience taught us that the rules regulating the ownership of means of production can determine the rise and fall of entire economic systems or even entire societies. These questions must be addressed very prudently, legalistically and jointly by scholars, legal professionals and technologists after conducting thorough research and drawing on international know-how.

How can regulation facilitate innovation? China is currently striving to build a new type of regulatory system to address the needs of digital finance. Regulators are adopting a new mindset and frameworks that distinguish between digital finance and traditional offline finance.

This overhaul is not surprising as FinTech innovation challenges both the effectiveness of existing regulatory models and methods and the set-up and structure of regulatory functions and divisions of responsibilities. Therefore, it is necessary to build a new regulatory framework that allows for a shift from entity-based regulation to activity-based regulation. This new model will enable regulators to oversee all of the financial businesses, strengthen the consistency of regulation and pilot “sandbox regulation” to increase the interaction between regulators and innovators so that regulators can remain responsive to new technologies.

FinTech poses challenges to the regulatory system, but technology-enabled innovation can also enhance regulatory capabilities and provide safeguards against financial risks. More work needs to be done to research, develop and employ regulatory technologies (RegTech) that will enable

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supervisors to govern technology with technology and address the remaining challenges arising from ongoing financial innovation.

Traditional financial regulation was designed to prevent, or at least control, risks. As new risk controls are gradually put in place, the future financial regulatory system needs to focus on promoting development and innovation in order to achieve a dynamic balance between inclusive innovation and prudential regulation.

Balancing data use and privacy protection

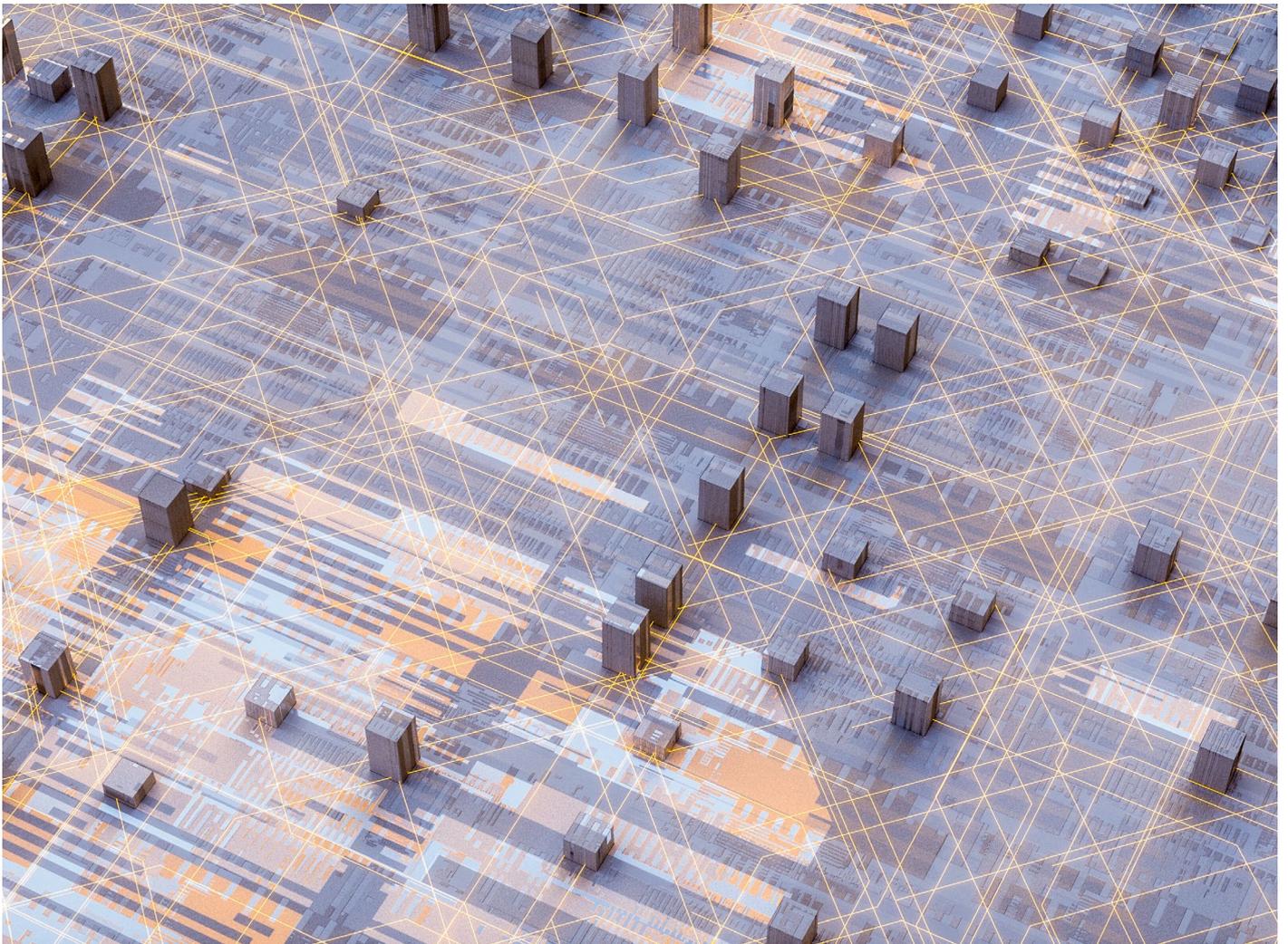
Ensuring that data integration and collaboration can be undertaken safely is an important challenge. Financial institutions wish to better understand and manage customer life cycles and improve financial inclusion through joint analysis among business partners that provide different services to the same customer. Financial regulators are looking to swiftly, accurately and systematically identify industry- and entity-level risks without requiring supervised entities to submit all core confidential information. Meanwhile, other stakeholders in the financial ecosystem are expecting more effective fraud detection, liability analysis and joint marketing.

