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Open banking and changing relationships between the Chinese banks and FinTech providers

Theme: Mres Thesis

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Abstract

Open banking was originally proposed in the UK and China's open banking is catching up. However, due to their different origins, there are obvious differences in the available content.

In China, open banking is a product of the transformation and upgrading of traditional commercial banks in the context of financial technology, The aim is to build a platform business model and provide integrated services to customers by open data and business. This thesis identifies FinTech as a national strategy in China and thus promotes the development of FinTech, And it forms a new financial network that is different from the previous bank-led financial network. With fintech having built out a mature platform business model, there is no mandatory. It is rather a market-driven choice by banks to develop open banks, especially in the context of neo-statism in China. The Open Banking platform has become a new tool for banks through reintermediation, changing the relationship between banks and fintech providers. In order to provide better protection for the Open Bank, China's regulatory pilot is being tested nationwide with the aim of balancing innovation and regulation.

Key words: Open Banking, Financial Technology (FinTech), Financial Network, Platform, Regulation

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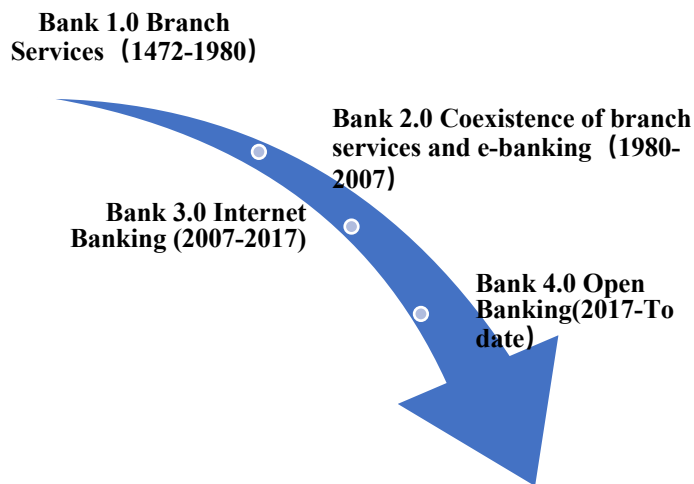
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1.0 Chapter 1: Introduction

This project aims to analyse how 'Open Banking' has emerged in China and how it is transforming the relationships between Chinese banks and FinTech providers.

Financial technology is known as FinTech; the development of FinTech is transforming the banking industry and the financial sector. The Financial Stability Board defines FinTech as innovation in financial services being enabled by technology (Andresen, 2017: 1, Wojcik,2020). Mention (2019) describes FinTech as the umbrella term for innovative financial services supported by technology and the business models that accompany these services. This innovative technology can potentially disrupt the banking landscape, financial institutions, intermediary structures, technology and e-commerce companies (Lai,2021., Hendrikse et al., 2018., Langley and Leyshon, 2017b., The Economist,2015). EY grouped FinTech services into five categories: savings and investment, budgeting and financial planning, borrowing and insurance, and transfer and payment. From the perspective of how banking services are provided, the development of banking in China so far has gone through 4 stages (Table 1) (National Internet Finance Association of China, 2019). In Bank 1.0, before 1980, people could only access banking services with a branch (Li & Liu, 2019). In Bank 2.0 from 1980 to 2007, banking services have sought to develop online platforms to enhance and extend their service capabilities as business models have become more complex. Brett King (2010) believes that BANK 2.0 will show bankers that these inevitable changes will not only lead to longer-term and more profitable customer relationships but will also increase the effectiveness of the organisational structure. From 2007 to 2017, Bank 3.0 revolutionised how banks deliver services in the Internet era. In other words, Bank 3.0 shows why banking is no longer a place you go to but something you do (King,2012). Customers can use their laptop terminals to access banking services, and they can do it

all digitally in the age of smartphones. Financial services delivered through smartphones can solve most basic financial needs of people, completely disrupting the traditional way of providing banking services and, at the same time, laying the foundation for Bank 4.0 to develop open banking (Li & Liu, 2019).



*Table 1 : History of the development of the banking industry
Sourced from: (National Internet Finance Association of China, 2019)*

Open Banking was born in the context of the convergence of finance and technology. The UK is commonly identified as the first country to develop the concept of open banking and is recognised as an international leader in this field (CMA Chair Jonathan Scott, 2021). In June 2013, The UK Competition and Markets Authority (CMA) launched the Open Banking Initiative (openbanking.org.uk). The UK in 2015 through the creation of the Open Banking Working Group (OBWG) at the request of the HM Treasury (Whittle, 2017) and developed the Open Banking Framework and Standards, followed by the release of The Open Banking Standard in 2016 (openbanking.org.uk). In September 2016, nine of the UK's largest banks joined in funding the Open Banking Implementation Entity (OBIE). The nine banks¹ subsequently shared data from 13 January 2018 at the request of the CMA, making the UK the first country to put the

¹ AIBG, Bank of Ireland, Barclays, Danske, HSBC, Lloyds Banking Group, Nationwide Building Society, NatWest Group and Santander (gov.UK) source: <https://www.gov.uk/government/news/update-on-open-banking>

open banking concept into practice (Chen,2021). Gartner defines open banking as the process of sharing data, algorithms, transactions, processes, and other business functions with the business ecosystem to provide services to third-party developers, FinTech, vendors and other partners in the business ecosystem, enabling banks to create new value and build new core capabilities (Financial Computer of China, 2019, p. 83). McKinsey & Company (2019) described Open Banking as a platform collaboration model that originated in the UK that uses technologies such as open APIs to enable data sharing between banks and third-party institutions, whereby API (Application Programming Interface) is an essential means of achieving open banking. It can also be understood as two computer applications using an API to communicate over a network using a common language they both understand (Zachariadis & Ozcan,2017., Jacobson et al., 2012). In short, open banking is a model in which banks open their data and services to third parties.

However, this thesis will investigate how FinTech and open banking in China has taken a different pathway in developing a world-leading position. In October 2003, when Taobao (an online shopping retail platform created by Alibaba) launched its Alipay service, commercial banks chose to open up their API interfaces for customers to make payments through Alipay. National Internet Finance Association of China, 2019). In 2004, Alipay was spun off Taobao and formally established as an independent entity (antgroup.com). Fintech companies represented by third-party payment are gradually changing people's financial consumption and transaction habits by improving user experience. The relationship between supply and demand in the financial industry that uses payment as an entry point has changed. The practice of open banking had already developed in China before the concept of open banking was introduced. Notably, China's Open Banking is different from the UK's Open Banking Initiative. The UK is making it mandatory for banks to open up their data to fintech companies to break the monopoly of the banking sector. However, Chinese banks have chosen to open up due to competitive pressures driven by the fast-growing FinTech ecosystem, Without mandatory requirements from the government and regulatory authorities.

In 2015, four banks received approval from the then China Banking Regulatory Commission (CBRC) to launch online banking in succession. The banks are MY Bank, WE Bank, XW Bank, and Yillion Bank (Financial Technology Research Institute et al., Renmin University of China, 2020). In 2018, open banking in China entered a phase of rapid development, and in July of the same year, Pudong Development Bank launched APIBank Boundless Open Banking (open.spdb.com.cn). Since then, more than 50 banks have now gone live or built open banking services (Financial Technology Research Institute et al., Renmin University of China, 2020). In the context of these developments, this thesis seeks to explore how China is understanding and developing open banking in ways that are distinctive from the more commonly understood UK open banking landscape, and this thesis is particularly focused on examining changing relationships between the Chinese banks and FinTech providers, as well as changing regulatory attitudes and approaches of the Chinese state regarding open banking.

Reviewing the previous literature, Chinese scholars have mainly discussed the efficiency and practicality of Fintech and have seen its function as disintermediation (Li, 2016). For example, Fintech is the technological means of applying science and technology to finance to improve the efficiency of the industry (Interviewee Peter, 2021); Fintech is the broad range of technologies that affect the way financial payments, financing, lending, investment, financial services, and money work (Wu, 2020). Secondly, FinTech is a technology-driven financial innovation activity. It can also be seen as a new financial business model and the use of technology to deliver financial solutions (Li & Wang, 2022). This also suggests that there is no consensus in academic circles on the definition of FinTech and that the main points of disagreement lie in the different emphases, with some focusing on financial attributes, some on technical aspects, and some on the convergence of which and the utility they generate. However, no one definition can negate and replace another in an either/or manner, i.e., different views are different but not mutually exclusive. The critical point is not simply that the existing literature disagrees about how to define FinTech but disagrees about how to

understand FinTech best. Chinese scholars discuss and focus on open banking with a narrow focus on understanding the name by national and industry stakeholders. China and the UK (the originator of open banking) are very different regarding fintech development and financial regulation, so it is worth considering How China understands open banking and how to develop an open bank with Chinese features. Therefore, by reviewing the research of economic geographers, this thesis aims to respond to the analysis of the integration of finance and technology and the changes they bring to financial services. From the formation of financial networks and how they influence partnerships; Fintech enabled platforms, and I see fintech platforms as re-intermediation (Langley & Leyshon, 2017) rather than de-intermediation (Li, 2016); so, this thesis will draw together three approaches to understanding FinTech which connect FinTech with developments in financial networks, the growth of the platform economy, and state strategies and regulations.

Following this introduction, the next chapter (Chapter 2) presents a review of the literature in economic geography and related fields, which addresses the integration of finance and technology, the role of the state in fintech, and the attitude, role, and strategy of the state as the regulator. How the platform economy is understood, how financial services are explained, and how the conceptualisation of networks affects partnerships. From this, research questions are formulated as presented in Chapter 3, which outlines the case studies, document analysis and semi-structured interviews used to address the issues. Empirical findings are analysed in Chapters 4 and 5. Chapter 4 examines the development of open banking by discussing the particularities of fintech in China and how open banking in China is moving from a broad consumer-facing strategy to niche consumer products and B2B and B2G services. This was done through extensive media coverage of grey literature and coded interview transcripts and data. Chapter 5 on the regulation of open banks examines several key moments and regulatory shifts. More recently, China has been developing a trial run of a Chinese version of its regulatory sandbox, which could illustrate specific Chinese regulatory approaches and priorities for open banking in China. The thesis concludes in Chapter 6

with a summary of key findings and reflections on further research directions.

2.0 Chapter 2: Literature Review

After briefly describing the current state of the relationship between Chinese banks and FinTech providers, to examine the evolving relationship between Open Banking and Chinese banks and FinTech providers, this chapter brings together the following TWO sets of literature (It also contains Chinese- language secondary literature) to provide some conceptual tools and theoretical frameworks.

This section's first sub-section reviews the literature on FinTech and regulation. With the combination of finance and technology and the changing financial services, fintech is developing so rapidly out of market-driven reasons, but also with the support of the state, open banking development is again built on fintech. Firstly, it deals with China's fintech capacity to grow outstrips financial regulation. The deputy governor of China's central bank commented that it "causes turmoil when loosed" yet "perish once regulated"(一松则乱, 一归则无). This also describes the dilemma facing China's regulators. So, a critical review of financial regulation confirms that the improvement of laws and regulations by regulators is a top priority. Secondly, how fintech economic geographers and other scholars understand fintech, the development of fintech and the literature on fintech as a national strategy in China. Thirdly, the literature on financial networks is critically reviewed, discussing their conceptual convergence and imperfections for state intervention. In the second subsection, the literature on platforms and the platform economy is reviewed, differentiating between the two, the rise of the platform economy, which has led to an increasing number of platform activities being possible, and the logic of platforms reshaping the financial business.

2.1 Financial Regulation

Under the Commission's framework, nothing is exempt from regulation.

—Guofeng Sun (Director, Institute of Finance,

Central Bank)

The increasing use of digital technology over the past two decades appears to have challenged the Party's control over financial reform and its traditional control mechanisms. Economically powerful online platforms and their big data-based business models have bypassed institutional controls to some extent, partly because the Party has not clearly defined policy boundaries or regulatory options. The spread of fintech has also created a marketplace rife with fraud and risky financial models, particularly in the area of peer-to-peer (P2P) lending, where low regulatory barriers have contributed to the exponential growth of digital finance while failing to control financial fraud.

For example, Research on the Spatio-temporal Patterns of P2P Companies in Chinese Cities (Pan, Wojcik & Liu forthcoming) shows that P2P in China has been allowed to grow so rapidly by the permissiveness of state regulation and the encouragement of local governments. For example, P2P companies in China have been much less regulated from the start (Atz and Bholat, 2016; Havrylchyk et al., 2018) and for years it was not even clear who should regulate P2P platforms" (Sun,2021). There are also some P2P companies that have changed their company names to Internet finance or fintech through regulatory loopholes in order to get strong government support. This has contributed to the return of some financial activities that were originally strictly prohibited in China (Zhou et al., 2021), For example, illegal financial activities and criminal activities related to virtual currencies. The P2P sector became quite dangerous,

with a steady stream of Ponzi scheme frauds, and it was only in 2016 that a relative regulatory framework was established for the P2P sector (Xing, 2020). China once developed the world's largest P2P lending platform, but in 2018 it set off a wave of P2P lending platform closures. Meanwhile, a report in *The Economist* (2016b) expresses concerns about the rapid growth of P2P lending in China, where fintech companies come with many security risks while powerfully confronting banks, and the need for a more transparent regulatory regime (Langley & Leyshon, 2017). It also illustrates the immaturity of China's traditional financial markets, where financial regulation has lagged badly and has developed recklessly for profit and business expansion. It would appear that if a data breach by a third party institution would pose a serious threat to banking security, then there may also be greater challenges in terms of customer privacy protection. In terms of regulation, the overall regulatory system for digital financial platforms is still in its infancy. But in the face of the strong growth and potential risks of digital finance, the central government has now tightened its policies, with the central bank, for example, requiring each of Ant Financial's business units to apply for a sector-specific licence, suggesting that, perhaps, fintech is now becoming a threat to certain national strategies.

China's growing influence on the global economy necessitates more robust risk controls. This is because a banking crisis in China could cause considerable problems in China and other countries (Feldkircher & Korhonen, 2014; Zeng, 2020). (Li&Liu,2019) believes that it is necessary and feasible to establish a "Regulatory Sandbox" in mainland China. The regulatory Sandbox was introduced in the UK and other countries. The Financial Conduct Authority (FCA) defines a regulatory sandbox as a supervised security testing area. The core mechanism of this security testing zone mainly includes regulatory testing subjects, testing procedures, regulatory exemptions, consumer interest protection, sandbox exit and other related elements (Sun & Chen, 2019). Such a sandbox structure allows consumers to enjoy the benefits of innovation and to avoid the potential risks of innovation as much as possible - to put it simply, to protect consumer rights. As the fintech boom in China continues to grow, so does the task of financial regulation that comes with it. Fintech products are both financial and

technological, and many businesses have moved from offline to online, enabling cross-institutional, cross-market and cross-industry behaviour due to the unique properties of the Internet - no borders (Li&Liu, 2019). This poses a significant challenge to the regulation, as the risks posed by FinTechs directly or indirectly are cross-cutting, contagious, complex, and emergent (Li & He, 2021), and then the traditional regulatory model is no longer sufficient to cover the risks posed by FinTechs.

2.1.2 Fin and Tech

This thesis explores open banking and changing relationships between Chinese banks and FinTech providers. China's financial sector has improved its financial activities and acquired a whole new financial sector due to the prevalence of fintech. In this context, the emergence of open banking also represents the emergence of another type of financial service at a time when the relationship between the two services is very delicate, and both are related to fintech, which is why an understanding of fintech is fundamental. As the purpose of this study is not to define FinTech but to understand its role and power in today's financial industry, the following insights provide some valuable insights.

