

# From Alipay to the Digital Yuan: China's Fintech Revolution

By  
Monique Taylor

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Development Policy



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# Executive Summary

- Fintech in China manifests itself in ways that are qualitatively different from its development in western countries. The unique blend of a mobile-first consumer base, underdeveloped traditional banking services, regulatory freedom, vast economies of scale, the influence of Chinese tech giants, extensive government support, and the enthusiastic embrace of fintech by Chinese consumers, has allowed the fintech industry to grow rapidly and permeate society more extensively in China compared to the West.
- China's fintech growth, transformed by the launch of Alibaba's Alipay in 2004, benefitted from supportive government policies and pioneering companies. Tech giants like Alibaba integrated fintech services deeply into expansive digital ecosystems, ensuring widespread adoption. By 2018, China led in global fintech investment and adoption rates surpassing global averages.
- WeChat, boasting over 1.2 billion monthly users, is China's leading super-app, primarily for content, while Alipay, with its hundreds of millions of users, reigns in mobile payments. Together, they command 95 percent of China's mobile payment market. The pivotal turn in mobile payments came with WeChat's 'redpackets' – a digital take on the traditional Chinese *hongbao*. This feature exploded in popularity during the 2015 CCTV Spring Festival Gala, resulting in 200 million users linking bank accounts to WeChat. The fusion of these digital red packets with social media and e-commerce gamified spending, driving business-consumer engagement and attracting new customers.
- While Ant Group's Sesame Credit and Tencent's Tencent Credit



have developed their own internal social credit systems, they do not directly contribute user data to China's national Social Credit System (SCS). They use vast amounts of data on user behaviour and spending to gauge financial trustworthiness and creditworthiness. These systems, intertwined with fintech innovations, underscore the significant role big tech plays in shaping societal norms and behaviours in China.

- China has experienced dramatic improvements in financial inclusion, largely driven by fintech advancements and supportive government policies. Despite the challenge of a significant unbanked population a decade ago, particularly in rural areas, fintech initiatives by tech giants like Alibaba and Tencent have transformed access to financial services. Fintech's utilization of AI to evaluate creditworthiness has been instrumental in addressing challenges in rural China, where traditional credit data is scarce. Despite these advancements, a stark reminder of the risks of unchecked fintech growth was the rapid rise and collapse of China's peer-to-peer (P2P) lending market.
- China's central bank, the People's Bank of China (PBOC) initiated discussions about a central bank digital currency (CBDC), the digital yuan or e-CNY, as early as 2014. By 2020 pilot programs began in several cities, placing China at the forefront of CBDC development. However, its adoption has been slow; only 20 percent of China's populace have used it, as most prefer existing mobile payment apps like Alipay. If fully adopted, the digital yuan would offer the PBOC the capacity to monitor and trace all transactions, aiding in combatting financial crimes but also granting the Chinese Communist Party (CCP) unprecedented insight and control over the financial lives of individuals.
- From 2016, Beijing transitioned its approach to the fintech sector from promotion to regulation, triggered both by the collapse of the

P2P lending market and wider concerns over big tech's challenge to state financial control. For instance, the PBOC introduced stricter regulation on microlending platforms to ensure financial stability. A regulatory crackdown began in 2020 with the halt of Ant Group's US\$37-billion initial public offering (IPO), leading to significant restructuring in fintech operations to align more closely with state guidelines. By 2023, regulatory focus shifted to routine supervision, after the imposition of substantial fines on major players like Ant Group and Tencent.

# Introduction

While financial technology (fintech) is not a new phenomenon—the use of technology in financial services can be traced to 1967 when Barclays Bank installed the world’s first ATM in north London—in the AI-powered Internet age it is revolutionizing finance and, in the process, transforming many other socioeconomic sectors. Today fintech is strongly associated with ‘internet finance’, denoting internet-driven innovations in financial products and services birthed by disruptive technologies. Over the past decade, fintech development has accelerated due to the impact of emerging technologies such as AI, blockchain, cloud computing, 5G, and the metaverse. The sector is also preparing for the transformative impact of quantum computing, which holds promise in areas like portfolio optimisation, cryptography, risk analysis, fraud detection, and complex simulations. Innovations offered by fintech companies encompass a wide spectrum: from mobile payments, digital wallets, and online banking to smart contracts, alternative finance mechanisms like peer-to-peer (P2P) lending and crowdfunding, cryptocurrency exchanges, and algorithm-driven financial planning platforms known as robo-advisors. The rapid growth in fintech has been spurred by the ubiquity and expanding capabilities of smartphones, coupled with the efficient, affordable, and scalable infrastructure created by AI, cloud computing, and other state-of-the-art technologies.

China has the world’s largest fintech market and stands at the forefront of the fintech revolution in terms of growth and innovation. Furthermore, fintech in China manifests itself in ways that are qualitatively different from its development in most western countries. There are a variety of reasons as to why fintech has grown more rapidly, is more innovative and transformative, and has permeated society more extensively

in China compared with the West. Given China's underdeveloped traditional banking services and lack of legacy systems that are slow to change, fintech was readily able to fill a void in offering financial services. At the same time, Chinese fintech companies have, up until the late 2010s, enjoyed a high degree of regulatory freedom. In addition, wire-based forms of communication and connectivity were relatively underdeveloped, allowing China to go straight to mobile, especially since traditional infrastructure development would require more substantial investments to service a vast population relative to the cheaper, more efficient, and scalable mobile technology. Much of the Chinese population also skipped prohibitively expensive desktop computers, instead purchasing inexpensive smartphones. As a result, along with extensive government investment in digital infrastructure and relatively high rates of unbanked Chinese citizens (36 percent of the population in 2011), China fostered a mobile-first culture and consumer base that has enthusiastically embraced fintech, mainly due to its convenience, accessibility, and alignment with a mobile-centric and app-driven lifestyle. The size of China's population, coupled with rapid urbanization, created an enormous and scalable market for fintech products and services in what is fast becoming a cashless society.

Chinese tech companies, notably the BAT (Baidu, Alibaba, and Tencent), have also played pivotal roles in shaping the fintech landscape in China. Through the development of their financial arms, Alibaba's Ant Group, Tencent Fintech, and Baidu Financial Services Group, and integration of fintech services with the e-commerce and social media platforms these companies provide, they have enabled fintech to become thoroughly blended into the everyday life of the Chinese consumer, transforming the way people manage their finances, access financial services, and make purchasing decisions. China's fintech landscape is dynamic and diverse consisting of fintech companies, established financial institutions that have embraced fintech, and tech giants with fintech arms. Fintech companies have driven disruptive innovation in financial

products and services and introduced new operational models, which then led to transformations within the traditional banking system, as Alibaba founder Jack Ma quipped in 2008: “If the banks don’t change, we will change the banks” (Ma quoted in Marsans, 2021). The large tech companies dominate some of the most prominent fintech services, notably mobile payments. For example, as of 2021 Alibaba’s Alipay and Tencent’s WeChat Pay together accounted for close to 95 percent of the mobile payment market in China.