Stakeholders are interested in collaborating with each other, but they fear the potential risks related to the loss of data copyright or unauthorized use of copied data in a conventional partnership. To

solve this challenge, the emergence of new data encryption computing makes data available but not visible. Collaborators can engage in joint training and computing, complete data analysis safely and produce results without disclosing the data of either party. As we move into a new economic cycle brought about by the COVID-19 pandemic, new opportunities and challenges have appeared in inclusive finance, digital-enabled economic growth and risk controls. Companies including Ant Group and Guangzhishu Technology are providing industry clients with new technology solutions based on confidential computing and federated learning to help them address these new challenges.

Jiachen Sarah Zhang

Founder and Chief Executive Officer,
Guangzhishu Technology



Outlook and conclusion: the rise of new finance

Technology will meaningfully reshape the Chinese financial system, creating a “new finance” system.

Surveys, interviews, a workshop and leadership discussions hosted by the World Economic Forum and SAIF show that China’s financial industry and regulatory bodies expect FinTech developments to further accelerate over the next five years. Leading technologies as represented by D-BASIC will

continue to drive financial innovation and play an ever bigger role in serving the needs of the real economy.

In the process, they will meaningfully reshape the Chinese financial system, creating a “new finance” system characterized by:

8.1 New economic benefits

“ In the old world of financial services, centred on capital, funds used to be the most critical resource capital. In the new finance, data is the most important asset and at the centre of the new financial system. Services and processes such as credit, payments and risk control cannot flow without data.

AI and blockchain technologies will increase the resilience of the financial system. New risk-control systems will be more effective in addressing operational risks such as fraud, money laundering and the financing of terrorism. Meanwhile, collateral-free credit services enabled by big data will help to reduce credit risks, realize counter-cyclical credit (see the Bank for International Settlements [BIS] working paper *Data vs. Collateral* for more details) and address liquidity and market risks.³⁶

FinTech innovations will also further enhance financial inclusion by: 1) expanding service to previously uncovered groups such as micro businesses and customers that are unattractive to traditional service providers and thus often overlooked; 2) improving the economic balance between developed and underdeveloped regions in the country; 3) extending digital financial solutions to underdeveloped regions outside of China; and 4) offering inclusive and easily accessible cross-border financial services.

In addition, financial technology has important spillover effects and will drive the upgrading of modern service businesses. Over the past 40 years, China has become the second largest economy in the world, primarily by relying on manufacturing and the ‘Made in China’ label. In the next 40 years, China needs to develop modern service businesses in order to take the next steps in its development. Driven by the digital revolution, and AI in particular,

it is modern service businesses, not manufacturing, that will be able to address employment challenges in the future. Currently, China is still in its infancy in terms of service digitalization, with only 20% of its RMB50 trillion service output digitalized.³⁷ A modern service sector goes hand in hand with a new financial system in which money looks for people and businesses instead of the other way around. In order to boost consumption, employment and entrepreneurship, China needs to promote online digital trade, drive the digital transformation of offline merchants and provide avenues for digital governance. The COVID-19 pandemic has highlighted the importance of this challenge in a dramatic manner.