From a technological point of view, the composition and origin of FinTech can be understood as FinTech consisting mainly of big data, blockchain, cloud computing, artificial intelligence, etc. FinTech represents the digital transformation of financial services through expanding the application of information and communication technologies (ICT) in the financial sector. According to Yi et al. (2019), the essence of fintech is "de-crediting", which is enabled by science and technology. The use of technology to price credit risk, i.e. the use of mathematical algorithms to solve credit problems in financial transactions, does not require knowledge of the characteristics of the counterparty or the help of a centralised third-party institution and essentially

creates credit and builds mutual trust. Therefore, the rise of fintech suggests that the continued convergence between finance and non-finance is accelerating (Hendrikse et al., 2018, p. 160).

Therefore, it follows that, first, the integration of finance and technology has deepened. There is no clear distinction between financial and technology companies in the financial market, and the boundaries between financial business operators, technology providers and fintech solution providers are becoming increasingly blurred. Previously, the integration of finance and internet technology was only about disintermediation, but with the advent of fintech. This integration is not only about disintermediation but also the restructuring and replacement of the entire financial system. Secondly, according to Zhou et al.(2019), it is based on information technology. The essence of the financial industry is the information industry, so the core of FinTech is the application of information technology in the financial sector. FinTech is driven by cutting-edge technologies such as big data, artificial intelligence and blockchain, all of which rely on the development of information technology. Thirdly, FinTech is accessible and inclusive. Low-income people have difficulty accessing financial services in traditional financial markets due to information asymmetry, lack of information and high costs. While it is difficult for individuals to collect and process all aspects of customer information at low cost, the use of fintech can provide access to all aspects of customer information in a short period and save on human costs, increasing the financial accessibility of poor people who were previously excluded from the financial system and making financial inclusion possible. Therefore, the internal and external restructuring of banks involved in fintech is challenging and requires a greater focus on customers rather than processes and a collaborative and agile structure rather than a hierarchical one (Chen et al., 2017; Alt et al., 2018; Wojcik, 2021).

There is no unified definition of FinTech, so many scholars have their understanding and views on FinTech. The combination of finance and technology is fintech. (Hendrikse et al., 2018, DiMaggio and Powell, 1983) Argue that finance and technology

are gradually converging. Lai argues that the definition of fintech depends on the particular industry sector, the players and the analytical focus of the particular study (Lai, 2021). FinTech was first introduced in 1972 by Bettinger (Bettinger, 1972, p. 62; Schueffel, 2016) and is understood as the product of combining the financial operations of banks with modern management information technology. This product can be seen as a new financial industry (Schueffel, 2016), and this new financial industry is using new technologies to improve financial activities. There are several national bodies and international organisations that also support the idea of FinTech improving financial services, for example, the Financial Stability Board (FSB) and the National Economic Council of the United States, in up, the 2016 Description and Framework Analysis Report on FinTech, and the 2017 FinTech Framework White Paper, respectively, while stating that FinTech refers to technological innovations that have the potential to change the financial services industry and even the economy fundamentally. The FinTech Development Plan (2019-2021) released by the People's Bank of China in 2019 can be generally understood as FinTech refers to the improvement of financial innovation by technological innovation to obtain new services. Fei & Xu (2019) argue that fintech is a financial innovation that makes good use of technology in the financial sector to expand the financial services community (Zhang, 2019) and that fintech breathes new life into financial development, reducing transaction costs and increasing the efficiency of the industry (Yi et al., 2021). Moreover, Lai (2020) explores how fintech products and services are reshaping the intermediary function of banks, for example, by disrupting the banking industry, as well as some technology and e-commerce sectors, intermediaries and financial institutions (The Economist, 2015; Langley and Leyshon, 2017b, Hendrikse et al ..., 2018, Lai, 2021). Therefore, FinTech as a new business model, technology applications, and products and services can impact financial markets and the provision of financial services. FinTech promises to disrupt the financial industry, democratise finance and promote financial inclusion (Wojcik, 2020; Grabher & Konig, 2020). However, the disruptive nature of fintech should not be exaggerated, and the apparent contradiction between the view of fintech as outstanding finance is the interplay between market-based forces and the regulatory framework that embeds

fintech in society (Wojcik, 2020). Banks are already involved in developing digital banks, incubating fintech startups, etc. (Lai,2020). Therefore, fintech expands the potentially profitable areas of the financial sector (Wojcik, 2020; Chen et al., 2019).

2.1.3 Fintech and State

Gruin, who has studied fintech in China in depth, argues that in China, fintech amounts to a national strategy due to the Chinese Communist Party's (CCP's) placement of "technology at the centre of an ambitious agenda for comprehensive reform of social and economic governance (Gruin, 2019). Perhaps this is why, in earlier years, regulators were lenient with digital finance (Hu & Zheng, 2016), with the central bank granting third-party payment (TPP) licenses to major internet companies such as Alibaba and Tencent in July 2010. Chinese Premier Li Keqiang confirmed this in his speech at the opening of WeBank, where he supported the idea that digital finance would lead to a profound reform of the traditional financial sector, explained in more detail that the government would support fintech companies in their search for alternative financial services, such as fintech companies, financial services, micro and small banks, rural finance, micro and small business microfinance. The government's pro-technology stance legitimised internet companies to run financial businesses and opened the financial sector to private companies. Between 2011 and 2014, more than 2,000 IT companies were licensed by the central bank for financial operations. In those four years, they attracted and managed more than US\$82 billion in assets outside the traditional banking system.

Moreover, a different study by Gruin (2019) shows how a transformative market-oriented technological innovation is then linked to the practice of digital 'authoritarian resilience'²; The rise of fintech represents the inclusiveness of China's financial

² Authoritarian capitalism is the result of constant renegotiation and redefinition of the boundaries of

ecosystem and its ability to regulate the infrastructure of fintech companies. At the same time, these can be explained by the alignment of core political and economic priorities at the heart of China's authoritarian capitalism. However, these represent a continuation of long-standing principles and structures of governance in China rather than a rupture. Moreover, the consequences of the transformation of China's financial system are not limited to the reform of China's financial system and economic growth model but also have far-reaching implications for the future of China's politics and society. Furthermore, the importance of China's emerging fintech companies extends to their potential impact on the "authoritarian resilience" of the Chinese Communist Party (CCP) as it faces the challenge of the rise of China's middle-class consumers and deep market-oriented reforms (Gruin, 2019). Cashless payments, for example, "help financial firms generate profits by adding another layer of cost to the payment system" (Jain & Gabor, 2020). Moreover, payments are just one data source from which tech companies excel at profiting. Zuboff (2019). Indeed, the most prominent experience of digital financialisation in China is also digital payments. However, the ambitions of digital payment giants Alibaba and Tencent are by no means limited to the payments industry but to all categories of financial business (Schueffel, 2016; Lai & Samers,). In fact, over the past five years, internet companies such as Alibaba and Tencent have entered the market to provide commercial loans to micro and small enterprises. Moreover, these companies have captured over 70% of the payment clearing market, previously controlled by state-owned banks. These are substantial pieces of evidence underpinning the rhetoric of FinTech as a national strategy.

2.1.4 Financial Networks

Understanding the fintech era from an economic geography perspective, Hendrikse et al. argue for re-engaging and strengthening the dialogue with economic geography

the public and private domains, in both the political and economic realm (Sallai, et al., 2020).

approaches (Hendrikse, Bassens & Van Meeteren, 2018). It has been argued that how the economic geography of development influences the strategic coupling of global financial networks is crucial and holds the future geography of fintech. Therefore, this thesis analyses the relationship between traditional banking, fintech and open banking from the perspective of Financial networks with its attention on critical finance actors. Fintech is an important reason for activating innovation and development in the traditional banking sector, and it is also a necessary tool for open banking construction. How banks and technology companies interact varies by geographical market, i.e. who may have more leverage or advantage (Lai, 2021). All this is to say that whoever has the better FABS will get more of the cake. Global financial networks are defined by (Haberly & Wojcik, 2022) as a network of these four main types of players and venues - world governments, offshore jurisdictions and financial hubs, and financial and business services (FABS) companies, which together are in the world economy. Among others (Coe, Lai and Wojcik, 2014), finance is as global and networked as production, with financial systems, interlocking structures of institutions and interdependent nature.

Moreover, viewing the GFN as an integrated framework, financial activities are seen as forming a global economic network unique in its operation and impact, in which finance underpins all the economic activities that make up the GFN. The GFN framework was therefore created in the context of globalisation and financialisation, and the financial network framework clarifies the role of FABS in organising and shaping global flows of capital and production. However, criticisms have also emerged, for example, that global financial networks are flawed and that there is a lack of analytical tools to locate the state's role in shaping financial networks. Topfer(2018) believes that the current global economic network approach in which the state may be present. Especially in China, with its one-party system, the government plays a leading role in the financial sector. It is the principal architect of the market structure, But there is still a need to promote the development of a more comprehensive concept of the state. For example, global 'lead firms' are seen as the primary coordinators of network relationships, while non-firm agents such as states mediate relationships between firms through 'strategic

coupling' (Topfer, 2018). Therefore, the country determines which companies can become "leading firms". This also explains why fintech companies are overgrowing in China.

As a developing country, Chinese fintech companies open the endless potential for the financial services industry. Before fintech, the banks dominated retail finance with little focus on the consumer (Langley & Leyshon, 2021). The current development and upgrading of fintech in China have gradually replaced traditional payment methods by bundling mobile phones with bank cards to enable third-party payments. Fintech providers are increasingly building platforms for customers to manage their money, offering multiple ways to manage their money and address the inefficiencies of single products and banking services. This isolates the customer from the bank and puts unprecedented competitive pressure on traditional banks. At this point, the relationship between fintech companies and banks has changed from partnership to competition. Therefore, banks and technology companies are direct competitors in the FinTech ecosystem, respectively as "incumbents" and "disruptors" (Lai, 2020). In comparison to the ease of use and relative transparency of fintech companies' financial services, the business model of banks has always been "secretive and discreet". For example, my interviewee, Wang. *"When I was doing my business I asked the staff what type of account this account belongs to and he said, it's the bank's business, you don't need to know so much, the account covers all your requirements. I said, I'm still curious because this Alipay and WeChat payment are very similar. The staff responded, this new service, Open Bank, said nothing much else"* (Interviewee Wang, 2021). Due to his company's new business, a community service app, which has courier hosting, home maintenance services, they needed accounts that could scan QR codes for payment. But, they can only resort to banking services. Wang has said that he initially did not know that the banking service called Open Banking. He felt that the form used was similar to Alipay, so he was curious. It was only after his further questioning that he learnt that the process was for an API account, Open Banking. In fact, for many of the services of the Bank of China, there is only an advertisement on the official website without any detailed explanation. For, customers who are not familiar with with financial products,

even if many customer are using the services of Open Banking, but they do not know that this is the service of Open Banking. but they think that this is a QR code payment similar to Alipay. So, It appears that the state of information on banking services has not been made transparent, making it difficult for customers who are not familiar with financial literacy to understand and operate these banking services.

Furthermore, banks and fintech companies originally belonged to two different organisational domains (Hendrikse et al., 2018; Fligstein, 2002; Van Meeteren & Bassens, 2018). The rapid development of fintech has broken the mystique of banks, which has weakened their credit intermediary function and contributed to the need for the banking sector to act as a financial intermediary. Therefore, the traditional banking sector, the incumbent of the financial industry, is actively collaborating to develop its strengths in traditional finance with fintech companies (Van Meeteren et al., 2018). Liu argues that this can also be interpreted as the technology is the most significant constraint and driver of the banking industry (Liu & Li, 2019), with fintech improving the quality and level of banking services across the board and disrupting the position of banks in the minds of customers (Wu et al., 2020). However, it is argued that fintech disrupts existing portfolios and creates unbalanced competition in high-return and low-cost markets (Hendrikse et al., 2018). Therefore, the relationship between banks and fintech can be seen as competing incumbents and disruptors. Moreover, while BigTech companies are essential to the political economy of FinTech as platform providers for retail money and financial services, the BigTech platform ecosystem is far more significant to the composition of the FinTech industry (Langley & Leyshon, 2020).

2.2 Platforms

The two dominant understandings of platforms are divided between the 'sharing' of the platform economy (Grabher & König, 2020) and platform capitalism (Langley & Leyshon, 2017).

2.2.1 Platforms Economic

Frazier et al. summarise several definitions of a platform as "a digital infrastructure or environment with zero marginal cost of access" (McKinsey, 2019). Platforms need to be built through the 'platforming' of practices. In other words, the business must be reshaped according to the platform's logic, and existing practices must be reconfigured into these new infrastructures (Hendrikse, Bassens and van Meeteren, 2018). Importantly, platforms are becoming extremely powerful organisers of large amounts of economic activity (Kenney et al., 2021) and are thus seen as platform economies. Polanyi's view is to understand platform economies as economic sharing. Grabher et al. agree with Polanyi and argue that understanding platform economies provides a valuable theoretical perspective (Kenney et al., 2021, Grabher & König, 2020). Furthermore, Kenney et al. (2021) believe that the critical economic change is not the establishment of companies using creating "gig work" or online sites that "share." The views of Van Dijck et al. (2018), These platforms are also becoming critical social organisers. This view, however, pre-dates the platform, although, more recently, the opposite vantage point of 'sharing' has occurred (Pasquale, 2017; Kirchner & Schüßler, 2020, Grabher & König, 2020). The compulsory commercial logic of platforms drives capitalism (Parker, van Alstyne, & Choudary, 2016; Van Alstyne, Parker, & Choudary, 2016; Grabher & König, 2020), and Grabher & König (2020) Considering that the key drivers of digital platforms are technology, science and the state, thus driving the great

market-based transformation that is driving the emergence of the current platform economy in different ways. Grabher & König (2020) also argue that in the 'great transformation' of the economy, the new sharing economy is envisaged around social value, while the concept of the platform economy is centred on commercial value. For example, a billion people currently access news, communicate, transact and recreate through digital platforms or digital platform layers (Kenney et al., 2021). In areas of China where the internet and mobile phones are available, there are few merchants where shopping is impossible using WeChat Pay and Alipay. This also shows that platforms have severely altered the market characteristics of entry (Kenney et al., 2021). The rise of fintech suggests that the financial industry has embraced data-driven platform capitalism (Hendrikse et al., 2018; Langley & Leyshon, 2017). Nick Srnicek was developing his understanding of platform capitalism (Nick Srnicek, 2017., Kenney et al., 2021).

2.2.2 Platform Capitalism

Platform capitalism is a new term that can be traced back to German blogger Sascha Lobo's (2014) critique of the sharing economy (Langley & Leyshon, 2017), and Langley & Leyshon (2017) understand the Platform as a distinct model of socio-technical mediation and business arrangement that incorporates a broader process of capitalisation. Moreover, it incorporates a more comprehensive process of capitalisation. Nick Srnicek (2017) develops his understanding of platform capitalism (Nick Srnicek, 2017. Kenney et al., 2021). For Sascha Lobo and like-minded critics, the new term 'platform capitalism' is a necessary counterbalance to the construction of a narrative around the sharing economy, which describes it as diverse and redistributive, made possible through new types of networked exchange. (Langley & Leyshon, 2017). It has been argued that the rise of fintech indicates that the financial industry has embraced data-driven platform capitalism, and therefore new forms of innovation are

needed (Hendrikse et al., 2018; Langley & Leyshon, 2017). Platform operating companies such as Google, Facebook, YouTube and Airbnb essentially provide the digital infrastructure to mediate between different groups of users and collect data from these interactions (Gillespie, 2010; Srnicek, 2017: 44). These companies use data generated on their proprietary platforms, leading to monopoly rents as the platforms become essential intermediaries in economic activity (Langley & Leyshon, 2017). GAFA has led to the rise of data-led 'platform capitalism' (Langley & Leyshon, 2017; Srnicek, 2017). In terms of the typical manifestation of platform capitalism, Srnicek argues that existing finance seeks open digital platforms for software and data ownership. However, Langley and Leyson (2021) provide a critical understanding of fintech as a platform for political economy. They see fintech companies as platforms that correspond to a large extent to the capitalist enterprise model. This means that fintech providers operate integrated platforms that can become the infrastructural backbone of the digital financial system on which new applications can be built and flourish, not least through the application programming interfaces (APIs) provided by the platforms for interaction.