This paper provides a broad and critical overview of the impact fintech is having on Chinese society and everyday life from the ubiquity of mobile payments and launch of red packets, through to super apps and social credit scoring; financial inclusion, especially in rural and under-served parts of China; the integration of fintech with e-commerce and social media; and the rollout of a digital yuan. Such an overview of the fintech ecosystem in China is lacking in the extant literature, with most papers focusing on specific fintech developments in isolation from each other. This paper also explores the opportunities and challenges for Chinese consumers in navigating an ever-expanding universe of innovative and, up until recently, poorly regulated, fintech products and services. The final part briefly examines the regulatory clampdown on Chinese fintech, which began in 2016 and intensified from 2020 onwards. The introduction of stringent fintech regulations provide greater consumer protection and, more importantly from the state’s perspective, reduce the risks posed by the fintech sector to financial stability.

Many of these new regulations were introduced by the Chinese government partly to protect Chinese consumers’ privacy, data security, and rights in the digital sphere, but also to reassert its control over the monetary and financial system. While fintech has brought many benefits such as efficiency, convenience, and greater access to financial services for Chinese consumers, this has largely occurred within a regulatory void. China’s freewheeling, albeit ‘Wild West’, fintech

environment gave rise to many systemic risks that became apparent in recent years. For instance, in alternative finance and specifically P2P lending there was a distinct trend of mismanagement and predatory lending practices, with some platforms operating as Ponzi schemes. Hence, the regulatory and policy environment in China has been catching up with the fast-moving fintech sphere, in ways that intersect with the everyday experiences of Chinese consumers.

# China's Fintech Landscape

The global fintech industry as we know it today can be traced to the late 1990s, as early pioneers introduced services such as electronic banking, online stock trading, and electronic payments systems, notably PayPal. Throughout the 2000s, the internet began playing a crucial role in financial businesses, catalysing new fintech products and services in the areas of payments, loans, and insurance. Following the global financial crisis (GFC) in 2008 alternative finance and cryptocurrencies emerged, and from 2015 onwards fintech sector development accelerated and flourished with traditional financial institutions also adapting and embracing fintech. During this most recent stage, fintech businesses began making comprehensive use of disruptive technologies such as AI, big data, blockchain, cloud computing, the Internet of Things (IoT), and security technology (WEF, 2021: 12).

China's fintech industry broadly maps onto this general evolution and stages of development in global fintech. The fintech story in China began in earnest, by virtue of its transformative impact on the consumer landscape, in 2004 when Alibaba launched its game-changing online payment system Alipay.<sup>1</sup> The growth of fintech in China has been driven by a combination of government policy and the initiatives of fintech companies. Recognizing the potential of fintech to improve financial inclusion, enhance innovation, and generate economic

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<sup>1</sup> Another entrant with ambitions in the e-commerce and fintech space was Tencent's instant messaging software, QQ2000. However, despite its fintech aspirations summed up in its claim "e-commerce starts here", QQ2000 did not actually offer fintech services, and so is not considered a fintech platform. There were earlier forays into fintech in China such as China Merchants Bank's 'All-in-One Net' launched in the late 1990s, which allowed online banking and transactions and can be considered a precursor in the fintech domain but one that did not have a transformative impact like Alipay.

growth, the Chinese government actively promoted the development of fintech through policies such as the *Internet Plus* strategy, which aims to integrate internet technology with traditional industries, and the establishment of fintech-focused zones such as Xiong'an New Area (State Council, 2015; CBN, 2021). The Internet Plus strategy, launched in 2015, mentions 'internet + finance', encouraging financial industries to apply internet technology to their products and services for enhanced efficiency, accessibility, and competitiveness (State Council, 2015). The People's Bank of China (PBOC) has also released multiple fintech development plans and initiatives to further advance China's fintech sector including the *Fintech Development Plan (2019-2021)* and *Fintech Development Plan (2022-2025)* (PBOC, 2022; PBOC, 2019). The fintech sector's rapid growth, while benefitting from a permissive and supportive policy environment throughout the 2010s, has been driven largely by the entrepreneurship and innovation of China's fintech companies.

Both fintech companies and giant tech companies like Alibaba and its fintech arm Ant Group have played instrumental and complementary roles in shaping China's fintech environment. Fintech companies have been at the forefront of innovation and disruption, introducing novel business models, products, and services that respond to consumer needs. They have niche specializations in areas such as P2P lending, digital payments, new insurance products, robo-advisory in areas such as wealth management, and blockchain-based solutions, and have injected competition into the finance sector, spurring innovation and encouraging traditional financial institutions to adapt. China's tech giants have leveraged their extensive user bases and vast digital ecosystems, which include e-commerce, social media, and messaging apps, to provide fintech services seamlessly to consumers. They are chiefly responsible for the rapid and widespread adoption of many fintech solutions, especially in mobile payments. In addition, big tech in China invests in fintech startups and collaborates with traditional financial institutions, further bolstering the fintech ecosystem.



To say that China's fintech industry flourished during the 2010s would be an understatement. China is currently the global leader in fintech; in 2018 the value of total investment in China's fintech industry amounted to US\$25.5 billion, accounting for close to 50 percent of the global total (Accenture, 2018). Fintech adoption in China is the highest in the world (equal with India), standing at 87 percent in 2019, compared with the global average of 64 percent (Ernst and Young, 2019: 7). Just as China skipped desktop computers and went straight to mobile, it also leapfrogged credit cards and went straight to mobile payment systems. China is also a world leader in mobile payments, accounting for nearly half of the world's global mobile payment transactions—in 2018, China's mobile payment transaction value reached US\$41 trillion—with QR codes the commonly used method for mobile payment users (Deloitte, 2019).<sup>2</sup> The figures for digital banking are also impressive: As of 2020, the number of mobile banking users in China reached 1.16 billion, representing a penetration rate of over 80 percent (CIW, 2020). Uptake of fintech services, notably mobile payments, online banking, and fintech loans and insurance further expanded during the COVID-19 pandemic due to the need to minimize person-to-person contact and stay home. There remains a significant rural-urban divide in fintech penetration: In 2022, internet penetration in urban areas stood at 82.9 percent and in rural areas it was 58.8 percent (CNNIC, 2022). This imbalance is declining over time since it is being addressed by policymakers and fintech companies striving to improve internet infrastructure in rural areas, promote financial literacy, and develop fintech solutions tailored to low-income and rural populations such as microfinance and agriculture-focused services.