Lastly, new finance drives green, sustainable economic growth. In early 2014, the United Nations Environment Assembly (UNEA) launched a programme called Design of a Sustainable Financial System to discuss how digital finance can be used to support sustainable development. In 2016, advocated by China and reflecting global consensus, green finance was included for the first time in the G20 agenda. FinTech plays an important role in advancing green finance because it improves efficiency, safety, security and data authenticity while reducing costs. It also provides financial regulatory tools to enhance accuracy and efficiency; for example, in functions such as auditing or the fight against fraudulent environmental reporting.

As an integrated agricultural service organization focused on serving the rural population, CD Finance has created a risk-control model that combines scientific and technological approaches with an offline workforce to improve efficiency and reduce costs.

CD Finance has built an IT team of more than 100 people to support business development and innovate a risk-control model by capturing millions of data points on rural customers. It has collected

soft information by using big data and the power of a strong local team, thus developing an original risk-control model with the combination of online and offline approaches to review and audit the loan. Through this combination, CD Finance has achieved a very low portfolio-at-risk ratio compared to its industry peers.

Dongwen Liu
Chief Executive Officer, CD Finance

8.2 Enhanced user experience

FinTech will accelerate the transformation towards *deviceless* (not dependent on smartphones), *awareless* (anytime, anywhere) and *intelligent* (AI-driven) financial services. This scenario is already a reality in physical business settings, with IoT-based facial and voice payments and AI-based robo advisory services being two examples.

The wide adoption of open banking models will give rise to “ubiquitous financial services” or “banks everywhere” digital solutions. Banks increasingly open their application programming interfaces (APIs) and data to third parties so that they can provide scenario-based services (financial

services that are tailored to specific scenarios covering almost every aspect of a user’s daily life from shopping to travel) to customers, including payments, credit and insurance.

AI and biometrics applications will increase the safety and security of services and processes such as payments and “know your customer” (KYC). China’s expertise in these technologies supports its service providers. In 2019, the capital loss rate of the WeChat and Alipay payment services was reported at 0.00001% and 0.000006% respectively,^{38,39} much lower than the 0.2% rate of their international peers.

8.3 New competitive dynamics

In traditional financial services, technology was adopted mainly to ensure the security and availability of financial systems. Organizationally, technology would be embedded in the mid office, back office and cost control centre. In the future, a financial enterprise will first and foremost be a technology firm in which the *technology system* will play a leading role by combining AI, big data, blockchain, cloud computing, IoT and other technologies with the financial system to improve the efficiency of financial services while reducing their costs.

In the old world of financial services, centred on capital, funds used to be the most critical resource capital. In the new finance, *data is the most important asset* and at the centre of the new financial system. Services and processes such as credit, payments and risk control cannot flow without data. Data is already the most

fundamental means of production. China has both the opportunity and capacity to move faster than other countries to build a brand-new data system powering its new finance services.

In the future, more *open digital finance platforms* will emerge. These platforms will support financial institutions to reach their users and shift towards scenario-based, digital and intelligent service models. Open platforms will make technologies such as blockchain, cloud computing and AI available to financial institutions that cannot develop them themselves, supported by autonomous and secure tools and controls. Meanwhile, public-private coalitions will explore solutions for data sharing that also address privacy protection. It is this new form of openness and integration that will enable system stakeholders to unlock the value of data and pave the way to the future of finance.

8.4 Conclusion

The current period of transformation marks the most exciting chapter in the relatively short but innovation-rich history of China's modern financial system. The country's technological prowess has enabled a rapid transformation, and industry and system experts globally have been taking note. As the Chinese financial ecosystem is being reshaped and patterns of competition and collaboration change, all stakeholders –private and public – must

now ensure that China's evolving financial industry will continue to drive innovation while delivering on its core function of contributing to stable economic growth. Getting this balance right will matter for markets far beyond Greater China. China's FinTech firms will continue to expand their global footprints and their future innovations will benefit not only domestic users and businesses but also societies around the world.



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