Digital technologies may fundamentally reshape the economic landscape of finance and the potential of fintech companies to provide opportunities for the financial services industry. (Hendrikse, Van Meeteren & Bassens, 2018) For example, platforming of financial services is possible based on (mobile) data generation technologies (Hendrikse et al., 2018; Langley & Leyshon, 2017; Srnicek, 2017); Platform operating companies like Google, Facebook, Uber and Airbnb essentially provide digital infrastructures that mediate between different groups of users and harvest data from these interactions (Gillespie, 2010; Srnicek, 2017: 44). These companies use the data generated on their proprietary Platform, which leads to monopoly rents as the Platform becomes an essential intermediary in economic activity (Langley & Leyshon, 2017)The platform economy has benefited from the development of fintech, which is closely linked to digital technology, and mention has to be made of China's most prominent digital financial Platform, Ant Financial, whose emergence has transformed the

country's financial sector and challenged the policy and regulatory system. This is demonstrated through the fact that socio-technological innovation in digital online platforms is a crucial fulcrum for economic restructuring that will reconnect data flows and ultimately transform money and power. (Kenney et al., 2021). So, the proliferation of digital platforms has created a new financial sector alongside the mainstream financial sector.

Summary

It can be found that China's national strategy to incorporate fintech (Gruin, 2019) has contributed to the rapid development of fintech, thereby in turn facilitating the rapid development of digital financial services, embedding technological innovation into the unique political economy of China's authoritarian capitalism, This constitutes a process of digital financialisation. In short, fintech facilitates digital fintech services and constitutes digital financialisation, and in this way marks the socio-economic impact of China's financial system. The underlying logic of the new financial networks and relationships that have been formed, which have undergone some subtle and significant shifts, also suggests that these actions have facilitated a shift in the centre of financial power from traditional commercial banking networks to digital finance (Gruin, 2019). At this point, out of the above developments, it is possible to demonstrate the development of fintech platforms, accompanied by a rapidly evolving business and institutional environment. The impact of the fintech industry on retail money and finance is a unique process of reintermediation, consolidation and capitalization, And, platform reintermediation is not a strengthening of existing retail currencies, and competition in financial markets, rather, it seeks to generate new market structures (Langley & Leyson, 2021)

With these arguments, firstly, it can help to address the gap in understanding China's

current financial regulation. Existing Fintech regulatory models cannot balance financial innovation and regulatory efficiency, and new regulatory models are still being explored (Mi,2020). Secondly, and linking back to that, Open banking is well established in some countries, such as the UK, where the concept and mode of operation are codified through regulation. In the process of regulating the open banking market, the regulatory authorities have developed various standard codes to ensure the compliant operation and effective supervision of the industry. China's open banking environment differs significantly from that of the UK in terms of the level of economic development, the banking system, the level of financial technology and the needs of bank customers. In fact, as early as 2013, when China's Internet finance entered a phase of rapid development, the financial regulators were already aware of the contradiction between the lack of unified standards for financial sector regulation and the hybrid nature of fintech operations (Mi,2020). Moreover, The hottest third-party payment technology in the fintech sector has created a market for non-bank payment services and underpins the payment clearing market outside of traditional regulation. However, there is a lack of clear legal regulation of the payment clearing market, resulting in no clear legal basis for regulatory measures either (Yang, 2019). Therefore, it is difficult to directly apply the UK model of open banking development and related concepts to the Chinese market. So, the core objective of this study is thus to find out how China has understood and developed open banking, as a result, what changes have been brought about in the organisational structure and competitive landscape of Chinese banks.

3.0 Chapter 3: Research Method

3.1 Research Question

In this section, I will present the research questions in the context of the study and describe my chosen research methods and discuss their strengths and limitations. The research questions are driven to a large extent by the current state of development of open banking.

According to the 'overall operation of the payment system in 2020'³ provided by the People's Bank of China, there were 123.220 billion mobile payment transactions, amounting to RMB 432.16 trillion, an increase of 21.48% and 24.50%, respectively year-on-year (The people's bank of China, 2021) . This indicates that in China, third-party payment platforms have almost built an alternative retail payment system. Although no naming is given to the way banks work with third-party payment platforms, the cooperation is such that the third-party payment platform takes on a similar role as a card issuer, such as a retail payment client at the front. The bank is responsible for payment, settlement and clearing at the back. Meanwhile, China is the global leader in mobile payments (J.P. Morgan, 2019). In the West, where the banks are positioned as more powerful incumbents and FinTechs as 'disruptors' (Lai, 2020), which is different from China, where the definition of open banking was introduced, Banks in China have become 'intruders', This is because the mainstream payment market in China has been taken over by third-party payments, leaving minimal space left for banks. So it would be meaningful to understand how China has understood and developed open banking.

³ Chinese version, can see:

<http://www.pbc.gov.cn/goutongjiaoliu/113456/113469/4213347/index.html>

This prompts the following Main Research Questions (Q1).

Q1. How is open banking understood in China, and what changes is it bringing to Chinese banks' organisational structures and competitive landscapes?

Open banking has emerged as a new rule in the UK banking sector, which is regulation driven and mandatory. China's banking sector has developed independently according to market-driven factors. The approaches to open banking vary significantly from country to country with different regulatory regimes, so I discuss this new development by contrasting the UK, a pioneer of open banking regulation, and China, a leading provider of financial technology services. It will be worth waiting to see what kind of sparks this new regulatory approach to open banking will create between Chinese banks and the already highly developed fintech providers. The idea of opening up banks was first proposed in the UK. However, However, in terms of development, the UK is regulated first, while China is developing on its own according to the market drivers. In terms of the market, China's third-party payment platforms are the primary payment method in China; however, this is different in the UK; this prompts the following Support Research Questions (Q2).

Q2: Non-bank third-party payment platforms have a near monopoly in the retail payments market, How are state regulation and the principal legal of experimentation contributing to the development of open banking in China?

3.2 Methodology

Firstly, the data analysis for this study primarily involved dialogue between three data sets, which took place during interviews between researchers and respondents, Textual analysis (newspapers and policy reports) and Chinese banks that developed open banks.

Secondly, the main data collection methods used for this study were key stakeholder interviews and Textual analysis, where I recorded vital themes, words and sentences from the interviews. Then, as I was a one-year MRes and now in the particular period of the coronavirus pandemic, China's stringent landing segregation policy has limited my fieldwork plans. They were so, limiting the possibility of using fieldwork. For this limitation, textual discourse analysis (Billo & Mountz, 2015) can be relied upon when participant observation is not feasible, so I chose Textual analysis as a research method. Since, the definition of open banking emerged as a new module in the FinTech field (all new modules below refer specifically to the definition of open banking), with new definitions and traceable content. Moreover, the development of open banking in China is at an early stage and limited research literature, so selecting representative banks as supplementary documents. Finally, data collection and analysis will take place simultaneously, and all interviewees will be recorded during the interviews using pseudonyms and handwritten notes.

3.3 Case Study (Selection of cases)

In collecting literature on open banking, I have found relatively limited empirical research in this area. Given the literature's limitations, I can only briefly discuss some specific and illustrative cases which created the need for compiling information on suitable cases of Chinese banks and fintech. Case studies have the advantage of providing the researcher with an opportunity to gain an insightful holistic view of the research question and may help to describe, understand and explain a research question or situation (Tellis, 1997a, 1997b, Baxter & Jack, 2008; Baskarada, 2014). As there are many significant differences in the development of open banking in China and the UK, several observations will also need to be made. Then, I will analyse the commonalities and differences between different industry players and their business strategies in different countries and regions; The above will serve as the basis of the inductive

construction theory. Pan believes that case studies are ideally suited to exploratory research, with ease of implementation, ease of formulating research questions, and ease of generalising to generate new theories (Pan, 2011). There are limitations to the case study approach, and case studies are sometimes deliberately selected (McKeown, 1999) to provide the most robust inferences about a particular theory. Biased case study selection can overstate or understate the relationship between the independent and dependent variables (Collier & Mahoney, 1996). Yin (1984:21) states that ambiguous evidence or biased views influence the direction and conclusions of findings." (Zainal,2017). Case studies rarely provide a basis for scientific generalisation (Zainal,2017). A common criticism of the case study approach is that it relies on individual case explorations, making it difficult to draw a generalised conclusion (Zainal, 2017; Tellis, 1997).

The main types of banks in China are State-owned Banks, joint-stock banks and internet banks. Therefore, I have chosen one bank in these three categories as a specific case to empirically demonstrate how open banking is understood and developed in China. In table 1 below, I will show a brief description of the case bank I have selected, such as the type of case bank, an overview of the case bank, the type of open banking services developed by the case bank, and the case bank's strategy for developing FinTech.

Table 1: Details of the Banks Selected

Bank Type	Bank Name	Overview	Types of Open Banking Services	Strategies	Source
States-owned banks	Bank of China	Bank of China was officially established in February 1912 It is the oldest continuously operating bank and the most global and integrated Chinese bank, with a presence in 61 countries and regions in Mainland China and abroad.	It has opened more than 1,600 interfaces and cooperated with large Internet platforms, payment institutions and government platforms in payment, wealth management and cross-border scenarios to provide financial services such as online account opening, payment and risk assessment.	FinTech Inclusive Finance (Financial Inclusion) Green Finance Wealth Finance Cross-border Finance Consumer Finance County Finance	https://www.bankofchina.com/cbservice/
Joint-stock banks	Shanghai Pudong Development Bank	Shanghai Pudong Development Bank Co. (上海浦东发展银行股份有限公司) Also known as Shanghai Pudong Development	Driven by the API architecture, Pudong Development Bank API Bank is user-centric, with an internal ecology and	Financial Technology Deepening the Changjiang River Delta City Cluster (深耕长三角) New Vision of Free Trade (自贸新视界)	https://open.spdb.com.cn/develop/#/index

		Bank, Approved by the People's Bank of China on 28 August 1992, the head office was established in Shanghai and opened on 9 January 1993. Currently, Pudong Development Bank has 41 branches and nearly 1,700 business establishments in China and overseas, including domestic branches covering all provincial administrative regions in China and overseas branches including Hong Kong, Singapore and London branches.	external scenarios. As of the first half of 2019, Pudong Development API Bank open platform has released 304 API services, docked 129 partner applications and reached a total transaction volume of 43 million.	Financial Inclusion	
Internet Banking	Zhengjiang E-Commerce Bank Co., Ltd (MYBank)	Established on June 25, 2015, Zhejiang E-Commerce Bank Co., Ltd. (浙江网商银行股份有限公司) Also	Through its open API, MYBank has served a cumulative total of 29 million micro and small operators,	Serving micro and small businesses, Mass consumers, Rural operators and farmers,	https://www.mybank.cn

		<p>known as MYBank), is one of the first pilot private banks in China, and the first bank in China to have its core system architecture on the financial cloud, No offline branches, services for users via the internet.</p>	<p>including online shops, roadside shops and operating farmers. The average household loan for these micro and small operators is 36,000 RMB, and 80% have never received a bank loan for their business before.</p>	<p>Small and medium-sized Financial institutions</p>	
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3.4 Textual Analysis

Given that open banking is a new definition and that I found a limited amount of literature available when reviewing the literature, I will use a second research method - textual analysis, a textual analysis of Chinese policy discourse and extensive media coverage. First, the State Council, the People's Bank of China, the China Banking and Insurance Regulatory Commission and the China Securities Regulatory Commission have passed laws and regulations; this includes national policy documents, central bank and financial regulator documents and reports, corporate documents and reports, The purpose is to exercise supervision and regulation over the entire financial sector. Meanwhile, these documents and reports can reflect the national will and objectives of the CPC Central Committee (see Table 2, List of policies to promote the development of open banking). Second, as I mentioned earlier, in China, after third-party payment platforms virtually monopolised the retail payment market, Recognition of new consumption and embrace of new technologies are also essential considerations for banks in choosing how to open their banks; individual banks will decide how to develop open banking according to their own market needs. This is where information on key bank websites, industry reports, media news, and other grey literature to review and analyse becomes essential data sources.

A text is written material that occupies anything from a newspaper article to a book on a library shelf. It is books, manuscripts, memos, archives, documents and essays (Aitken, 2013). "The concept of 'text' has become important in human geography since science constantly produces and uses texts that confirm the authenticity of its privileged status, which is called 'philosophy' (D. Wilson, 2009). Nevertheless, texts always need to be understood in light of the realities of social organisation, the prevailing class dynamics and the necessity of capital accumulation. Texts are often seen as the fundamental basis for defining social life rather than as tools, and their use infuses a

key role of 'realism' into a turbulent, class-stained world. The notion of text in Michel Foucault, for example, is methodologically articulated in *The Archaeology of Knowledge*, which offers an insight into how modern societies manage and discipline their populations in endorsing the claims and practices of the humanities. Texts here are systems of knowledge possibilities, that is, fields of knowledge formulated through sets of discursive rules. Through these subjectively constituted domains, texts are promoted as potentially powerful fields of coercion at the interface of political drive and necessary to influence humans. However, the textual analysis also has certain limitations; although textual analysis defines a field in geography that finds its form primarily through the imagination, texts are inevitably political, and engagement with them is designed to effect change, perhaps through the articulation of new meanings, or perhaps through the expression of resistance to dominant narratives (Aitken, 2013).

Table 2 shows the efforts made by the Chinese government and regulators in promoting open banking - effectively preventing potential risks arising from liberalisation and driving openness and change in the banking sector. Over the past few years, the Chinese government has been promoting the opening of the financial industry to the outside world, in particular by encouraging the development of fintech and issuing various policy documents to facilitate the banking sector's deployment of fintech. Essential elements of China's reform and opening up are deepening financial reform and opening up and enhancing the capacity of financial services for the real economy (Chinese President Xi Jinping, 2019). The first is the approval of the establishment of private banks, marking the opening of China's banking and even financial sector. Since 2014, the China Banking and Insurance Regulatory Commission has been approving the establishment of private banks, and as of September 2019, 19 private banks have been approved for establishment. Secondly, the "13th Five-Year Plan (2016-2020)" puts forward the concept of opening up and sharing, expanding the opening up of finance and other areas, expanding the entry of private capital into the banking sector and developing inclusive finance. At the same time, the China Banking and Insurance Regulatory Commission (CBIRC) has also stated that commercial banks should take

the initiative to transform and establish an open banking system. Then, in August 2018, the China Banking and Insurance Regulatory Commission (CBIRC) abolished the shareholding ratio restriction on foreign investment in Chinese banks, which has to some extent weakened the protection of the "financial licence" for Chinese commercial banks, thus further increasing the competitive pressure on traditional commercial banks.

At the same time, the People's Bank of China and the China Banking and Insurance Regulatory Commission (CBIRC) have encouraged banking institutions to cooperate with emerging financial technology companies in financing small and micro enterprises. In September 2019, the People's Bank of China proposed to expand financial services channels, deepen cross-border cooperation using application programming interfaces (APIs) and software development kits (SDKs), and build an open and cooperative financial services ecosystem. At the same time, this means even further promoting the development of Open banking.