As these facts and figure illustrate, fintech has become an integral part of everyday life in China. Consumers in China are offered an ever-increasing array of financial products and services, often provided

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<sup>2</sup> The quick response (QR) code payment system was rolled out by Alipay and WeChat Pay from 2017.

through super-apps—integrated one-stop shops providing seamless delivery to users. Hence the efficiency, convenience, improved access to capital, and the personalization and customization delivered by fintech services provide clear benefits for consumers. Recent studies even indicate a positive correlation between mobile payment usage and subjective well-being, especially among women and those residing in rural areas, suggesting that individuals who pay with mobile devices tend to be happier than their cash-paying counterparts (Ma et al., 2023; Zheng and Ma, 2022). Despite these advantages, fintech’s pervasive influence in China is not without its challenges and concerns, which will also be explored in this paper.

# Rise of the Super-Apps

Super-applications (super-apps) integrate numerous services and functions, including many fintech offerings, into a single platform. They have greatly enabled the growth and development of fintech in China, notably in the areas of mobile payments and big tech credit (credit and lending services). The wide range of services offered by such apps include mobile payments, digital wallets, online banking, social networking, messaging, e-commerce, health and insurance services, video and live-streaming, gaming, ride-hailing, food delivery, hotel and travel bookings, and event ticket purchases (movie, theatre, sporting events, etc.). Within each super-app are mini-programs or mini-apps (first pioneered by Tencent's WeChat in 2017); these are sub-applications that can be accessed on-demand by using QR codes and other types of links to perform a variety of functions, for example, food ordering. They enable users to access non-super-app services without leaving the platform; there is no need to download these other apps and payments occur via the super-app's wallet. Users link their bank accounts, credit cards, and other payment methods to their digital wallets, which streamlines money management and provides the individual user with a comprehensive view of their financial activities. The most popular super-apps in China include WeChat, Alipay, Meituan-Dianping, and Baidu. The dominance of these Chinese super-apps has been partly fostered by a lack of alternatives as most major foreign apps are banned in China, including Facebook, Google search, YouTube, Whatsapp, Telegram, Twitter, Netflix, and Instagram. However, these super-apps are not just alternatives; they are pioneering platforms tailored to the specific needs and preferences of the Chinese populace.

### *Mobile payments and red packets*

WeChat is by far the largest (according to user base) super-app, with over 1.2 billion active monthly users, while Alipay has hundreds of millions active users. WeChat has a near monopoly in content consumption giving it the edge in terms of overall influence and user engagement in China, whereas Alipay dominates in mobile payments and other fintech services. Both Alipay and WeChat compete in several areas including mobile payments and together account for 90-95 percent of the mobile payment market share (Alipay accounts for 55 percent and WeChat Pay for close to 40 percent) in China, creating a duopoly. While the digital wallets of Chinese super-apps are typically linked to a user's bank account, there are solutions for unbanked individuals. For example, WeChat Pay users can add credit to their digital wallets by purchasing prepaid cards at kiosks with cash. Super-apps have been instrumental in facilitating the transition to mobile payments in China, which took off in the mid-2010s. Significantly, the concept of mobile payments went mainstream due to its successful integration with a popular Chinese tradition.

A WeChat innovation called 'red packets' rapidly converted Chinese citizens to mobile payments, significantly advancing fintech in China. In 2014, just before Chinese New Year, WeChat introduced the red packet feature—a digital red envelope—based on the Chinese tradition of *hongbao*, exchanging red envelopes filled with cash during festive holidays or on special occasions such as weddings and birthdays. This application allows users the ability to exchange monetary gifts in the form of virtual credits to other app users. These credits can then be used for services such as online shopping or taxi rides or alternatively be transferred to a bank account. Each red packet is capped at 200 RMB (US\$28) to help prevent abuse or fraudulent activity and encourage users to distribute red packets evenly among recipients. Red packets gained immense popularity during the 2015 China Central Television (CCTV) Spring Festival Gala (the annual variety show to celebrate Chinese New Year) (Borak and Shen, 2021). Digital red packets,

ranging in value from 1 RMB to 1000s RMB, were randomly sent to audience members during the show, and viewers were asked to shake their phones at their television screen to receive them via WeChat. As a result of this single showcase of red packets, 200 million WeChat users linked their bank accounts with the app. Hence, the role of CCTV was pivotal in the almost instant widespread uptake of WeChat Pay.

Red packets continue to be wildly popular; over 5 billion red packets were sent via WeChat in 2022, with the total being higher since other companies now offer their own versions of red packets for example, Alipay's 'lucky money'. WeChat has gamified the sending of red packets, making it an addictive activity and form of entertainment for many Chinese users, thus increasing engagement (Ji, 2017: 73). For example, it injected competition into the process of receiving red packets; when someone sends a red packet in a group chat the recipients can compete to grab the packet by tapping on it as quickly as possible. WeChat also introduced rankings to showcase who sent and received the highest number of red packets during festive periods and would encourage users to share their red packet experiences on social media platforms such as WeChat Moments in exchange for rewards and discounts.

Digital red packets have also been adopted by online businesses, which hand them out to customers either on their websites or through messaging apps such as WeChat and e-commerce platforms such as Taobao. These businesses have integrated the sending of red packets with social media, for instance through 'social' promotions whereby companies dole out red packets rewards based on customer loyalty and the value of an individual's social network—here the value of the red packet not only depends on the customer's status with the company but also the size of their online social network. Users are incentivized to recruit new customers by sending out referral links on the app to their friends who are not existing users, as this increases their chances of obtaining valuable red packets. Lin (2022) concludes that

“By making digital red packets ‘social’, companies turn incentivizing online purchases into a red packet game. It’s a win-win situation for both customers and the company. The former gets to participate in a fun and interesting experience, and the latter benefits from exposure to a new customer base as well as potentially increased business from existing clients”.

### *Social credit scoring*

Although super-apps currently do not contribute (by sharing their user data) to China’s national social credit system (SCS)—a decentralized framework used to rate the trustworthiness and integrity of individuals, corporations, and government entities across China<sup>1</sup>—they have established their own internal social credit systems. For instance, Ant Group’s Sesame Credit and Tencent’s Tencent Credit have been integrated into their platforms. Due to its ubiquity, Sesame Credit is often conflated with the national SCS. Moreover, given its alignment with SCS principles, Sesame Credit has “... a strong habituation and training effect, contributing to the overall vision of a ‘trust-based’ society, in which everybody willingly follows the government’s rules” (Drinhausen and Brussee, 2021). High Sesame Credit scores reward individuals with perks and privileges such as e-commerce benefits, enhanced access to financial services, exclusive travel deals, and advantages in securing rental accommodation. In contrast, those with low scores might face restrictions like challenges in accessing loans. Within these super-app SCS frameworks, financial creditworthiness is crucial.<sup>2</sup> Therefore, fintech innovations, especially in the area of big tech credit, are essential. These systems leverage big data—drawing from

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1 The SCS involves collecting and analyzing data on individuals’ behaviors, financial activities, and social interactions. By integrating data from various sources, it generates a score reflecting each individual’s creditworthiness and trustworthiness.

2 While China had credit ratings systems for individuals before the SCS, these systems were not as comprehensive, leaving many individuals without formal credit histories. The development of the SCS and other alternative credit scoring models such as Ant Group’s Sesame Credit emerged, in part, as a response to this gap.

extensive user behaviour, spending patterns, and digital footprints—and machine learning models to assess creditworthiness, gauge default risk, and predict individuals' repayment capabilities.

There are a variety of perspectives on social credit systems in China ranging from such schemes constituting projects in social engineering and nefarious tools for political and social control, through to a means to improve social trust, governance, and consumer protection. Regardless of these perspectives, there is no denying that they have real impacts on Chinese citizens, influencing their decision-making and behavior. This is the case whether implemented by governments at national, regional, and municipal levels, or by super-apps, given the latter's integration with so many aspects of daily life and ability to affect an individual's access to many different services. The official rationale for a SCS, implemented at any level, is that it is a remedy for the deficit of trust in society (Knight, 2020). This sentiment appears to resonate within Chinese society: A survey of 700 individuals conducted by *Southern Metropolis Daily*, a Guangzhou-based newspaper, found that 80 percent were in support of a national SCS because "... 'it helps to build a society of trust' and 'provides a safer and more reliable environment for business'" (Ruan 2018). However, since social credit systems are also punitive, serve to "enforce repressive and exclusionary norms", and are open to abuse, potentially by political actors when it comes to the national SCS, there are also distinct downsides that should be considered (Drinhausen and Brussee, 2021).

# Financial Inclusion

Financial inclusion refers to the availability, accessibility, and affordability of essential financial products and services, products, and infrastructure to meet the needs (transactions, payments, savings, and insurance) of everyone in society. The term also includes financial literacy—empowering individuals to manage their money effectively and safeguard against financial risks by acquiring sufficient knowledge and understanding of financial concepts. Financial inclusion is high on the political agenda at the global level, with 1.4 billion unbanked individuals and countless more underbanked (lacking access to credit and loans) in 2022 and is considered crucial in alleviating poverty (World Bank, 2022: 3; Demirguc-Kunt et al., 2017: 2). Although it is a phenomenon that is particularly acute in many developing countries, financial inclusion could also be improved in some developed countries, for example, 6 percent of Americans are unbanked and a further 13 percent underbanked in 2021 (Federal Reserve, 2022). Significant progress on financial inclusion has occurred over the past decade, especially in China and India, with more than one billion people gaining access to bank accounts during this period (World Bank, 2022). Fintech is now recognized as a transformative tool in this area, as the World Bank suggests: ‘Technological innovations can lower the cost and inconvenience of accessing financial services. The last decade has been marked by a rapid growth in new technologies ... [which] allow for a significant reduction in transaction costs, leading to greater financial inclusion’ (World Bank, 2014: 8). The case of China is illustrative of the role fintech has played in improving financial inclusion.

As of 2021, 11 percent of the Chinese population (130 million) was still unbanked, many of whom reside in rural areas characterized by geographic remoteness, limited infrastructure, and lower income levels (World Bank,



2022: 33 & 175). In addition, internal migrant workers experience high levels of financial exclusion due to the *hukou* system (household registration system) whereby they are classified as temporary residents in their destination city, which limits their access to banking services. Although it has the world's largest unbanked population due to the total population size, China has relatively high rates of account ownership compared to other developing countries. Furthermore, the situation in China has greatly improved in recent years; according to the World Bank, 36 percent of the Chinese population in 2011 lacked bank accounts, hence there has been a close to 70 percent reduction in the unbanked population within a span of around 10 years. This significant improvement can be attributed both to the growth of fintech, complemented by proactive government policy in China, which made financial inclusion a priority. For example, in 2013 the 18th CCP Central Committee called for 'enhancing financial inclusion', and in 2015 the State Council of China issued its first national plan to improve financial inclusion, *Plan for Advancing the Development of Financial Inclusion (2016-2020)* (State Council, 2015). This strategic document underscores the imperative to enhance the accessibility and quality of financial services in China, spotlighting fintech's pivotal role. It promotes the adoption of leading-edge fintech services by financial institutions, and the use of the internet as the main tool to increase accessibility and lower the cost of financial services.

In addition to mobile payments and online banking, which facilitate easier access to financial services, fintech companies have introduced online lending and alternative credit options such as P2P lending and microfinance, which target the needs of low-income individuals and small businesses. For example, Alibaba's MYbank and Tencent's WeBank provide small loans to millions of small firms each year, more than 80 percent of which have no credit history (Huang and Pontell, 2020: 5). Online lending platforms revolutionize the lending process by eliminating traditional intermediaries, namely banks, and directly connecting borrowers with lenders. P2P lending platforms, for instance, used big data and AI algorithms to assess creditworthiness, matching

borrowers' financial needs with individual lenders seeking investment opportunities. Microfinance services offer small loans, savings, and insurance to low-income individuals and firms that typically lack access to traditional banking services. Traditional credit scoring models are often not well-suited for evaluating the credit risk of individuals and businesses with limited credit histories or unconventional income sources. To address this, online lending platforms harness big data analytics and AI algorithms. By tapping into diverse data sources like e-commerce transaction records and digital footprints, they gain a clearer picture of borrowers' financial situations.

Encouraged by the adoption of global financial inclusion discourse in government documents and speeches, along with massive state investment in extending China's internet infrastructure to rural regions, both fintech companies and the tech giants have made inroads into China's rural financial market (Kong and Loubere, 2021). Indeed, strategies for rural development have been pivotal to the evolution of fintech in China. Tech companies such as JD and Alibaba have not only embraced these strategies but have also deliberately aligned their rural fintech initiatives with broader global development discourse (Kong and Loubere, 2021: 1749). Alibaba, with its extensive rural market network via Taobao (its e-commerce platform, which ranks as China's largest and the world's second largest), was particularly well-positioned to benefit from the expansion of rural digital finance. Supporting the central government's vision, Alibaba advanced e-commerce in rural areas through its 'village Taobao program' (*cuntao jihua*), launched in 2014 (Kong and Loubere, 2021: 1747).

By the end of 2018, 40,000 villages across every province of China were connected to e-commerce through the program, "... representing a vast logistical ecosystem across rural China that can supply agricultural produce to rural markets" (Kong and Loubere, 2021: 1747). Taobao was launched in 2003, and a year later China's first fintech service, Alipay, was introduced to as a "solution to the lack of trust between sellers

and buyers on Taobao” (Kong and Loubere, 2021: 1747). As fintech adoption steadily grew in rural areas, financial literacy improved. This improvement largely occurred through interaction with user friendly apps that offer financial guidelines, virtual financial advisors, and tailored financial planning. An exemplar of rural fintech solutions is MYbank’s popular Wangnong Loan, introduced in 2015, specifically catering to farmers and rural consumers. These loans do not require collateral, rather Alibaba employs a mix of big data and offline data, such as local references and recommendations, for risk assessment. This approach allows Alibaba to harness “... data emerging from interpersonal relations at the local level that have thus far been difficult to collect or quantify in any systematic way” (Kong and Loubere, 2021: 1748).