Table 2 List of policies to promote the development of open banking	
Times	Events / Policies
11/2005	e-Banking Management Approach
03/2016	The thirteenth Five-Year Plan
04/2016	Implementation Plan for the Special Rectification of Internet Financial Risks
07/2016	The China Banking Regulatory Commission (CBRC) issued the "Supervisory Guidelines for the 13th Five-Year Plan for the Development of Technology in the Banking Sector in China (Draft for Comments)".
06/2017	Cyber Security Law enacted
12/2017	Information security technology—Personal information security specification
05/2018	The CBRC issued the "Guidelines on Data Governance for Banking Financial Institutions

06/2019	The People's Bank of China and China Banking Regulatory Commission jointly released the China Small and Micro Enterprise Financial Services Report (2018)
02/2020	The peoples bank of Chian release "Commercial Bank Application Interface Security Management Specification"
11/2020	Implementation Measures of the People's Bank of China for the Protection of the Rights and Interests of Financial Consumers
12/03/2021	Fourteenth Five-Year Plan ⁴
<i>Source: Compiled by the Institute of Financial Technology, Renmin University of China</i>	

3.5 Semi-Structured Interviews

An important feature of qualitative interviews over the past few years has been their use to shed light on issues of concern to other human geography sub-disciplines, particularly economic and political geography (Poorthuis et al., 2014). The interviews enable the purposeful co-production of social data in the connection of the interviewees' worldviews and the evolving issues actively pursued by the researchers (Brenner et al., 2010). using interviews to explore their frayed edges and centres of authority, network nodes are positioned in a wider reading of 'local' institutional and social contexts. Interviews are often used to understand the interpretations, experiences and spatiality of social life. (Dowling et al., 2016).

Therefore, semi-structured interviews have the potential to expand knowledge and facilitate the resolution of all research questions. So, to begin with, I defined the respondents as those who have experience working in the FinTech or Open Banking sector. However, simply interviewing officials may constrain the acquisition of

⁴ Fourteenth Five-Year Plan: Fourteenth Five-Year Plan for National Economic and Social Development of the People's Republic of China

objective narrative knowledge (Hitchings and Latham 2020), This is to prevent officials from looking at issues from a single perspective and starting from a position of looking only at the interests of their department. To address this issue, I have interviewed practitioners from state-owned banks - Bank of China, commercial banks - Shanghai Pudong Development Bank, and YIJIA Technology services Ltd, who represent interests that are different from those of the state and offer new perspectives. In addition, I also discussed the expansion of financial regulation with practitioners from YINGKE LAW FIRM, KPMG and the Nation Internet Finance Association of China. However, unfortunately, the staff of MY Bank (Zhengjiang E-Commerce Bank Co.), which I contacted, declined my invitation for an interview.

For this research, semi-structured interviews were conducted with 13 people, including banking professionals, lawyers, members of financial associations etc. Most respondents do not wish to have their personal information disclosed and recorded during the interview process; therefore, all interviewees use pseudonyms (see table 3). Most interviewees were recruited by telephone or email after being referred by their university alumni network, and family members in the legal profession referred only two lawyers. Regarding the interview time, it took about 3-6 weeks from my first contact with the interviewee to the actual interview date, and all interviews were conducted by videoconference. When face-to-face interviews are not possible, online interviews should be seen as a viable option for researchers and not just as an alternative or secondary option (Deakin & Wakefield, 2013), as Videoconferencing is helping researchers overcome geographical barriers. I have used Ding Talk, WeChat, and WeChat Voice Calls, as these were the more acceptable methods to the interviewees. As I was based in the UK and the interviewees were all based in China, given the highly contagious COVID-19 epidemic spreading globally and China's specific entry quarantine policies, I needed more time to conduct field research. The online interview format was the appropriate choice. Interviews ranged from 26 to 108 minutes, with an average duration of approximately 50 minutes. The length of the interviews varied, depending on how cooperative the interviewees were, with some willing to give details

and others providing only summaries.

Fortunately, most interviewees were willing to talk to me and acknowledged the significance of my research. At the beginning of the interview, the interviewees did not want me to note their positions or roles in the company or organisation. However, after my explanation and efforts, they eventually agreed to have that information noted. Unfortunately, the interviewees said they avoided talking directly about regulatory policy, fearing that talking too much about it would interfere with their work. Moreover, they declined to have the interview recorded, which forced me to take down keywords during the interview and refine other details afterwards with the remainder of the critical words.

Regarding notes and coding (Walby, 2013), firstly, I pre-defined the themes of the interviews based on newspaper articles and reports to facilitate the coding of the interview transcripts. However, the reality is that as these were flexible semi-structured interviews, I did not strictly follow the interview guide but asked the questions in the most appropriate order based on the interviewees' responses. And then, I triangulated (Olsen, 2004) the data obtained from the interview transcripts with the data obtained from the published material. This would have resulted in some of my research themes being changed or removed. This was because new questions emerged from the data analysis of the interview transcripts and were new questions that became possible arguments. More specifically, by interviewing practitioners and finding out whether there is any project interaction between banks in open banking (thus addressing RQ1) and by gaining insight into how institutional players and policymakers support or undermine monopolies in existing financial markets (thus addressing RQ2), the information from the interview transcripts was then triangulated with three cases to explore whether China must go along with the trend to develop open banking and change the existing financial market structure.

Again, the interviews had certain limitations. First, Interviews usually focus on individual perspectives, so this data collection technique can easily lead us down a slippery slope of methodological individualism in interpretation

(Lamont&Swidler,2014). There is also the additional trap that interviews encourage us to find coherence in narratives and worldviews, regardless of whether people have a coherent or disconnected culture (Lamont&Swidler,2014). Just as open banking in China is currently still developing, there are no uniform standards. That development needs to be tailored to the country's context and political system, yet the UK, as a pioneer, set standards early on and made almost all information public. It is unclear whether, having been informed of these standards and information, respondents will forget the gaps in regulatory positioning in different countries and ignore the impact of Alipay, the existing open platform leader in their country. In terms of technology, interviews conducted through technology have obvious disadvantages (McCoyd & Kerson, 2006). Videoconferencing requires both the researcher and the interviewee to have a laptop, iPad or smartphone capable of providing this technology and that both are technologically proficient and comfortable using it. However, videoconferencing is not perfect, and potential failures can occur beyond human control, such as network connectivity problems and software failures. I had internet connection problems twice during my interviews, one of which was a sudden lag while the interviewee was answering a critical question that could not even be resolved for over 10 minutes. As the interviewee had another appointment, the time available to me was only for that period, so we had to reschedule the date based on the interviewee's availability, which was three weeks after this interview, which was significantly delayed in getting the information.

Table 3: Description of the respondents

Organisation	Pseudonym	Current profession	Duration of the interview	Mode of interview
China Construction Bank	Allen	Branch Manager	26 Minutes (28/09/2021)	Ding Talk Video Call
China Construction Bank	Peter	Senior Management (Individuals/businesses)	50 Minutes(15/10/2021)	Ding Talk Video Call
Bank of China	Alex	Senior Management (Products)	20 Minutes(27/09/2021)	WeChat Video Call
Bank of China	Ella	Senior Management (Payment Settlement Centre)	27 Minutes(23/09/2021)	Ding Talk Video Call
Shanghai Pudong Development Bank	Leah	Senior Management (Corporate Finance)	52 Minutes(21/09/2021)	Ding Talk Video Call
Shanghai Pudong Development Bank	Alessia	Senior Management (Personal Finance)	41 Minutes(23/09/2021)	WeChat Video Call
KPMG	Pernille	Finance Team Leader	50 Minutes(27/09/2021)	WeChat Video Call
YINGKE LAW FIRM	Sam	Banking legal affairs direction	83 Minutes (22/09/2021) (21/07/2022)	WeChat Video Call
YINGKE LAW FIRM	Andy	Blockchain legal affairs direction	45 Minutes(23/09/2021)	WeChat Video Call
The People's Bank of China	Tilly	Senior Management	30 Minutes (28/09/2021)	Ding Talk Video Call
The People's Bank of China (Inner Mongolia Branch)	Jess	Senior Management	108 Minutes (08/10/2021)	WeChat Video Call
YIJIA Technology Services Ltd.	Minghua Wang	Managing Director	90 Minutes(15/10/2021)	WeChat Video Call
National Internet Finance Association of China	Ben	Member of the Digital Finance Committee	45 Minutes (20/20/2021)	Ding Talk Video Call

4.0 Chapter 4: Empirical evidence of open banking development - Open Banking is not a bank

4.1 Introduction

Fintech is technology-driven financial innovation (Zhou et al., 2021) that uses technology to innovate financial products, business processes and even business models and to empower the financial sector to serve the real economy better. The rapid development of financial technology in China has brought challenges and new opportunities for the banking-based financial industry. On the one hand, the development of financial technology has intensified competition in the banking industry, breaking the monopoly of traditional banks; on the other hand, the empowerment of financial technology has also provided technical support and innovative impetus for the transformation and upgrading of the banking industry. To address the challenges and opportunities, commercial banks are exploring a new banking model called "Open Banking" in the context of FinTech. At present, there are many definitions of open banking given globally. According to Gartner, a consultancy and analyst firm, open banking is essentially a platform business model in which banks create new value by sharing data, algorithms, transactions and processes with participants in the business ecosystem to provide services to all types of users in the ecosystem. Open banking is a platform strategy, i.e. banks open up their data ports and attract external partners to join them, aggregating various scenarios and providing more convenient customer services. *Some Chinese scholars describe this convenient service as a "one-stop service"*⁵

⁵ *once a customer has a need, once they enter a service site, all their problems can be solved without the need to find a second site (Interviewee Ben, 2021)*

(Interviewee Ben, 2021)

With the continuous development of Open Banking and China's leading FinTech (deep integration of digital technology with the financial sector), the new round of cooperation and competition between commercial banks and fintech platforms around application scenarios and how to promote their cooperation and the long-term stable development of fintech has become an important theoretical and practical issue. Therefore, open banking requires commercial banks and fintech platforms to innovate together (Wang, 2021). However, some financial platforms (e.g. Wechat pay and Alipay) base their resources on pre-precipitated user flows and application scenarios. They were using the advantages of rich scenarios to build their own fintech companies, traffic and data, thus establishing a complete ecological closed loop of fintech services (Yi, 2022). In the process, the business similarities between fintech platforms and commercial banks in terms of fintech services and consumer scenario services make them competitive in terms of business overlap and contradictory in terms of long-term strategic layout. In addition, there are potential risks to open banking practices in the absence of clear future benefits, such as “*unclear revenue-sharing mechanisms*” and “*inadequate data regulation*” (Interviewee Ben, 2021), making there some resistance to a long-term collaboration between the two parties.

This chapter covers the concept of open banking, the impact of fintech innovation on open banking, and the relationship between traditional commercial banks and open banking. This thesis, therefore, argues that, unlike the UK, which is regulation-driven, open banking is market-driven in China; the Open Banking development model will develop on its own, depending on the bank's FinTech strengths, for example, by establishing its platform practice or partnering with FinTech companies. However, in the UK, open Banking tries to allow small fintech companies or start-ups to compete with banks and offer a separate service to consumers. This chapter, therefore, uses the conceptual framework of the literature review chapter. Fintech as a national strategy (Gruin, 2019) constitutes the digitisation of finance. It forms new financial networks

where platforms seek new market structures through reintermediation (Langley & Leyson, 2021) as a tool for How China understands open banking and explores the most realistic picture of the development of open banking in China, and what changes it has brought to the organisational structure and competitive landscape of Chinese banks. By discovering the structural features of financial markets transformed by fintech, how open banking is understood and developed in this financial market-driven approach, all of which takes place in a context that is not mandatorily open. Then, the open banking practice of a representative commercial bank in China is used as an example to discover the way they have developed open banking, the types of openness and the characteristics. It further demonstrates that open banking, as a new form of banking service, is facilitating the transformation of traditional commercial banking services, delivering financial activities more accurately and timely to the ecological scenarios that customers need, and extending financial assistance to previously new customer segments.

4.2 What is Open Banking?

4.2.1 Background and Definition of Open Banking: the UK experience

The UK proposed Open Banking, and the UK has been at the forefront of innovation in open banking financial services. The 2016 Competition and Markets Authority case (CMA case) found that large, well-established banks did not have to compete through accumulation to gain customer business. However, the newer banks have struggled to enter the market and achieve growth. Firstly, it shows the data monopoly of the big old banks, which is not fair. Secondly, technological change and intense competition in an industry may benefit that industry (Ozcan 2017., Matsa 2011). Therefore, the CMA considers that one of the solutions to this problem is to implement open banking. The OBIE (Open Banking Implementation Entity) was created to drive innovation,

competition and transparency in retail banking in the UK. As explained by OBIE, open banking gives customers precise control over their financial situation, and It can also help clients transfer, manage and earn more money. For example, customers can register with a provider that shows all their accounts with multiple banks in one place. Alternatively, customers can connect their bank account to an application that the app will analyse their spending and recommend a new product, such as a credit card or savings account, to save them money. Both methods give clients a better overview of their financial situation (Bannister, 2020). In more detail, Open Banking is a type of information sharing (New and Secure) for customers, including individuals and small businesses; this is a way to offer super-fast payment methods and innovative banking products to facilitate the company (New and Old)⁶. The essence of this is the use of open API technology, And in a way that empowers the customer, Sharing information that has been shared with the bank to an organisation (regulated providers⁷) they trust. Open banking is therefore defined as "reliable, personalised financial advice, tailored precisely to your specific situation, delivered securely and confidentially" (Ramdani et al., 2020.; CMA, 2016: 7).

The UK has introduced the world's first more complete open banking system, mandated by government legislation. The main drivers for the implementation of Open Banking come from two sources. One of these is in response to the EU's "General Data Protection Regulation" (GDPR), which came into force in 2018, and the regulatory compliance requirements of "The second Payment Services Directive" (PSD2). in which the GDPR provides an essential legal framework for access to and sharing of customer banking data. However, PSD2 requires payment account providers to work only with the customer's consent. The main objective of PSD2 is to integrate further and support a more efficient EU payments market and ensure that small companies can compete with banks for digital payment services (Rothwell et al., 2020).

⁶ New (new customers), Old (as well as existing customers)

⁷ <https://www.openbanking.org.uk/regulated-providers/>

To some extent, Open Banking is the UK version of PSD2. However, Open Banking not only requires banks to open their data to third-party institutions, but it also requires open access in a standard format and secure data transfer to the customer. Open Banking allows access to a broader range of third-party organisations. Thus, further stimulating innovation by third-party organisations, including fintech companies and bank technology departments. The CMA's pre-survey report revealed a lack of competition in the UK banking market, Particularly a poorly functioning market for customers and SMEs. Open banking data can be effective in improving efficiency. It has become a barrier to competition in the UK banking market. Improving the liquidity of information is an essential tool to keep the market functioning correctly between the different players in the banking sector in the UK retail and SME banking market in particular (CMA, 2017). Open Banking has also emerged to facilitate the flow of information in the banking market and to open access to accounts and credit data to market participants.

Fundamentally, Open Banking is providing a public good and trying to make it possible for everyone to use their data for their benefit (Annual report 2020, OBIE). It also promotes digital fairness - between established banks and fintech providers to the greatest extent possible-i.e. data sharing. Therefore, open banking will revolutionise how we transfer, manage and make money (OBIE, 2016). This situation, leading large banks to reconsider their customer service standards and market positioning, bring benefits to customers by improving the quality and reducing the price of products and services (Zachariadis, 2017; Matsa, 2011). Furthermore, Open Banking is changing the competitive landscape and market dynamics of the financial sector through technological and digital innovation; these behaviours will revitalise the country's economy. For example, UK Treasury estimates that open banking will bring more than £1 billion in GDP growth yearly (UK Treasury, 2018). Open Banking will be expected to generate at least £7.2 billion in revenue for the UK by 2022 (PWC, 2018). 60% of the UK population will use Open Banking by September 2023 (CMA, 2021). In addition to the estimated achievements, over 2,660 cumulative open bank payments

were completed by the end of 2021 and have grown by over 500% in 12 months. New customers have also increased by 60%, with 1 million new users (Regular/Active) added every six months (OBIE, 2021).

Therefore, as the process of "unbundling" (separate banking services are identified and sold separately by non-banks) of banking services (Li&Liu,2019) advances, the emergence of Internet banking has made people realise that banks that are detached from physical branches still provide banking services; on the other hand, financial technology companies, with their advanced technology and user advantages, use small and high-frequency payment business as an entry point and provide customers with financial management, small loans and other financial solutions as a package. Microloans and other financial solutions continue to expand their market share. The biggest challenge facing the banking industry today is not from its peers but from other competitors, especially the growth of fintech companies which pose a massive threat to banks. One big player is not being knocked down by another big player but is being disrupted and replaced by emerging players. According to Global FinTech Survey 2017 China Summary by PwC⁸, emerging fintech companies are expected to steal 24% of the revenue of large financial institutions in the next three to five years. Against this backdrop, commercial banks should strengthen their investment in fintech and open a comprehensive cooperation model with fintech companies to seek win-win cooperation (Li &Liu, 2019). In this ecosystem, banks do not have to stick to how they provide services at their branches but rather take a more covert stance to share the output of banking services.

4.2.2 API

Open banking through API. The key features of Open Banking are API technology-

⁸ <http://www.d-long.com/eWebEditor/uploadfile/2017092518274883861957.pdf>

based and data sharing at its core. Open banking is the sharing of bank customer data. It allows third-party institutions to access the data they hold at the bank with the customer's consent. This is also a result of an awakening to the value of data assets and the rights of consumers to data, Concerns about data security and privacy, and dissatisfaction with competition and financial innovation in the existing banking market, which has two levels of meaning. Firstly, data sovereignty is clearly defined to the customer, a prerequisite for sharing bank data. The reason for starting with the banking sector is that traditional banks are already committed to having due diligence on their customers. The customer has two assets on deposit with the bank: money and data. The client is the property owner, and the bank is the controller and custodian. The bank is therefore obliged to provide the customer's information to third parties as instructed by the customer. Secondly, data has potential value, but it can only be value-added when it is flowing and shared. The more data is used, the easier it is to generate value. Customers who understand the value of data are more willing to share that value, and It is also more aware of the responsibilities to be taken in data sharing. Therefore, data sharing is a prerequisite for implementing open banking, both for the benefit of consumers and society. APIs can be divided into two types: the Pure open API model and Partnerships, etc., using API.

Pure open API Model. An API is "a way for two computer applications to communicate with each other on a network through a common language that they understand" (Ozcan,2017., Jacobson et al., 2012). Alternatively, "power outlets with predictable opening patterns", where other applications matched to these patterns, can be "plug and play" in the same way as electrical appliances (Ozcan,2017., Berlind, 2015). More imaginatively, The API is like a teacher, fetching information back and forth between the lecture room (client application) and the students (essential software). For any given software, The API defines the mechanism for connecting to the software, the data available through the software and the functions to be invoked, and the rules other software must follow when interacting with that data and functionality. Provider organisations use open APIs to create platforms for the digital economy, let innovators

develop applications that use API and charge a fee for their use. API is giving rise to an emerging API economy on a global scale (Lai,2021); it has completely changed how companies do business and compete in the marketplace.

Furthermore, one of the advantages of APIs is that they allow for the transfer of large volumes of data and capabilities without the need for complex manual work. On the other hand, API data sharing is more secure and convenient. Importantly, banking data sharing does not require access to user privacy information such as usernames and passwords. As a result, the risk of a hacking attack leading to a massive breach of customer information is significantly reduced. With the aid of API, Banks can export their open technology services to third parties without worrying about the details of core technologies and mechanisms being compromised. Moreover, no significant modifications to the original core system are required. All of this benefits the security of the API and PSD2.

Partnership using APIs. With Open APIs as a boundary resource⁹, institutions such as banks or fintech companies can share core functionality based on a software platform and provide external developers with modules with which they can interoperate. The production and labelling of API documentation help to nurture and expand the ecosystem, attracting new players, knowledge and capabilities from outside the enterprise (Li, 2019). The platform business model has two main advantages (Yi, 2021) over the traditional 'pipeline' business model: it reduces transaction costs and stimulates network effects. Platform strategies can further reduce search, matching, negotiation and contracting costs and potentially endanger information asymmetries between consumers and suppliers. Successful platform reinvention depends on transforming and monopolising new market structures in retail money and finance (Langley & Leyson, 2020). For example, Alibaba's subsequent expansion has seen the introduction of

⁹ *In information systems, boundary resources refer to standardized application programming interfaces (APIs) or and software development kits (SDKs). In this thesis, boundary resources are understood as: an important means of organisational opening up in a manageable and controllable way, which is designed to foster innovation and development within the digital platform ecosystems (Gong and Li,2023)*

'complementary products' for the user base they capture by 'building an ecosystem of goods and services and shutting down competitors' (Langley & Leyson, 2020; Srnicek, 2016, p.96).

The core value proposition of the platform business model is not to sell products but to 'sell services that reduce transaction costs' (Munger, 2015). Another vital advantage of the platform business model is the network effect, whereby the marginal revenue received by platform users increases with the number of platform users (Shapiro & Varian, 1999). For this reason, API has been used by many companies to create innovation platforms; Apple's (Hendrikse et al., 2018) App Store, for example, makes it as easy to integrate the various API technologies of all application service providers into the entire ecosystem as it is to build a house. In other words, each API is like a block of building blocks on a common platform. Through efficient collaboration, the building blocks are joined together, complementing each other and working together to create a complete product and service.

4.2.3 Fintech Driving Models and Platform Development

The financial technology industry is characterised by openness, sharing, equality and inclusiveness, driving the rules of the banking market from "homogeneous competition" to "collaboration and win-win" (Mao, 2021). Traditional banks can use financial technology to build open banking platforms, cooperate with internet communities and third-party institutions, and integrate resources from multiple industries to enhance their competitiveness in the industry chain. The development of open banking in the context of fintech has gradually led to the hybridisation of licences in the financial sector, i.e. "operating without borders" replacing "operating with borders" (Hou, 2020). Open banking, also known as "banking without borders" (Li, 2019), can provide customers with a variety of integrated services in the same or

different sectors through an open platform and an open ecology, thus satisfying their multifaceted needs. Financial technology innovation is the driving force behind the development of open banking, providing not only new operating rules but also important underlying technology. FinTech, the 2.0 version of Internet finance (Li, 2019), is a financial innovation driven by underlying technologies such as artificial intelligence, blockchain, cloud computing and big data. Open Banking uses these emerging technologies to make financial services genuinely ubiquitous.

Open banking reflects the penetration and reshaping of the traditional banking industry by the platform economy, and platform cooperation has become the expression of open banking as distinct from traditional commercial banking. Platform cooperation breaks down the relatively closed internal ecological barriers of commercial banks, realising "Bank as a Platform" (BaaP) (Zhou,2020). Instead of providing financial services and products directly to customers, Open Banking exports them to third-party platforms or aggregates them into its scenario-based platforms, building a new "Finance + Life¹⁰" hybrid business ecosystem (Chi,2020). Moreover, indirectly providing financial services to customers Platform cooperation is the basis for cross-border integration and open and borderless banking on the one hand and guarantees the implementation of open API technology and data sharing on the other. Open API technology and data sharing will retain their value with platform cooperation. While platform partnerships may move financial services from the front of the stage to behind-the-scenes, the platform also acts as a connection point, allowing banking services to be seamlessly integrated into all scenarios of corporate production and public life. The Open Banking API can be invoked (Zhou,2020). whenever a customer needs it so that the service can be accessed in the first instance, thus achieving "customer-centricity".

¹⁰ Finance + Life means building financial services in the community to provide convenience to residents around the perimeter of their medical, food, housing, transportation, education, culture and entertainment.

4.3 The Driven and Cases of Open Banking in China

4.3.1 Market-Driven

In China, as there are no uniform standards for Chinese regulators, they are simply advocating for banks to develop their open banking based on their situation. The reason is that, in China, in earlier years, open APIs largely enabled partnerships between banks and large technology companies. This has led to significant changes in the Chinese financial system (Gruin, 2019). Such as Alipay is one of the most popular mobile payment platforms in China and offers a range of digital banking, investment, lending and insurance services (Langley,2020) . Another application, WeChat, offers a range of money transfer and payment functions to its 890 million users (Langley,2020., Chandler, 2017).

This shows that technologies can be used by redesigning their use and changing their economic and political potential, thereby having unintended political consequences. For example, The rise of fintech in China represents a market-based use of new financial technologies through inclusive financial liberalisation (Gruin, 2019). Meanwhile, the growth of fintech in China is mainly driven by the expansion strategy of BAT (Baidu, Alibaba and Tencent) (Langley,2020; Economist, 2017; Wang & Doan, 2018).

China's e-commerce platforms and third-party payment businesses are well-developed. In recent years, Internet financial companies have significantly contributed to the optimisation of financial services and the provision of financial services, gradually occupying a place in the financial sector. They are even competing with banks in some areas. Its embrace of fintech has greatly stimulated banks to develop innovative

businesses, enabling them to work closely with e-commerce platforms and fintech companies quickly. Internet companies are the first to see the opportunity and are rapidly developing on the strength of their financial technology, becoming the priority beneficiaries of the data dividend; the rapid rise of the sharing and platform economies symbolised by data sharing has affected all aspects of economic life. The impact of the "customer-centric" business philosophy and the "open sharing, data-driven, business model restructuring" has prompted traditional commercial banks to shift their decisions in response to this massive change. For example, the Bank of China launched its BOC Open Platform in September 2013, and Shanghai Pudong Development Bank launched the industry's first API Bank, the Borderless Open Bank. According to the public information of Shanghai Pudong Development Bank, it is also a "universal connector" in financial services, developing a wide range of applications and functions such as scenario access, fund introduction, fund depository and open platform. Nevertheless, Under the Open Banking business model, one-way data openness creates an unequal playing field between the two parties: e-commerce platforms, for example, can rely on the richer data resources of financial institutions for growth opportunities, while traditional financial institutions are vulnerable to losing their fundamental data advantage.

4.3.2 Bank of China-Open Ecosystem

Bank of China's open banking model focus on the aggregation and access of financial services scenarios, focus on differentiated customer needs (Interviewee Alex,2021), *“This time,aggregates third-party services, products and data into their apps through APIs and other technical means, creates open ecology, and provide customers with one-stop "finance + life" or "finance + production" services. For example, the Bank of China's Personal Mobile Banking App for retail business presents, With our open banking, we offer our customers the possibility to pay their water, electricity and gas*

bills directly through mobile banking (Interviewee Alex,2021).Bank of China's credit cards are focused on the consumer benefits that users are concerned about. And, we also,New products such as flexible repayment and automatic highway deduction are launched” (Interviewee Ella,2021). This fully demonstrates the perfect integration of Internet consumer financial services and consumer scenarios, enabling consumer upgrading. In addition, based on its “*self-built Sunrong Commerce platform*”, the Bank of China has also accessed and aggregated various scenarios, such as daily consumption and e-commerce, and “*built a scenario-based open banking model using the bank's App as a carrier*”, which has significantly improved the customer experience (Interviewee Ella,2021).

It can be concluded that the advantage of scenario access is mainly reflected in the integration of various scenarios from partners into its App and other platforms and the proactive creation of an open ecology, which enhances the control of the business ecology and the influence of the bank's brand. At the same time, there are some shortcomings. These include a bank-led scenario, which is bound by traditional business thinking and needs more flexibility of fintech companies, and a high cost of exploration around differentiated customer needs, with some uncertainty about its contribution to profit growth.

4.3.3 Shanghai Pudong Development Bank - Business Output

Under the business export model, banks focus on the construction of underlying APIs and other technological capabilities, exporting financial services and sharing operational data to third-party partners through open APIs and other forms, thus enabling the creation of open platforms and other building integrated service platforms that can meet most of the needs of network customers with just one portal (interviewees Leah,2021). For example, in July 2018 (interviewees Alessia,2021), Pudong

Development Bank launched API Bank, a borderless open bank, to create an open and shared digital openness platform. API Bank is fully open for banking services so that customers can call the bank's API through partner apps, WeChat applets, corporate portals and other channels to meet their financial service needs the first time. The API Bank can be embedded into the Community App, allowing homeowners to use the App to pay their property bills, get discounts at community merchants, book cleaning services and more. The API Bank (open.spdb.com.cn) is also embedded in various travel websites. It combines technologies such as the Internet of Things and artificial intelligence to proactively provide services and products such as instalments and insurance based on customer preferences, as well as sensing customers' location and pushing helpful information such as discounted merchants and flight delays in the vicinity in real-time. In addition to exporting traditional financial services, Apibank can open up the bank's professional financial management and risk management capabilities to its corporate customers, enabling micro and small enterprises to improve their management and growth through new business interfaces.

The business-exporting build model helps (Zhou,2020) increase the incentive for third-party fintech companies to participate in open banking. By enabling third parties to build open platforms through API technology, banks give them more room for innovation. Third parties can call on API services to improve their business ecosystem while taking advantage of the traffic to help banks attract customers. Banks can leverage their comparative advantages in cash management and supply chain to provide more professional financial services. However, this model relegates banks to the background and, to a certain extent, reduces their control over the fintech ecosystem.

4.3.4 MY Bank- Integrated Open Banking

Under the integrated construction model (Zhou,2020), the bank's business ecology and

open platform construction go hand in hand, not only building its business scenarios and ecology around its customers' apps but also exporting its financial services through API and other means to stimulate the participation of third parties and create an open business ecology and cross-industry alliances through the flow platforms provided by third parties. For example, as the first private internet bank in China, MyBank is a pioneer in integrated open banking and has achieved both open ecosystem-based scenario aggregation and open platform-based business export. In scenario aggregation, the primary examples are Microfinance, MyBank and the Direct Banking App, where customers are mainly obtained from online financial scenarios. For example, many micro and small enterprise customers are connected to the enterprise version of WeChat Bank, and more than 20 million (Chi,2020) customers have been acquired through the direct banking scenario. MyBank cooperates with internet used car platforms and relies on their traffic to export its financial services and products, such as micro car loans, to the used car platforms, forming a "cross-industry alliance". When a customer looks at a car, selects a car, does a valuation and needs financial services on the used car platform, the service interface of MyBank will pop up. In business export and platform empowerment, MyBank directly open-sources its technology applications to partner organisations based on privacy and security. The partner car dealers can use the open-source technology provided by MyBank to build their special platform services, thus significantly saving the customer's investment. (Based on the MYBank Annual Report¹¹)

Therefore, the integrated open banking model realizes both ecology and platform, which is conducive to banks to grasp the advantages of channel access and traffic, and enhance their control over customers and the influence of their own brands. The weaknesses are mainly due to the need to balance open ecology and open platform construction, and therefore often require higher construction costs, including capital, human resources and technical investment (Wu,2020). Around November 2016, Online Business Bank of Zhejiang used technologies such as big data, blockchain and cloud

¹¹ <https://render.mybank.cn/p/c/18mgesugrvnk/information.html>

computing to meet the rapidly growing financial needs of small and medium-sized enterprises (MSMEs), providing a total of over RMB 50 billion in loans to 1.33 million MSMEs (2017 MY Bank annual report), supporting the financial needs of merchants throughout the Double 11 cycle¹². This is a technological solution to the information problem. With technology as the backbone, it will not only change the way traditional banks provide services, but will also provide an important foundation that will benefit all sectors in the future. In particular, micro and small enterprises, which are not accepted and trusted by traditional banks, can find low-cost, personalised financial services under the open banking model, a feature that is evident in Zhejiang Internet Business Bank's lending to micro and small enterprises (Chi,2020). So, Financial inclusion is thus promoted, and it exists to increase the accessibility of financial services to its audience.