Fintech’s use of big data and AI to assess creditworthiness is the solution to the most significant barriers to extending commercial financial services to rural areas in China: Borrowers who lack collateral and an environment where credit data is scarce or difficult to access. This has had transformative impacts on financial inclusivity, efficiency, risk mitigation, and scalability. While there have been many positive impacts in terms of advancing financial inclusion, the results of fintech’s rural development strategy in China have been uneven. Regional disparities persist; fintech has succeeded more in relatively developed and economically dynamic rural regions, but the more remote and underdeveloped areas still lag, and reaching the poorest segments of society remains a challenge. There are also broader anxieties surrounding ‘surveillance capitalism’, coined by Zuboff, which refers to “... the unilateral claiming of private human experience as free raw material for translation into behavioural data” (quoted in Laidler, 2019; Zuboff, 2019). Objections to this range from threats to privacy and lack of consent to the commodification/exploitation of the human experience. There are also concerns about potential for manipulation and behavioral control, algorithmic biases leading to discriminatory outcomes, and the concentration of power among those entities (corporations and government) that possess and harvest data.

An area of financial inclusion that serves as a cautionary tale about some of the risks posed by fintech, particularly in the absence of regulation, is P2P lending. P2P lending in China experienced rapid growth during the early to mid-2010s, again becoming a popular source of funding for borrowers who had difficulty accessing bank loans. While P2P can enhance financial inclusion, the lack of regulatory oversight and consumer protection within this sector in China led to high rates of loan defaults and significant loss of investor funds (Tsai, 2017). Numerous P2P lending platforms had emerged, many of which turned out to be Ponzi schemes and other fraudulent operations, while others lacked risk management measures and sufficient collateral to back the loans that were issued, leaving them vulnerable to borrower defaults. As the risks and fraudulent practices became apparent, panic ensued among investors, leading to mass withdrawals and causing a run on many P2P lending platforms. The fallout was substantial: Between 2016 and 2019, the P2P lending market in China collapsed, with the number of operating platforms falling from a peak of 3,464 in 2015 to just 343 in 2019. This represented a 90 percent reduction that resulted in billions of dollars lost by millions of investors (Huang and Pontell, 2023).

This P2P lending market crash caused “widespread psychological and social problems, including mental stress and disruptions of family plans” along with a documented case of suicide (Huang and Pontell, 2023). In 2016, the Chinese government attempted to introduce a range of regulations to bring greater stability, transparency, and oversight to the P2P lending industry including, among other things, licensing and registration requirements, capital requirements, investor protections, and limits on lending. However, they faced implementation challenges, particularly at the local government level, causing the market to continue its decline. On November 27, 2020, the China Banking and Insurance Regulatory Commission (CBIRC) ‘announced that the number of [P2P] platforms had fallen to zero’ (Huang, 2022: 2; Chorzempa and Huang, 2022: 283)).

# Digital Yuan

As early as 2014, China's central bank, the PBOC (a non-independent central bank), began discussing the establishment of a central bank digital currency (CBDC)—a digital version of the legacy yuan, which holds legal tender status (Fullerton and Morgan 2022: 10). The motivation for a digital yuan or e-CNY is to decrease reliance on the US dollar, internationalize China's currency, foster financial inclusion, and give the PBOC greater control over money supply and circulation. Unlike cryptocurrencies such as Bitcoin and Ethereum, which operate on blockchains—a type of decentralized peer-to-peer distributed ledger technology—the digital yuan employs cryptographic techniques but remains centralized, under the full control of the PBOC. Digital yuan pilot programs began in 2020 across several cities including Shenzhen, Suzhou, Xiong'an, and Chengdu, putting China ahead of other major economies such as Japan, which began its pilot program for developing a digital yen in 2023 (Reuters, 2023; Fullerton and Morgan 2022: 10).

Nonetheless, the development of the digital yuan has been slow; by 2022 the pilot program had expanded to 23 cities, but still had not been officially launched or rolled out nationally. The main obstacle to its widespread use (only 20 percent of the population have used it) is that China's population is accustomed to established mobile payments apps such as Alipay and see no reason to abandon them in favor of the digital yuan (Kawate and Maruyama, 2022). The digital yuan might have some advantages over apps like Alipay, including that retailers do not pay fees on digital yuan payments, and transactions can be made without an internet connection using 'near-field communication terminals', but the public is not yet convinced to make the switch (Kawate and Maruyama, 2022). Alibaba's MYBank and Tencent's WeBank are working with the PBOC to distribute the digital yuan; their

services are available through the PBOC's digital yuan app hence, the relationship between the tech companies and the PBOC is characterized by both competition and collaboration.

Despite the slow rollout of the digital yuan, CBDCs like the digital yuan are likely to be an important part of the future of money. Based on China's pilot programs and information provided by the PBOC on the design of the digital yuan, some speculations on its implications and impacts on everyday life can be made. If it were to completely replace cash, the most significant effect of the digital yuan would derive from the capability of the PBOC to monitor, trace, block, and revert all transactions: "Such a capacity would make financial crimes, such as money laundering, tax evasion, financing terrorism, and the purchasing of illicit goods, far easier to identify and prosecute" (Fullerton and Morgan, 2022: 16). Tax evasion and corruption are pressing challenges in China and the digital yuan would give the PBOC a clear record of transactions, which would make identifying instances of theft and tax evasion much easier (Fullerton and Morgan, 2022: 16). However, the digital yuan would also grant the Chinese Communist Party (CCP) direct access and control over the financial lives of individuals and, as such, it could also become an important part of its authoritarian toolkit. For example, when it comes to political dissidents and human rights activists, the PBOC, which is not an independent central bank and is required to enact the policies of the CCP, could suspend their digital wallets (Keram, 2021).

One of the PBOC's stated motivations for developing the digital yuan is to advance financial inclusion. The PBOC claims that "An e-CNY system will make financial services more accessible, providing fiat money for a large population in various scenarios. Those without bank accounts can enjoy basic financial services provided via e-CNY wallet, and foreign residents temporarily travelling in the PRC can open an e-CNY wallet to meet daily payment needs without opening a domestic bank account" (PBOC, 2021). However, as Fullerton and Morgan (2022:

20) point out, 86 percent of smartphone users already utilize mobile payment platforms such as Alipay, so the existence of the digital yuan is unlikely to have a significant impact on financial inclusion. The benefits of a digital yuan for the PBOC and party-state more broadly in terms of the crime prevention (including tax evasion), control of the money supply, and societal control it permits are significant, hence the PBOC will continue to develop and implement this project. In May 2023, payments to public sector workers in Changshu began to be paid fully in digital yuan, representing one of the biggest steps taken to date to popularize the currency (He, 2023). Over the next decade, it is likely that the digital yuan will gain traction given the government's concerted efforts and determination to promote its usage.