4.4 How Open Banking is Understood in China?

Today in China, the financial sector is increasingly dependent on technology to support its services and products, and financial innovation is changing the financial ecosystem (Funk & Hirschman, 2014). Fintech is, in fact, an adjunct to the demands of the global financialisation trend. On the other hand, financialisation is a phenomenon in which financial motives, financial markets, financial actors and institutions are playing an increasing role in Chinese and international economic operations (Epstein, 2005). In this process, 'Tech' breaks down potential barriers between the various actors in the financial market and becomes the glue that holds the financial elements together. However, "Tech" has always been a “channel” (Using technology for development)

¹² It is Alibaba's discount festival on 11 October, similar to Black Friday in Europe and the United States. MY BANK will provide credit enhancement services for several platforms during this period to support their participation in the discount festival. where merchants on multiple platforms will have the opportunity to receive different levels of credit enhancement by submitting tax data, order information and other materials

rather than a "pivot"(Technology at the centre)¹³ and open banking is part of the financialisation process. Digitisation' is a socio-technical process of applying science and technology across a broader social and institutional spectrum. The digital economy provides the basis for open banks to cooperate with third parties to develop services such as payments, investments and information intermediation, thus giving them a colouring of Internet financial products. So, The biggest challenge facing Chinese banks today is not from their peers but from other non-bank competitors, such as fintech companies who offer similar services to banks. PWC expects emerging fintech companies to steal 24% of revenues from large financial institutions over the next 3-5 years (PWC 2017 Global Fintech Report). In this context, Chinese banks are working together to build a win-win ecosystem by opening their banking APIs in terms of technology. Moreover, the bank is not limited to a branch service approach but takes a more covert stance to share the output of banking services. This aligns with the current digital economy (Zeng, 2020).

Among the most recent open banking practices in China, Pudong Development Bank has launched the industry's first API Bank, which can be described as an "open bank" in the true sense of the word rather than a mere technology platform. API technology will build what is close to a "cross-industry data sharing ecosystem, embedding its products and services directly into the platforms of third partner parties rather than limiting them to physical outlets and mobile apps; it can better data integration and resource sharing, and provides a technical guarantee for the smooth implementation of cross-border financial services. Open Banking is essentially a new business model and data-sharing mechanism. It is built on a consumer-centric, platform-dimensioned hierarchy, with API technology as the basis for empowerment. Open banking development models usually include the self-built API platform model¹⁴ and the third-

¹³ For China's Open Bank, it originally already had its own model to develop Fintech, digital payment platforms, and these platforms have a full range of services. So it wasn't with the development of Tech in mind to do this.

¹⁴ The self-built API platform model means that the bank builds its open platform, with business scenarios, technical support, traffic entrances and financial services all built by the bank itself or by the group to which it belongs (Interviewee Allen,2021).

party API platform model¹⁵. In general, larger banks tend to build their platforms on both the technology export side (API) and the scenario demand side (APP) to increase their control over all platforms (Chi, 2020). In addition to their strength, banks' business strategies also influence their choice of position in the open banking platform. For example, Pudong Development Bank launched the industry's first API Bank without borders, dedicated to opening API services to third-party partners. These are all signs that the banks developing open banking are developing and building a Chinese style of open banking, as directed by the Fourteenth Five-Year Plan¹⁶(Chi,2020).

So, what exactly constitutes open banking in the Chinese style? Bank of China, which launched its BOC Open Platform in 2013, can help me answer this question. In an interview with the staff, she said to take your memory back to before 2013 and how our household bills were paid. Such as water, electricity, and gas bills. Did we have to split up and wait in pairs at the branch, sometimes when many people were waiting and a whole day could be wasted? However, now, we need to take our mobile phone and click to complete the payment, no queuing, and we can pay anytime 7*24 hours. Is this just because of Alipay or WeChat? No, it is due to the cooperation between third-party payment platforms and banks and the Open API economic model of the new value network. Through Taobao and Alipay, it became clear to the Bank of China that fintech was driving financial innovation and that the financial landscape was being restructured. Therefore, they were the first to use the shared service capability of APIs and formed the BOC Open Platform as a unified access platform to the Internet for the Bank of China, providing access to internal systems for Internet applications. It has also opened more than 1,600 interfaces and cooperated with large Internet platforms, payment institutions and government platforms in payment, wealth management and cross-

¹⁵ The third-party API platform model refers to several collaborations between banks and participants in the open banking ecosystem, such as fintech companies, to leverage products or services developed by fintech companies, form partnership networks, traffic/lead buying, joint ventures or co-creation of services (Interviewee Allen,2021).

¹⁶ The 14th Five-Year Plan generally refers to the 14th Five-Year Plan for the National Economic and Social Development of the People's Republic of China and the Outline of the Vision 2035
Source: http://www.gov.cn/xinwen/2021-03/13/content_5592681.htm

border scenarios to provide financial services such as online account opening, payment, and risk assessment. It adopted a Business-to-Business Consumer(B2B2C) model to provide complete financial services to the outside world. And unified channel layer management of the Bank of China's financial product output.

During an interview with professionals from Shanghai Pudong Development Bank (Referred to as PF below), the interviewee (Leah & Alessia, 2021), “*we are the first bank in China to develop and implement an open bank guided by national policy and the bank's requirements for sustainable development.*” They also mention that they have created an API Bank open platform that fits China's national context. Moreover, in May 2019, PF Bank joined forces with IBM to set up the Open Banking Joint Lab. In terms of customer base, the target customers are subdivided by industry, industry chain and life cycle into four major customer groups: technology-based SMEs, large leading technology companies, government, and PE/VC (Private Equity/Venture Capital). Moreover, they are happy to work with micro and small businesses to embed their products and services on their partners' platforms based on open API technology. For example, the community app was built by Wang (YIJIA Technology Services Ltd), who told me in the interview that their company works with PF and Bank of China, which is “*courier collection*” and “*property services projects*”. This confirms the interviewee's (PF Bank) reference to API Bank's ecological role in extending APIs into the lives of community residents for payment settlement, collection and payment collection, and online financing. PF Bank's API open platform has been upgraded from Open Banking 1.0 to Open Banking 2.0. The *Open Finance Alliance* has been established to work with financial institutions in the “*Yangtze River Delta region*”. Therefore, the location also presents a unique opportunity for PF Bank to develop API, based in Shanghai, in the Yangtze River Delta region, which is typically an affluent (rich in goods and population) area, for example, “*new industrial sectors such as integrated circuits, biomedicine, aerospace and high-end equipment*”(interviewee Leah & Alessia, 2021).

The interviewees (People's Bank of China, Internet Society of China, Leo, 2021) also mentioned that the *“country is currently committed to promoting financial inclusion in industrial finance, which has led to a small and micro customer group widely valued by the banking industry, Helping small and micro enterprises to lend is at the top of most banks lists for developing their public business. Furthermore, financial services in China are currently in a demographic shortage and with tens of millions of small and micro-operators.”* So, Banks Building an open banking model to change the traditional offline service model can effectively unlock new needs based on the current development of open banking in each bank. They believe open banking is shifting the bank's customers to Long Tail customers¹⁷. This sends a positive message to banks or start-ups implementing or not implementing open banking due to various preferences.

4.5 Conclusion

Studying the relationship between banks and fintech in the context of open banking, scholars have mostly focused on the collaborative dynamics of banks. For example, Chi (2020) argue that the development of open banking cannot be achieved without the traditional retail commercial banking on the one hand, and the existing social network and technology resources of the external partner fintech platform on the other. However, open banking is a competition around the consumer, and each participant, such as commercial banks and internet platforms, needs to maximise consumer value to enhance their competitiveness. For example, Pudong Development Bank has launched API Bank, an open bank that opens its products and services to various scenarios on fintech platforms, so that users can directly use Pudong Development Bank's services in other fintech platforms without having to transfer to commercial banks' internet platforms. While large banks have built their own platforms for business cooperation,

¹⁷ Long-tail customers tend to have smaller assets at their disposal. However, the total number of people in this group is large, with micro and small businesses, start-ups and people involved in agriculture falling into this category (interviewees Leo, 2021).

small and medium-sized banks often need to use external third-party technology platforms to open up their business. In general, banks and fintech platforms have long had a dual relationship of competition and cooperation, and the development of open banking has led to closer competition and cooperation between the two

5.0 Chapter 5: Empirical evidence of Open Banking Regulation

5.1 Introduction

This section introduces the regulatory sandbox model and the related practice of the Chinese version of the regulatory sandbox - the regulatory pilot - and analyses its related issues, identifying problems such as the administrative hierarchy of regulatory bodies, the challenges of sectoral regulation and the lack of distinctive universal character of the Chinese regulatory sandbox-style pilot, Regulatory pilot. Fintech brings enormous pressure on the traditional regulatory model. To balance the need for financial innovation and risk prevention and control, the Financial Conduct Authority (FCA) has pioneered the "regulatory sandbox" model; the "regulatory sandbox" mechanism is designed to effectively protect the rights of financial consumers and curb risk spillovers, as a way to encourage and promote fintech innovation (FCA, 2015). Based on the British model, we have considered China's specific national conditions to create a "regulatory pilot" unique to China. The "regulatory pilot" is compatible with China's fintech innovation, and studies have focused on the theoretical definition of the "regulatory sandbox" model, mechanism design and exploratory attempts to set up a fintech "regulatory sandbox" in some places (Gong&Shen,2021). However, there needs to be a discussion on the regulation of fintech in the context of national strategies and national systems. So, as the unique situation in China, where fintech comes first and regulation follows, I will first explain how China is if fintech comes first. The regulation follows later, thus leading to an analysis of the Chinese financial regulatory system and how they are invoking improved sandbox regulation to make it more suitable for their system.

5.2 Development of Fintech in China

Since 2012, when the concept of Internet finance first emerged in China, with the continuous development and updating of Internet technology, the organic combination of the Internet and traditional finance has led to the continuous innovation and derivation of financial products. The "long tail"(Brynjolfsson,2006) is evident in interviews (Interviewees Pernille, Jess&Ben, 2021) and articles by Chinese academics (Yang,2019); they particularly like to describe the Chinese internet finance market as the long tail customer (Zhang, 2021) or Pareto principle (Backhaus,1980), Online banking, p2p internet lending, the launch of 'cloud flash payment' by UnionPay and various internet financial products by e-commerce companies such as Alibaba (Wang, 2020) have reduced the associated operational costs, making it easier to obtain and process information and lowering transaction costs. This has led to an increasing influence of Internet finance on the development of Chinese society and people's daily lives; in other words, tremendous opportunities and benefits coexist with risks. In particular, the single disintermediated nature of internet finance highlights the issue of risk control in its development.

There is tension between financial safety and efficiency. The safety of financial markets is the primary concern of financial regulation, which requires the development of regulations to keep financial activities within an appropriate range to ensure that no systemic risks occur in the financial sector. Therefore financial regulation tends to be conservative and strict. On the other hand, financial regulation is mainly based on the development of the financial economy and innovation. Nowadays, with the vagaries of financial innovation and the rapid development of technology, financial regulations are often characterised as "outdated once they are made" (Leah, 2021), which is a constraint on financial innovation. However, for the lifeblood of fintech, innovation efficiency is most crucial, leading to more value and profits. To put it more broadly, the country's overall interest is not isolated(Li,2016); it is the unity of security and efficiency in

economic life. Without a safe and harmonious economic and financial environment, the country's development will also be affected, thus missing the foundation of development. In the development of fintech in China, there is a tendency to pursue efficiency at the expense of safety, leading to 'innovation overload' and barbaric growth in fintech development. Therefore, in terms of the principles of China's internet finance regulation, China's internet finance regulation adopts a three-tier regulatory model combining industry associations and internal controls of enterprises (Internet Society of China, 2018). For firms to innovate, there is bound to be some risk, and the function of government regulators (CBRC, 2020) is to control systemic risk. However, too rigid a law (Interviewees Sam, 2021) may inhibit firm innovation.

Li and He (2021) mention that behind the Chinese FinTech miracle is China's unique technology ecosystem, such as a tech-savvy population, an underdeveloped banking sector and an initially relaxed regulatory environment. The initially relaxed regulatory environment is often referred to, in the news within mainland China, as regulation with one eye closed/shut; this means that you should have stopped this thing from happening but pretend not to see it and let it happen. On the one hand, this indicates that China's current regulatory system is backward and that it is difficult to form a unified and complete regulatory system. On the other hand, there are many differences in the type of Internet finance, the range of models, etc. For example, Chinese commercial banks are mainly state-owned and focus on providing services to Chinese enterprises, which makes them ignore the growing financial needs of SMEs and ordinary Chinese people who rapidly accumulate wealth (Li & He, 2021). The current definitions and penalties for illegal or non-compliant conduct in traditional Chinese finance do not fully apply to the system of Internet finance. From the government's continued emphasis on financial innovation and financial stability, the balance between the two is difficult to determine, and there is more of a regulatory development lag. Therefore, under such a trend, Chinese regulators should look for regulatory tools that align with their national conditions.

5.3 Analysis of China's Financial Regulatory System

The central government had proposed at the Fifth National Financial Work Conference in July 2017 that China is gradually improving the two-tier central and local financial regulatory system (see table 4) (Sam, 21 July 2022). At first, *“I needed clarification on this concept”*(Sam, 2022). However, in a conversation with the interviewee Sam, he explained that *“a two-tier central-local regulatory system means the central vertical management system is monopolistic. All regulatory powers in the local financial sector are vested in the central government. In other words, the central government gives local governments the right to regulate, but the central government issues the policy guidance for regulation.”*

As explained by Sam, *“according to the 'Local Financial Regulations of Shandong Province'¹⁸, the local regulators have a promotional and supervisory role only.”* However, as mentioned at the beginning of this paragraph, China's financial management system is gradually transitioning from a single central regulation to a two-tier regulation between the central and local levels. *“However, based on practical needs, the central government has not provided uniform guidance and planning for this process, nor has it drawn clear boundaries between central and local financial regulatory areas.”* So, The blurring of regulation is also causing disputes over the scope of local financial regulation, which can lead to regulatory gaps and overlaps. This, coupled with China's current inadequate financial regulatory coordination mechanism and lack of adequate information sharing, may make it challenging to tailor regulatory policies to actual practice.

¹⁸ http://www.gov.cn/xinwen/2016-04/01/content_5060397.htm

Table 4: Policies to promote Open Banking development Form

Times	Events / Policies	Main content	Core themes	Sources
11/2005	e-Banking Management Approach	Financial institutions may enter into written agreements for the exchange and transfer of e-banking data	Commercial Banks	http://www.gov.cn/flfg/2006-02/06/content_179492.htm
03/2016	The thirteenth Five-Year Plan	Put forward the concept of open and shared development	Open Concept	http://www.gov.cn/xinwen/2016-03/17/content_5054992.htm
04/2016	Implementation Plan for the Special Rectification of Internet Financial Risks	Financial institutions shall not rely on the Internet to conduct asset management business	Internet Finance	http://www.gov.cn/zhengce/content/2016-10/13/content_5118471.htm
07/2016	The China Banking Regulatory Commission (CBRC) issued the "Supervisory Guidelines for the 13th Five-Year Plan for	Commercial banks should take the initiative to transform and gradually open their service interfaces on the basis of compliance and security	Commercial Banks	http://www.cbirc.gov.cn/_/view/pages/ItemDetail.html?docId=114322&itemId=951&generaltype=2

	the Development of Technology in the Banking Sector in China (Draft for Comments)".			
06/2017	Cyber Security Law enacted	Network operators shall take necessary measures to ensure the security of user information	Data Governance	http://www.cac.gov.cn/2017-06/02/c_1121073242.htm
12/2017	Information security technology—Personal information security specification	Regulation of the collection, retention, use, etc. of personal information	Data Governance	https://www.tc260.org.cn/front/cbw.html?start=0&length=10&type=4
05/2018	The CBRC issued the "Guidelines on Data Governance for Banking Financial Institutions	Requirements on data governance structure, data management, data quality control, etc. for financial institutions	Data Governance	http://www.gov.cn/xinwen/2018-05/23/content_5292938.htm
06/2019	The People's Bank of China	Company cooperation	The small	http://www.pbc.gov.cn/goutongjiaoliu/113456/113469/3848271/index.html

	and China Banking Regulatory Commission jointly released the China Small and Micro Enterprise Financial Services Report (2018)	enhances the ease and availability of financing for micro and small enterprises	and micro enterprise	
09/2019	People's Bank of China Releases Fintech Development Plan 2019-2021	Deepening external cooperation in financial technology, breaking service thresholds and barriers, and widening ecological boundaries	FinTech	http://www.pbc.gov.cn/goutongjiaoliu/113456/113469/3878634/index.html
12/2019	Meeting of the People's Bank of China Financial Technology Committee	Strengthen financial data governance and accelerate the promotion of secure sharing of corporate information	Data Governance	http://www.pbc.gov.cn/goutongjiaoliu/113456/113469/3951388/index.html
	Internet Society of China	Summarize the development	Open	https://www.cebnet.com.cn/20191229/102628485.html

	releases Open Bank Development Research Report (2019)	status of Open Banking and discuss the development direction.	Banking	
02/2020	The peoples bank of Chian release "Commercial Bank Application Interface Security Management Specification"	It specifies technical and guarantee requirements such as the type and security level of commercial bank application program interfaces	Data Governance And Open Banking	http://www.pbc.gov.cn/zhengwugongkai/4081330/4081344/4081395/4081686/4085095/index.html
11/2020	Implementation Measures of the People's Bank of China for the Protection of the Rights and Interests of Financial Consumers	Banks, payment institutions should protect the rights of financial consumers	Consumer Protection	http://www.pbc.gov.cn/tiaofasi/144941/144957/4099060/index.html
12/03/2021	Fourteenth Five-Year Plan	Accelerating digital development and building a digital China	Financial openness	http://www.gov.cn/xinwen/2021-03/13/content_5592681.htm

Source: Compiled by the Institute of Financial Technology, Renmin University of China

In Table 4, it can be concluded that when open banking was defined in 2015, in terms of the concept of openness, the 13th Five-Year Plan put forward the concept of open and shared development, pursued an open strategy of mutual benefit and win-win situation, and develops a higher level of the open economy. The China Banking and Insurance Regulatory Commission also stated in 2016 that commercial banks should take the initiative to transform and establish an open and efficient new-generation banking system.

As for services for MSMEs, the People's Bank of China (PBOC) and the China Banking and Insurance Regulatory Commission (CBIRC) noted in the China Financial Services Report for Small and Micro Enterprises (2018) that cooperation between banking financial institutions and emerging fintech companies has improved the convenience and accessibility of financing for MSMEs. In the Financial Technology Development Plan (2019-2021) released by the People's Bank of China, the People's Bank of China also pointed out that the keynote is to promote financial openness and deepen cooperation in financial technology with the outside world.

In terms of data governance, the Code on Information Security Technology Personal Information Security, released in 2017, regulates the use and preservation of personal information, etc. In December 2019, the People's Bank of China's Financial Technology Committee emphasised strengthening financial data governance and accelerating the secure sharing of business-related information. In January 2020, multiple departments were planning new initiatives to prevent data privacy from strictly leaking. In January 2020, several departments were planning new initiatives to prevent potential risks arising from financial services, such as data privacy leaks and misuse of personal financial information.

YiFei Fan, Deputy Governor of People's Bank of China (PBoC FinTech Committee Meeting, 23/3/2022). In 2022, we will implement the outline of the 14th Five-Year Plan and take various measures to promote the Financial Technology (FinTech) Development Plan (2021-2025). Promote the digital transformation of finance with

high quality while establishing a sound regulatory framework and institutional norms for fintech ethics. To enhance regulatory uniformity and professionalism in the regulation of fintech and using fintech regulatory tools.

These show that China has encouraged opening its financial sector to the outside world and developing fintech over the past few years. However, since open banking began to develop in the UK, the Chinese regulator has yet to make it mandatory to open and set uniform regulatory standards. Instead, the policies in the above table provide a reference for banks willing to develop open banking. It also shows that China values the development of open banking, but more is needed to rely on previous regulatory policies to regulate open banks. Specific policies for open banking are still needed to keep open banks from illegal practices.

5.4 Governance Issues Arising from Fintech and Open Banking

Fintech is profoundly changing the global financial landscape and is increasingly characterised by its rapid iterative, complex and cross-border nature. On the one hand, it brings consumers more personalised and intelligent financial services, but on the other hand, it also gradually reveals financial risks. With the help of new technologies, a large number of new financial models have emerged that are fundamentally different from traditional financial operations and products, not only challenging traditional business models with the characteristics of "disruptive innovation" and "internal disruption" (Christensen, 1997) but also "pushing" financial regulatory reform, giving rise to "experimental regulation" and other new regulatory models. "Experimental regulation" or "experimentalism" emphasises flexibility and flexibility in regulatory approaches, opening up institutional "buffers" (Sabel & Simon, 2011), while "adaptive regulation" advocates adapting regulatory strategies to changes in the market and within

mandates (Brummer, 2015; Yuan,2021). IOSCO recommends that regulators take a "forward-looking perspective" on technological innovation, using inclusiveness, efficiency and flexibility to unlock the potential of the financial system. If policymakers are concerned about early interventions affecting innovation, they can adopt negotiated policymaking and exemptions or promote a 'new governance' system (Cortez, 2014). In the face of the new financial industry, regulators should adopt the concept of "soft law governance and flexible regulation", reflecting openness, inclusiveness and adaptability (Zhang, 2018).

At the heart of open banking is data sharing, providing API-based system interfaces to enable data communication and sharing between banking and non-banking systems, thereby improving existing banking services. The integration, sharing, and opening of data in open banking "monetise" data by turning financial data into a product. There still needs to be a definitive answer whether open banking is about open data or open capabilities (services) (Chi, 2020). Most scholars believe that open banking is open data, while Chinese scholars believe that open banking is available capabilities, i.e. open services. (Yang, 2019) argues that open banking is about opening up financial services rather than their financial quality; it is about opening up digital capabilities rather than raw data (Zhang, 2018). In terms of value creation and value realisation in open banking and data sharing, on the one hand, data as a factor of production can only create value through processing, flow and sharing; on the other hand, in order to avoid the phenomenon of information silos caused by fragmentation of financial data, the banking industry must open up financial data.

So, Data has become an essential factor of production and a core asset of banks in the context of FinTech innovation. Integrating traditional commercial banks and third-party financial technology companies based on platform cooperation is one of the critical paths for developing open banks. After the platform is built, open banks should use its data assets to optimise and innovate their existing business models and increase the number of users, user loyalty and data validity of the platform. Open banks should make

up for the "shortcomings" in data accumulation and application and quickly promote data intelligence by doing an excellent job in data collection, data storage, data analysis, data security and privacy protection. It is essential to establish a sound data standardisation system for open banks, reduce duplication in the collection of primarily financial data, improve the efficiency of data sharing and data value mining, increase risk monitoring in the open banking system, create a credible and shared alliance of different industries, achieve high efficiency in customer acquisition and low-cost risk control, and fully release the critical value of data as a factor of production in the digital economy.

5.5 Using Technology to Cope with Technology-Regulatory Sandbox background

Sandbox is a computer terminology. It provides an isolated environment or test environment for testing running programs or software without posing a threat to the whole system's security (Liao, 2020). The "regulatory sandbox" project was pioneered by the Financial Conduct Authority (FCA) in the UK to balance the needs of financial innovation and risk prevention and control, aiming to provide a "regulatory experimental zone" for new industries such as fintech and new finance, and working to encourage financial innovation and reduce financial risks, avoid inhibiting financial innovation while maintaining financial stability, and enhance the development of financial technology. (FCA.org.uk)

From a regulator's perspective, the FCA defines a Regulatory Sandbox as a safe space where firms can test innovative products, services, business models and payment mechanisms without breaching existing regulations. After taking into account the definition and understanding of Regulatory Sandbox from various sources (FCA. Org. UK), I would like to understand Regulatory Sandbox as a way for financial regulators

to allow some licensed financial institutions or technology-based start-ups to test new financial products, models or mechanisms for a limited period, in order to promote financial innovation and fintech development in the region. Financial products, new financial models or new business processes, and in the process lowering the entry threshold and relaxing regulatory restrictions on the test items (Jin, 2019). For projects that successfully pass the test, even if they do not meet the requirements of existing laws and regulations, the regulator can authorise the applicant institution so that they can be rolled out on a broader scale; In contrast, for projects that fail to achieve the expected results or cause adverse effects, the regulator has the power to stop the test. This can encourage innovation while effectively preventing financial risks (Zhang, 2021).

In order to be able to regulate in real-time and dynamically, the regulatory body also needs to have a certain level of common sense, principles and concepts of financial technology and be able to use technology to deal with technology. Moreover, the use of technology in the financial market provides a relaxed and inclusive regulatory environment while also achieving the purpose of encouraging real financial innovation, but also to protect consumers. The regulatory Sandbox in the UK is essentially a way of testing and evaluating innovative products and services through financial technology and then evaluating factors such as the enhancement of consumer rights and interests and the compatibility between financial innovation and financial regulation based on the results before deciding whether the innovative products and services being tested should be promoted and whether the financial regulatory system or the existing system needs to be amended. However, the Regulatory Sandbox places higher demands on the regulatory body, requiring a thorough understanding of fintech and financial innovation projects or products and a high degree of sensitivity and responsiveness (as mentioned in Sam, 2022, 21 July, on the understanding of the Regulatory Sandbox).

5.6 The Chinese Version of Sandbox Regulation - Regulatory Pilots

The launch of China's financial regulatory sandbox is a diplomatic effort by the regulator to enhance its ability to regulate adaptively. China's regulators have been striving to innovate a regulatory model compatible with the development of fintech. In order to explore establishing a fintech-piercing regulatory system with Chinese characteristics, the People's Bank of China has promoted the development of a pilot fintech innovation regulation, also known as the Chinese version of the regulatory sandbox. (Hou, 2020). China has been formally deploying fintech development since 2017 when the Central Bank's Department of Science and Technology established the Fintech Committee. Guiyang launched the Blockchain Financial Sandbox Programme in the local government in May of that year, the first government-led sandbox programme. This signalled that Chinese regulators were beginning to pay attention and experiment with innovative regulatory concepts.

In July 2019, Li Wei, Director General of the Department of Science and Technology of the People's Bank of China, proposed a 'Chinese version of the regulatory sandbox' pilot, stating that this pilot of fintech applications in ten provinces and cities had taken into account possible risks at the beginning of the development of the programme, and established a risk compensation and exit mechanism. In order to promote the healthy development of fintech, balance innovation and risk, and improve the effectiveness of regulation, in August 2019, the central bank issued the "FinTech Development Plan (2019-2021)" (Yinfa [2019] No. 209), which proposes to actively build a basic rule system for fintech regulation and create an inclusive and prudent regulatory tool for fintech innovation. In December of the same year, the People's Bank of China (PBOC) issued a report on the development of financial technology supervision. In December of the same year, the People's Bank of China (PBOC) announced that it had organised, in conjunction with relevant departments, a launch meeting for the Beijing FinTech

innovation supervision pilot, supporting Beijing to take the lead in the country in launching the "regulatory sandbox" pilot and officially launching the FinTech innovation pilot. Subsequently, on 14 January 2020, the Department of Business Administration of the People's Bank of China proposed that they were testing six pilot applications of financial technology innovation and supervision to enhance financial services for the people, expand financial services channels and alleviate the financing difficulties and high costs for small and micro enterprises.

The Chinese "regulatory pilot" has some similarities with the international regulatory sandbox. In terms of regulatory philosophy, both regulatory sandboxes and regulatory pilots adopt an experimentalist regulatory philosophy, and both encourage fintech innovation (song, and Fu, 2021) The differences are compared in Table 4.

Table 5 Comparison of the components of the regulatory sandbox and the regulatory pilot			
Category	Regulatory Sandbox	Regulatory Pilot	Regulatory Differences
Test space	Geographical scope within the jurisdiction of a country/region or corresponding policy sector	Geographical scope in individual cities	The country is vast and has significant regional differences
Test duration	Limited test period, with exit required	Not specified, should be around 2 years	Longer testing period to make it easier to regulate Observation and commissioning of products with regulated persons

				and rules
Test participants	Regulatory Subjects	Financial regulators, with certain exemptions or licensing powers, advisory and assistance obligations	Central bank + local regulators, with a four-part system of institutional autonomy, public supervision, industry self-regulation and government regulation	Different institutional arrangements and regulatory systems
	Corporate subjects	Mostly non-licensed start-ups or financial technology companies, may be licensed after exit Regulation Main body	Adherence to the principle of licensed operation	China focuses on "risk prevention" and "regulation and guidance"
	Consumer entities	Should participate in the test in an informed manner and with relevant rights protected	Should participate in testing with knowledge and protection of	Both are similar

			relevant rights and interests	
Test rules	Clear entry thresholds	Innovation, usefulness, need for testing, adequacy of preparation, availability of consumer protection initiatives	Business inclusiveness, technological innovation, risk manageability, need for regulatory support	China's top-level design on fintech development focuses more on risk prevention and serving people's livelihood
	Relaxed regulatory rules	Use of various tools to relax or exempt from existing regulatory rules	Under the premise of setting rigid bottom lines, support the testing of theoretical prototypes, technology selection and business models in the complete business chain	Differences in legislative regimes, sandboxes, pilots with different initial intentions
	Strict testing boundaries	Restrictions on number of participants, project size, test boundaries Business scope, etc.	Limit the number of participants, project size, and clarify test boundaries and risk handling through contingency plans, complaint response, etc.	Both are similar

	Flexible operation mechanism	"One division, one policy", with policy department project specialists who can dynamically adjust the specific design	A coaching team is set up to provide "one-to-one" professional regulatory coaching	Both are similar
<i>Source: translated from Song&Fu</i>				

Regarding testing space differences, sandbox projects in countries and regions such as the UK are mostly rolled out territory-wide, accompanied by mature financial markets and established laws. In contrast, the Chinese pilot project was delineated in a limited area with a limited financial market and legal maturity (Interviewee Sam, 2022).

Regarding differences in the actors involved, China's "regulatory pilot" takes the form of rules, guidance, coordination by the People's Bank of China, and implementation by local financial regulators (Interviewee Jess). For example, the regulatory pilot in Beijing is led by the People's Bank of China, and a working group comprising the Camp Management Department of the People's Bank of China, the Beijing Financial Bureau and the Beijing Institute of Financial Technology is organising the implementation. The regulatory pilot in Shanghai is led by the People's Bank of China (PBOC), with a working group comprising the Shanghai branch of the PBOC's Department of Banking and Administration, the Shanghai Finance Bureau, and the Shanghai Institute of Financial Technology.

Generally, the differences between the Chinese regulatory pilot and the UK regulatory sandbox are mainly the participants and testing rules. Regulatory pilots emphasise licensed operations (Song & Fu, 2021), sandboxes generally incentivise testing by non-licensed institutions, and testing rules (openbanking.org.uk). The emphasis of the regulatory pilot on business inclusiveness may lead to pilot projects, especially in micro and small enterprises and financial inclusion (Interviewee Sam, 2022).