As this overview of the development in fintech in China reveals, fintech innovations are increasingly woven into the fabric of the everyday lives of Chinese citizens; they have not only transformed how people save and spend their money, but also have an impact on cultural practices and social interactions. The impacts on society are becoming more transformative over time as disruptive technologies, notably AI, produce ever more advanced financial products and services. Just as AI plays a fundamental role in fintech as a tool for data processing, pattern recognition, and risk management, its capacity to process vast amounts of data and generate narratives based on this, can also be used for studying and illustrating the way that fintech has become integrated with people's daily routines and societal norms. Box 1 presents an anecdotal exploration of the impact of fintech on everyday life in China, which was entirely generated by OpenAI's ChatGPT-4. This AI-generated anecdote about fintech also showcases a growing area of AI application within fintech—using data to tell a story and identify patterns that are then used for various purposes including risk assessment and predicting market trends. AI-generated narratives are also increasingly used in areas of fintech such as robo-advisory to communicate complex financial advice in a personalized, understandable, engaging, and relatable manner.

**Box 1:****An anecdote on the impact of fintech on everyday life in China created by OpenAI's ChatGPT-4**

Everyday life in Beijing had changed subtly but significantly since the widespread adoption of fintech products and services. Li Wei, a young software engineer, found his life more streamlined than ever before.

Wei's day began with a brisk jog around his apartment complex. As he passed by his favorite bakery, he decided to buy a red bean bun for breakfast. With a few taps on his super-app, which integrated payment, social, and retail services, he quickly paid for his bun. The days of carrying physical cash or cards on his morning run were long gone.

After his jog and breakfast, Wei headed to his workplace, hopping on the bus. Instead of fumbling with loose change or a separate travel card, he used his super-app to scan the QR code for public transportation and the fare was instantly paid.

During his lunch break, he visited a local restaurant that had recently initiated a red packet lottery event for customers. As Wei paid for his meal through his super-app, the cashier excitedly told him he had won a red packet. He opened the envelope on his app and smiled seeing that he too had won a small sum of money. He decided to use his winnings to buy dessert from a nearby street vendor.



In the evening, Wei's mother, who lived in a remote village, called him to say she needed money for groceries. Traditional bank transfers were often slow, and his mother had no easy access to a bank or ATM in her village. However, through his super-app, Wei was able to transfer the funds to her instantly. His mother could then use the same app to pay for her groceries at the local market, which had also digital payments.

Before going to bed, Wei reflected on his day. From his morning bun to his mother's groceries, fintech solutions had made financial transactions faster, easier, and more integrated into his daily activities. Recently, he had been hearing more about the arrival of the digital yuan. The prospect both intrigued and concerned him. The convenience was enticing, of course. Imagine, a currency as fluid and quick as the rest of his apps. Yet, he also wondered about the future. If every transaction, big or small, left a digital trail, what would that mean for his personal data privacy? Would the ease of digital yuan come at the cost of his anonymity?

Wei then tucked away his phone and switched off the lights. As he drifted to sleep, his last thought was a quiet acknowledgement of the shifting world.

# Reining in Fintech

From 2016 onwards, Beijing changed its approach to the fintech industry from 'promotion' to 'regulation', a shift that was partly driven by problems in the P2P lending market (Chorzempa and Huang, 2022: 280). The Chinese government was motivated to regulate this sector primarily due to the challenge posed by big tech and fintech businesses to the state's ability to ensure financial stability and control resource allocation in the economy (Taylor, 2022a: 98). Most of the loans extended through fintech platforms were either underwritten by traditional financial institutions or securitized: "Ant's management likens China's banks to the arteries of the economy, and Ant as the capillaries that send funds to its extremities—small businesses and individuals" (Tudor-Ackroyd, 2020). This phenomenon improves financial inclusion, but also exposes the traditional banking system in China to the credit risk taken on by the fintech industry, which essentially operates as a shadow banking sector. With reference to big tech microlending, the CBIRC commented: "There exist problems like unsound corporate management, profiteering off data monopoly, encouraging over-borrowing and overleveraging" (Yang, 2021).

In 2020, China's financial regulators, led by the PBOC, clamped down on microlending platforms to address the risks to financial stability and consumer protection posed by their lending practices, and rein in rising debt levels in the economy. The regulatory measures that were introduced subject online lending to a similar regulatory framework as that for traditional financial institutions and in doing so, reduce both the profits of microlending platforms and the flow of funds to small businesses. According to Jack Ma, Beijing's focus on 'preventing systemic financial risks' was misguided: "Innovation always comes with a risk. There will be no risk-free innovation ... the biggest risk

is that you try to minimise the risk to zero," he said (Ma quoted in Tudor-Ackroyd, 2020). The more regulated microlending environment is a safer one for consumers and less risky for overall financial stability in China, but at the same time may have made it more challenging for certain borrowers to access credit.

Beijing's efforts to regulate the fintech sector culminated in a crackdown in November 2020 when Chinese regulators put a stop to Ant Group's US\$37 billion initial public offering (IPO) (the world's largest). The comments by Jack Ma (quoted above), where he criticized Chinese regulators for stifling innovation and being overly cautious, certainly drew their scrutiny and ire however, the crackdown was ultimately part of a broader effort to bring fintech companies more in line with state-controlled banks and strengthen state oversight and supervision of their financial activities, especially consumer lending operations (Taylor, 2022b). The new rules on microlending were released at that time, and Ant Group was subjected to a 'rectification' plan to restructure its business to comply with new regulations and establish a financial holding company overseen by the PBOC, giving the latter direct access to the largest consumer database in China. Other big tech companies such as Tencent and Meituan have also encountered regulatory challenges and investigations. This regulatory crackdown on fintech appeared to be drawing to a close in 2023 with the following statement issued by the PBOC:

Currently, most of the prominent problems in the financial business of platform enterprises have been corrected. The focus of the financial regulators has shifted from collectively rectifying the fintech businesses of tech platforms to business-as-usual supervision (quoted in Liao, 2023).

The years-long regulatory overhaul also saw hefty fines imposed by the PBOC on Ant Group (US\$1 billion) for "... a range of illegal activities, including those concerning corporate governance, consumer

protection, banking and insurance, payments and settlement, anti-money laundering practices and fund sales” and Tencent (US\$410 million) for “... past regulatory breaches in relation to the provision of payment services in the mainland of China” (Liao, 2023).

Beijing has also been decisive in its regulation of cryptocurrency, banning initial coin offerings (ICOs), prohibiting mainland-based cryptocurrency exchanges from trading, banning crypto mining, and instructing banks and other financial institutions not to offer their clients any services involving cryptocurrencies (Reuters, 2021; BBC, 2017). This hardline stance towards cryptocurrencies is consistent with other regulatory efforts in fintech: “Cryptocurrencies were seen as working against government objectives by allowing Chinese to access speculative assets that also enabled them to sidestep capital controls and other methods of supervision, and they did not pose a plausible benefit to the real economy in the short term. In addition, the PBOC feared that widespread use of Bitcoin would erode China’s monetary sovereignty and monetary policy independence” (Chorzempa and Huang, 2022: 284). The creation of the digital yuan and prohibiting cryptocurrency transactions essentially ‘channels citizens away’ from private financial service providers, and into a state-controlled monetary system where all transactions and economic activity are recorded and can be accessed by the government (Qin and Livni, 2021).