Sandboxes require more significant innovation and vary in their requirements for whether licensed testing is required, but generally do not require licensed testing or provide direction to the industry (Song & Fu, 2021). This shows that the differences between China's "regulatory pilot" and UK's "regulatory sandboxes" reflect the differences in the regulatory environment and development direction of fintech. proactive regulation represented by the UK, with a more vital willingness to try first., Moreover, policies have been introduced to encourage fintech innovation and foster all types of financial innovation companies. China's reactive regulation, represented at the beginning of the development of Internet finance, first gave financial innovation a more relaxed environment to encourage its development and gradually strengthened regulation after the innovation endangered financial security.

5.7 Other Regulatory Policies and Frameworks (Besides the Regulatory Sandbox)

Open banking is well established in the UK, with mature concepts and operating models. The regulatory authorities have developed various standards and regulations to ensure compliance and adequate supervision of the open banking market. However, Table 3 shows that, unlike foreign development models, the relevant regulatory authorities in China have not provided specific guidance on open banking but have continued to speak out on open model innovation, data governance and support for the development of small and micro enterprises, and open banking is gradually gaining attention. This is also because the open banking environment differs significantly from that of Western countries in terms of the level of economic development, the banking system, the level of financial technology and the needs of bank customers, making it difficult to directly apply the UK open banking development model and related concepts to the Chinese market.

For example, the People's Bank of China's Financial Technology (Fintech) Development Plan (2019-2021) mentions that it will "study the adjustment and improvement of existing laws, regulations and policy provisions that do not meet the requirements of the development of financial technology and promote the introduction of laws and regulations related to the application of new technologies in the financial industry", so China needs to establish regulations applicable to its own country. Firstly, there are guiding and regulatory policies. In addition to macro-level development plans, the State has also issued API security management standards to guide the development of open banking. The Outline of the 13th Five-Year Plan for National Economic and Social Development of the People's Republic of China (2016-2020) puts forward the new development concept of openness and sharing, calling for greater market access for social capital, greater openness in financial and other areas, greater access of private capital to the banking sector, and the development of inclusive finance and multi-stage small, medium and micro-financial organisations. In August 2018, the China Banking and Insurance Regulatory Commission (CBIRC) issued the Decision of CBIRC on the Abolition and Amendment of Some Regulations, which abolished the share ratio restriction on foreign investment in Chinese banks and significantly relaxed foreign investment access to the financial sector, to a certain extent breaking down the barriers to potential competitors entering the Chinese banking sector and weakening the protection of "financial licences" for Chinese commercial banks, further increasing the competitive pressure faced by traditional commercial banks. In September 2019, the People's Bank of China released the Financial Technology (FinTech) Development Plan (2019-2021), pointing out the need to expand financial services channels, deepen cross-border cooperation using application programming interfaces (APIs) and software development kits (SDKs), create new business paradigms with the help of high-quality channel resources from various industries, maximise the use of resources, and build an open, cooperative and win-win financial services ecosystem. The Code for the Security Management of Commercial Bank Application Interfaces (JR/T 0185-2020) defines in detail the types of commercial bank application interfaces, security techniques and

security requirements, pointing out that the main parties involved in commercial bank application interface services are the user, the application and the commercial bank, and defining the roles and responsibilities of each party.

In terms of information protection, the Cyber Security Law and the Measures for the Implementation of the Protection of the Rights and Interests of Financial Consumers by the People's Bank of China have established the principles of lawfulness, propriety and necessity in the collection and use of consumer financial information. The Personal Information Law will also come into force. In terms of institutional qualifications, the Regulations on the Administration of Payment Services by Non-Financial Institutions also announced the formal regulation of the domestic third-party payment industry, requiring the acquisition of a "payment business license" before providing payment services. Industry self-regulation. Currently, 12 institutions spanning the banking, securities and insurance sectors, including Pudong Development Bank, Tai Bao Group and Guotai Junan Securities, have signed the Open Finance Alliance, which is a catalyst for the development of open banking in China. (Song & Fu, 2021)

5.8 Summary

Since the Financial Conduct Authority (FCA) formally proposed the regulatory sandbox mechanism in 2016, more and more countries and regions have started to apply it to their financial regulatory areas to innovate the regulatory mechanism of the financial sector. However, the industry still has no uniform regulatory sandbox operation model. The 'regulatory sandbox' can be understood as the condition that the rights of financial consumers are not compromised, and that risk spillovers can be effectively curbed (Sun & Zhang, 2022), so the model in China is that the regulatory

sandbox and sectoral regulation need to be cooperative. Local financial regulators have a better understanding of the financial development of their regions than central financial regulators. They, therefore, have more control over the "7+4"¹⁹(Sun & Zhang,2022) types of local financial organisations⁶ that are more mature in terms of business regulation. However, for the current large number of financial-like institutions and the need for a government approval process, loopholes may still occur if regulation is only through the sector (Interviewee Sam, 2022). In practice, matching and targeting regulatory sandboxes and sectoral supervision to improve the speed of listing; for financial institutions can first be guided into the regulatory sandbox for testing to ensure that risks do not spill out of the box, and then further regulated by sectoral supervision in the system, to achieve full coverage of regional financial supervision (Interviewee Ben,2021). Therefore, within the framework of central and local financial supervision and coordination, the core of local financial supervision lies in maximising motivation, resolving information asymmetries and maintaining the unity of effort across regions and sectors.

¹⁹ The "7+4" category of financial organisations generally refers to non-mainstream financial organisations belonging to local, professional companies.

The "7" refers to microfinance companies, financial guarantee companies, regional equity markets, pawnshops, financial leasing companies, commercial factoring companies and local asset management companies;

The "4" refers to various types of local trading venues, investment companies and social crowdfunding institutions, professional farmers' cooperatives.

6.0 Chapter 6: Conclusion

The research objective of this project is to understand open banking in China, focusing on changing relationships between Chinese banks and FinTech providers and regulators' responses. Banking, especially for individuals, is changing fundamentally, and Open Banking is how the UK government has mandated banks to open up their banking data using APIs as required by regulation. However, in China, with the rapid development of fintech, from third-party payments involving bank data, the financial regulator should have deliberately protected the banking sector and thus prevented people from having a choice. As a result, third-party payment institutions such as Alipay and WeChat Pay in China have grown bigger and bigger. They have replaced banks in terms of providing financial services. Most banks are selective in developing open banking based on market drivers. For example, many Chinese banks have started to open their API interfaces, such as the emerging internet bank, MY bank, which involves business categories such as consumer credit and payment and settlement. Shanghai Pudong Development Bank launched API Bank in July 2018. Construction Bank and Bank of China have established their open banking management platforms. The Bank of China originally developed a related API bank. However, it did not develop a system. This is also due to the high acceptance of the Chinese population from the system of third-party payments applied to smartphones. Moreover, they have the convenience, fastness and easy to use that the general public is looking for.

The proliferation of smartphones has allowed third-party payments to break the banks' grip on payment services, making financial services accessible to many people without access. On this basis, Open Banking has broken (Interviewee Ben, 2022) the data monopoly of banks, which are now required to provide consumer financial data unconditionally to authorised third parties whether they wish to do so or not, and this has had an understandable impact on banks. However, in terms of banking services, rather than disappearing, they have continued to be enhanced. Most importantly, the

payment service, which will only become more critical as banks open up their data, can also take advantage of open APIs to provide more third-party organisations with access to authorised data and services such as payments and transfers (Li,2017). As Third-party payments were developed with the Internet, thus breaking the monopoly of banks on payments and financial data, Open Banking, on the other hand, is the first time that the government has legislated to protect consumers, among other things, the ownership and control of their financial data, in a situation where data ownership is being evoked. It also builds on other data protection laws to allow third-party organisations to use consumer financial data as a starting point for other services where authorised, allowing consumers to enjoy the benefits of advances in financial technology while breaking the monopoly on bank data (Interviewee Sam, 2022).

The regulator mainly leads the development of open banking in the UK. Before the concept of open banking was introduced, there was a monopoly of some large and medium-sized banks in the UK financial sector. These banks have been gradually losing their incentives to innovate because they have absolute control over the market and a loyal customer base. At the time, when the concept of open banking had not yet been introduced, the UK government noted the deteriorating customer experience under the monopoly of some of the large and medium-sized banks. Based on this, the Competition and Markets Authority pioneered the concept of open banking in an attempt to stimulate the banking industry, encourage innovation and improve the user experience. In August 2015, HM Treasury established "The Open banking working Group"(OBWG), which aims to study and develop a detailed framework and standards for open banking. In March 2016, the OBWG released "The Open Banking Standard", which consists of three standards (Data Standard, API Standard, Security Standard) and a Governance Model. It is also enough to prove that in the United Kingdom, the regulator first establishes a complete regulatory and supervisory system before developing open banking. Open banking regulation in China faces a different market environment. China's banking sector operates a system that puts development before regulation. Because of the growth of online shopping websites such as Taobao, the online banking

model has been developed as early as 2012. For example, the Bank of China, in 2013, had introduced a similar construct to the Open Bank, but at that time, the Open Bank had not yet been named. The public's focus on easy-to-use third-party payment platforms has prompted regulators to focus here as well, as a result of the public's continued fervour. Therefore, China's open banking is based on policy guidance, which does not include a complete regulatory and supervisory system, but only a series of white papers and other policy guidance documents, which are not mandatory and are developed on their own according to the banks' wishes. However, the traditional commercial bank is a relatively closed system, for example, commercial banks only need to protect their own information security, with appropriate risk prevention and control capabilities. However, open banking drives commercial banks to connect with many partners, and risks are prone to occur where the risk prevention and control capabilities of information security technology are weak. That means that, in fact, it is important to establish sound regulatory standards, because the development of unified technology and data standards, and compliance and control, not only reduces the cost of risk, but also reduces the cost of banks and third-party co-operation and docking. For example, when the number of open banking partners increases, cooperation will inevitably lag due to differences in corporate culture and technology levels, affecting the efficiency of cooperation. Open Banking, promoted by the UK government, is an orderly opening to the outside world on the premise that there are standards and constraints, and that participating organisations are subject to strict supervision by the regulator. So, China's open banking developed the open model on their own, based on a market-driven first, an act that was not accompanied by clear regulatory regulations. As a result, China's open banking was challenging and flawed in its early stages of development. Because it's missing industry standards, data privacy protections, etc. In contrast, the UK's Open Banking, regulatory standards between the development of the pre-Open Banking model, allows Open Banking to develop in a relatively safe, fair and equitable environment.

In contrast, the development of open banking in China is more driven by competition

and market forces, and there are differences in the state of open banking development and the market landscape in both countries. In the UK, large financial institutions dominate, with an absolute advantage in terms of clients, technology and resources and critical capabilities for external export. Financial institutions have more mature financial services in the market, and large and medium-sized commercial banks can retain customers without competing hard, limiting market innovation and customer experience (openbanking.org.uk). In the gradual maturation of the Internet in China, customer behaviour has been influenced and changed to a certain extent by the major Internet companies, which dominate customer traffic and make financial institutions relatively passive. Open banking is not a new business area for Chinese financial institutions but an essential way out of a passive situation. China still does not have a uniform open banking regulatory policy standard, but rather a sound open banking regulatory framework based on existing policies and regulations. However, a Chinese version of sandbox regulation is already being tested. However, in this environment, the mainstream media and scholars within China have advocated developing regulatory policies with Chinese characteristics following China's national conditions. So the open banks developed in China are different from the UK open Banking, both in driving development and in the way they have developed.

Firstly, there is a deepening integration of finance and technology. There is no longer a clear distinction between financial and technology companies in the financial market, as the boundaries between financial business operators, technology providers and fintech solution providers are becoming increasingly blurred. Previously, the integration of finance and fintech was only reflected in disintermediation, but from a platform political economy perspective, the process of fintech as reintermediation, integration and capitalisation (Langley & Leyshon, 2020). Secondly, (Zhou Xiaochuan, former Governor of the People's Bank of China, 2019), argues that the essence of the financial industry is the information industry. Therefore the core of FinTech is the application of information technology in the financial sector. Financial technology is driven by cutting-edge technologies such as big data, artificial intelligence and

blockchain, all of which rely on the development of information technology. Finally, FinTech is accessible and inclusive. The "long tail" has difficulty accessing financial services in traditional financial markets, mainly due to information asymmetry, lack of information and high costs. While it is difficult for individuals to collect and process the full range of information about their customers at a low cost, the use of fintech makes it possible to obtain the full range of information about customers quickly. It saves on human costs, increasing the financial accessibility of the poor previously excluded from the financial system and making financial inclusion possible.

In chapter 2, the literature review of FinTech, it can be found that FinTech is developing rapidly and efficiently because of FinTech as a strategy for China's national development (Gruin, 2019). The Communist Party of China, as the sole ruling party of the People's Republic of China, due to this specificity, when it issues a proposal for guidance, all provinces in the country are fully committed to completing this strategy (Interviewee Pernille, 2021), this is reflective of China's neo-statism (sovereign judicial authority) (Gruin, 2019). This has led to fintech being embedded in the economic capital of China's unique political system, creating a new financial network. Retail finance, formerly dominated by banks (Langley & Leyshon, 2020), has been forced in by fintech and is being used as a platform to provide convenient and innovative services to customers, with a strong focus on consumer perception. In China, although the development of open banking is still in its infancy, open banking banks are being used as a new tool and opportunity for banks to provide services. Analysing the development of The research objective of this project is to understand open banking in China, focusing on changing relationships between Chinese banks and FinTech providers and regulators' responses. Banking, especially for individuals, is changing fundamentally, and Open Banking is how the UK government has mandated banks to open up their banking data using APIs as required by regulation. However, in China, with the rapid development of fintech, from third-party payments involving bank data, the financial regulator should have deliberately protected the banking sector and thus prevented people from having a choice. As a result, third-party payment institutions such as Alipay

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that current fintech developments are already between a background of sovereign judicial authority and market-positioned capital.

The banks selected for this study only represent the current development of open banking and still need to represent the full range of open banking. The open banking model still needs to be robust, and there are still many government restrictions on its operations, resulting in internet banks needing help to perform the full functions of traditional banks. Therefore, China needs to improve its fintech legal system because of the role of financial regulation in enhancing the efficiency of market operations, reducing trust risks, maintaining financial stability and preventing financial risks. As mentioned earlier, the analysis of the impact of regulation on FinTech and the study of the regulatory system represented by RegTech are in their infancy. Fintech regulation covers all aspects of infrastructure, industry, standards and regulation and is a focus of attention for regulators, academics and practitioners. Therefore, first of all, it is necessary to clarify the subject of FinTech regulation, particularly the regulatory body to which the innovative financial products and services brought about by FinTech belong. Secondly, there should be a uniform scale of financial enforcement and a suitable mechanism of interaction between the regulatory authorities to avoid regulatory arbitrage. Finally, fintech regulation should be proportionate to stimulate financial innovation while controlling risks. Yang (2019) argues that legal requirements that are too strict or too early may stifle fintech development, while regulations that are too loose or too late may increase financial risks. The use of technology in the financial sector needs a set of compliant solutions to address it adequately. For example, they were strengthening the application of financial regulation. Supervision needs to be data-centric, and in the face of the massive amount of data reported by financial institutions, there is a need to improve regulatory efficiency with the help of financial technology. Overall, open banking can be even better in the future. China's Internet banks, represented by MyBank, are still in their infancy. The open banking model still needs to be sound, and many government restrictions on its operations prevent internet banks from performing all the functions of traditional banks.

Fintech in China has broader implications for our understanding and study of how

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7.0 Chapter: References

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