## Conclusion

China's fintech industry has had a transformative impact on Chinese society over the past two decades. Largely due to China's stage of development, underdeveloped traditional banking services, and lack of regulation, fintech was able to flourish, innovate, and disrupt in ways unseen in the West. This has had both positive and negative effects on the daily lives of individuals in China, although most would probably say that they appreciate the accessibility, efficiency, and convenience of fintech, especially when in the context of super-apps that weave fintech into a plethora of services, notably e-commerce and social media. Mobile payments remain the most popular fintech service, creating an almost cashless society, one that is ripe for transition to the digital yuan. Although adoption of the latter has been slow to date and competes with mobile payment platforms such as Alipay, Beijing is determined that this will be the future of money in China, where the digital yuan may completely replace cash at some point. Online lending and microlending are important fintech services that have helped to improve financial inclusion but have also presented challenges to the stability of the financial system and, in the case of the P2P lending market collapse, caused damage to the economic well-being of both lenders and borrowers.

By the mid to late 2010s, it had become obvious that fintech innovation and disruption needed to be moderated with regulation. This realization led to the introduction of various measures, culminating in a crackdown on the tech giants, which began in 2020. All in all, the 'rectification' of China's fintech sector transformed it from a freewheeling realm of easy credit and experimental products and services into a more controlled environment with enhanced consumer protection. This shift aligns with a broader trend: The Chinese government's increasing ability

to exert significant control over the economy. This control is partly achieved by the developing the capacity to trace financial transactions and rein in private enterprises. Such developments may have positive impacts such as improving tax compliance and fraud detection, and even reducing crime overall, but could also provide the state with abundant information about the lives of individuals with the possibility of applying punitive measures, for example against dissidents by restricting their access to financial services. Although the fintech industry in China has evolved from a 'Wild West' to strictly regulated sphere of activity, it will remain a space to watch and evaluate over the coming decades as it continues to reshape how people in China save, spend, and manage their finances.

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# References

- Accenture. (2018) 'Press release: Global Fintech Investments Surged in 2018 with Investments in China Taking the Lead.' Accenture: <https://newsroom.accenture.com/news/global-fintech-investments-surged-in-2018-with-investments-in-china-taking-the-lead-accenture-analysis-finds-uk-gains-sharply-despite-brexit-doubts.htm>.
- BBC. (2017) 'China bans initial coin offerings calling them 'illegal fundraising'.' BBC News, September 5: <https://www.bbc.com/news/business-41157249#>.
- Borak, M., and Shen, X. (2021) 'Why China's Spring Festival Gala is a major promotions vehicle for Big Tech firms.' *South China Morning Post*, February 13: <https://www.scmp.com/tech/big-tech/article/3121548/why-chinas-spring-festival-gala-major-promotions-vehicle-big-tech>.
- CBN. (2021) 'Xiong'an New Area to Step up Financial Infrastructure Development, Establish Fintech Hub.' *China Banking News*, August 3: <https://www.chinabankingnews.com/2021/08/03/xiongan-new-area-to-step-up-financial-infrastructure-development-establish-fintech-hub/>.
- Chen, W., and Yuan, X., (2021) 'Financial Inclusion in China: an overview.' *Frontiers of Business Research in China* 15, no. 4.
- Chorzempa, M. (2018) 'How China got a head start in fintech, and why the West won't catch up.' *MIT Technology Review*, December 19: <https://www.technologyreview.com/2018/12/19/138354/how-china-got-a-head-start-in-fintech-and-why-the-west-wont-catch-up/>.
- Chorzempa, M., and Huang, Y. (2022) 'Chinese Fintech Innovation and Regulation.' *Asian Economic Policy Review* 17: 274-292.
- CIW. (2020) 'China mobile internet users reached 1.16 bn in Apr 2020.' China Internet Watch, June 11: <https://www.chinainternetwatch.com/30687/mobile-internet-apr-2020/>.
- CNNIC. (2022) *The 50th Statistical Report on China's Internet Development*. China Internet Network Information Center, August.
- Deloitte. (2019) 'The smartphone multiplier: Towards a trillion-dollar economy.' Deloitte, December 8: <https://www.deloitte.com/au/en/our-thinking/insights/industry/technology/technology-media-and-telecom-predictions/2020/smartphone-multiplier-effect.html>.
- Demirguc-Kunt, A., Klapper, L., Singer, D., and Ansar, S. (2021) *The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19*. Washington, DC, World Bank Group.



- Demirguc-Kunt, A., Klapper, L., and Singer, D. (2017) 'Financial Inclusion and Inclusive Growth: A Review of Recent Empirical Evidence.' Policy Research Working Paper 8040, World Bank Group: <https://documents1.worldbank.org/curated/en/403611493134249446/pdf/WPS8040.pdf>.
- Drinhausen, K., and Brussee, V. (2021) 'China's Social Credit System in 2021: From fragmentation towards integration.' *MERICs China Monitor*, March 3: <https://merics.org/sites/default/files/2023-02/MERICs-China-Monitor67-Social-Credit-System-final-4.pdf>.
- Ernst and Young. (2019) *Global FinTech Adoption Index 2019*. Ernst and Young: [https://assets.ey.com/content/dam/ey-sites/ey-com/en\\_gl/topics/banking-and-capital-markets/ey-global-fintech-adoption-index.pdf](https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/banking-and-capital-markets/ey-global-fintech-adoption-index.pdf).
- Federal Reserve. (2022) *Report on the Economic Well-Being of U.S. Households in 2021 – May 2022*. Board of Governors of the Federal Reserve System, May: <https://www.federalreserve.gov/publications/2022-economic-well-being-of-us-households-in-2021-executive-summary.htm>.
- Fullerton, E. J., and Morgan, P. J. (2022) *The People's Republic of China's Digital Yuan: Its Environment, Design, and Implications*. Asian Development Bank Institute (ADBI) Discussion Paper Series, No.1306, February: <https://www.adb.org/publications/the-peoples-republic-of-chinas-digital-yuan-its-environment-design-and-implications>.
- He, L. (2023) 'China makes major push in its ambitious digital yuan project.' *CNN*, April 24: <https://edition.cnn.com/2023/04/24/economy/china-digital-yuan-government-salary-intl-hnk/index.html>.
- Huang, Y. (2022) 'Why did the Peer-to-peer lending market fail in China?' *HKUST IEMS Thought Leadership Brief*, No. 61: <https://iems.ust.hk/publications/thought-leadership-briefs/huang-why-did-the-peer-to-peer-lending-market-fail-in-china-1b61>.
- Huang, L., and Pontell, H. N. (2023) 'Crime and crisis in China's P2P online lending market: a comparative analysis of fraud.' *Crime, Law and Social Change* 79: 369-393.
- Ji, X. (2017) 'Red Packets in the Real and Virtual Worlds: How Multi-Function WeChat Influences Chinese Virtual Relationships.' In Frömming, U. U., Köhn, S., and Fox, S. (eds) *Digital Environments: Ethnographic Perspectives across Global Online and Offline Spaces*. Transcript Verlag.
- Liao, R. (2023) 'China wraps up fintech crackdown with big fines on Tencent, Alibaba.' *TechCrunch*, July 7: <https://techcrunch.com/2023/07/07/china-wraps-up-fintech-crackdown-with-big-fines-on-tencent-and-alibaba/>.
- Kawate, I., and Maruyama, D. (2022) 'China struggles to launch digital yuan after 8 years of trials.' *Nikkei Asia*, July 22: <https://asia.nikkei.com/Business/Markets/Currencies/China-struggles-to-launch-digital-yuan-after-8-years-of-trials>.
- Keram, A. (2021) 'China wants to take the entire country cashless – and surveil its citizens even more closely.' *The Washington Post*, March 2: <https://www.washingtonpost.com/opinions/2021/03/02/china-digital-yuan-currency-surveillance-privacy/>.

- Knight, A. (2020) 'Technologies of Risk and Discipline in China's Social Credit System.' In R. Cremmers and S. Trevakes (eds), *Law and the Party in China: Ideology and Organisation*. Cambridge University Press: 237-262.
- Kong, S. T., and Loubere, N. (2021) 'Digitally Down to the Countryside: Fintech and Rural Development in China.' *The Journal of Development Studies* 57, no.10: 1739-1754.
- Laidler, J. (2019) 'High Tech is Watching You.' *The Harvard Gazette*, March 4: <https://news.harvard.edu/gazette/story/2019/03/harvard-professor-says-surveillance-capitalism-is-undermining-democracy/>.
- Lin, L. (2022) 'Digital Red Packets and the Power of Sharing Online.' *South China Morning Post*, July 13: <https://www.scmp.com/presented/news/hong-kong/education/topics/new-age-consumer/article/3184805/digital-red-packets-and>.
- Ma, W., Zheng, H., and Vatsa, P. (2023) 'China's experience with mobile payments highlights the pros and cons of a cashless society.' *The Conversation*, March 14: <https://theconversation.com/chinas-experience-with-mobile-payments-highlights-the-pros-and-cons-of-a-cashless-society-201177>.
- Marsans, M. (2021) 'China's Fintech Revolution.' CSIS, January 12: <https://www.csis.org/blogs/new-perspectives-asia/chinas-fintech-revolution>.
- PBOC. (2022) 'Fintech Development Plan (2022-2025).' People's Bank of China, January 5: [https://www.gov.cn/xinwen/2022-01/05/content\\_5666525.htm](https://www.gov.cn/xinwen/2022-01/05/content_5666525.htm).
- PBOC. (2021) 'Progress & Development of E-CNY in China.' Technical Report. W. G. on E-CNY Research and Development of the People's Bank of China, July: <http://www.pbc.gov.cn/en/3688110/3688172/4157443/%204293696/2021071614584691871.pdf>.
- PBOC. (2019) 'Fintech Development Plan (2019-2021).' People's Bank of China, August 22: <http://www.pbc.gov.cn/goutongjiaoliu/113456/113469/3878634/index.html>.
- Qin, A., and Livni, E. (2021) 'China cracks down harder on cryptocurrency with new ban.' *The New York Times*, September 24: <https://www.nytimes.com/2021/09/24/business/china-cryptocurrency-bitcoin.html>.
- Reuters. (2023) 'Bank of Japan launches forum with 60 firms on digital yen pilot programme.' July 20: <https://www.reuters.com/technology/boj-launches-forum-with-60-firms-digital-yen-pilot-programme-2023-07-20/>.
- Reuters. (2021) 'China's top regulators ban crypto trading and mining, sending bitcoin tumbling.' September 24: <https://www.reuters.com/world/china/china-central-bank-vows-crackdown-cryptocurrency-trading-2021-09-24/>.
- Ruan, L. (2018) 'Big data in China and the battle for privacy.' ASPI, June 22: <https://www.aspi.org.au/report/big-data-china-and-battle-privacy>.
- State Council. (2015) *Guiding Opinions of the State Council on Actively Promoting the 'Internet Plus' Action Plan*. The State Council of the People's Republic of China, July 1: [https://www.gov.cn/zhengce/content/2015-07/04/content\\_10002.htm](https://www.gov.cn/zhengce/content/2015-07/04/content_10002.htm).

- State Council. (2015) *Plan for Advancing the Development of Financial Inclusion (2016–2020)*. The State Council of the People's Republic of China, Beijing, China.
- Taylor, M. (2022a) *China's Digital Authoritarianism: A Governance Perspective*. Cham, Switzerland, Palgrave Macmillan: <https://doi.org/10.1007/978-3-031-11252-2>.
- Taylor, M. (2022b) 'A Party-Led Internet Economy.' In *China's Digital Authoritarianism: A Governance Perspective*. Cham, Switzerland, Palgrave Macmillan: [https://doi.org/10.1007/978-3-031-11252-2\\_5](https://doi.org/10.1007/978-3-031-11252-2_5).
- Tsai, K. S. (2017) 'FinTech and Financial Inclusion in China.' *HKUST IEMS Thought Leadership Brief*, no. 20, November: <https://iems.ust.hk/tlb20>.
- Tudor-Ackroyd, A. (2020) 'What China's clampdown on online microlending mean for fintech giant Ant Group.' *South China Morning Post*, November 3: <https://www.scmp.com/business/banking-finance/article/3108279/what-chinas-clampdown-online-microlending-means-fintech>.
- WEF. (2021) *At a Crossroads: The Next Chapter for Fintech in China*. World Economic Forum March: [https://www3.weforum.org/docs/WEF\\_The\\_Next\\_Chapter\\_for\\_FinTech\\_in\\_China\\_2021.pdf](https://www3.weforum.org/docs/WEF_The_Next_Chapter_for_FinTech_in_China_2021.pdf).
- Yang, Z. (2021) 'Chinese microlending is getting weird and dangerous.' *Protocol*, February 9: <https://www.protocol.com/china/chinese-microlending-out-of-control>.
- Zheng, H., and Ma, W. (2022) 'Scan the QR Code of Happiness: Can Mobile Payment Adoption Make People Happier?' *Applied Research in Quality of Life* 17: 2299-2310, <https://doi.org/10.1007/s11482-022-10036-0>.
- Zuboff, S. (2019) *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. New York, PublicAffairs.

