

# The Study and Overview of FinTech's Impacts on the Risk-Taking of the Traditional Bank Industry

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## Abstract

Recently, in the realm of finance, developments of FinTech are being focused on. Numerous types of FinTech are deeply changing the financial ecology and rebuilding financial patterns by driving innovations of the traditional bank industry. The statement “No technology then no finance” has already become the mutual recognition in the industry. Our country highly concentrates on innovations of the finance domain demonstrated by the fact that a series of policies and measures used to support and regulate the healthy development of FinTech have been published. It has become the popular question for countries and the whole society that how the relationship between innovations of FinTech and avoidance of financial risks can be balanced well. Therefore, this essay employs the existing literature on the changes of FinTech risks faced by traditional banking industry, the impact of FinTech on the risk taking level of traditional banking industry and the heterogeneous impact of FinTech on the risk taking of traditional banking industry to sort out and explore the impact of FinTech on the risk-taking of traditional banking industry as well as verify the conclusion that FinTech has also brought new risks, such as technology risk, to the current financial business.

## Keywords

FinTech, Traditional Bank Industry, Risk-Taking

## 1. Introduction

FinTech, based on a series of technological innovations such as big data, cloud computing, artificial intelligence, and blockchain, has been fully applied in six major financial fields, including payment settlement, lending and financing,

wealth management, retail banking, insurance, as well as transaction settlement. FinTech has become a new engine for promoting the transformation and upgrading of the financial industry and a new way to serve the real economy by improving the service efficiency of the traditional financial industry and effectively reducing operating costs.

On December 5, 2019, in order to implement the National FinTech Development Plan (2019-2021), the People's Bank of China actively constructed a basic regulatory framework for FinTech and worked hard to create inclusive and prudent FinTech innovation regulatory tools; On March 5, 2021, Premier Li Keqiang of the State Council clearly stated in the 2020 Government Work Report that "we will strengthen the supervision of financial holding companies and FinTech, ensure that financial innovation is carried out under the premise of prudent supervision", and emphasize "improving the mechanism for handling financial risks, and firmly guarding the bottom line of not experiencing systemic risks". Meanwhile, the Outline of the 14th Five Year Plan (2021-2025) also proposed to "steadily develop FinTech, accelerate the digital transformation of financial institutions, strengthen regulatory technology application and financial innovation risk assessment, and explore the establishment of innovative product correction and suspension mechanisms". It can be seen that how to balance the relationship between FinTech innovation and preventing financial risks has become a hot issue of common concern for the country and society.

As an important participating institution in FinTech, China's banking industry has embarked on strategic transformation and actively invested in the research and application of FinTech. The contactless service model during the COVID-19 in 2020 prompted commercial banks to accelerate the pace of digital transformation. According to relevant data, the FinTech investment of financial institutions in China reached 41.37 billion yuan in 2020, a year-on-year increase of 14%. It is expected to increase to 69.15 billion yuan by 2023, with a growth rate of 67.2% (data source: iResearch Consulting's 2020 China FinTech Industry Development Research Report). At the same time, traditional banking industries have set up FinTech subsidiaries and technology companies, or invested in financial institutions, or cooperated to carry out related financial businesses.

Overall, the deep promotion of FinTech has brought new formats and models to the traditional banking industry, as well as new risks such as security risks to current financial operations. Therefore, exploring the impact of FinTech on the risk-taking of traditional banking industry has certain scientific and important practical significance. The application of FinTech can change the business risks of traditional banks, overall improving their risk resistance and reducing their risk-taking levels. However, it also brings new risks, prompting different banks to propose different response strategies. This article starts with the change of risk types faced by traditional banking industry by FinTech, reviews existing literature, and analyzes the impact of FinTech on traditional banking industry risk taking, including the impact of FinTech on traditional banking risk taking beha-

avior, level, and heterogeneity, to verify the above conclusions.

This essay is arranged by four parts. The first section is introduction aiming at the background of FinTech from the perspective of national policy and real society as well as the general situation of this study. Remaining sections are separate literature review, methodology as well as discussions and conclusions. In the second part, concrete literature reviews are provided, which conducts a further exploration of this research to demonstrate relevant and deeper reasons and mechanisms. The third part is clearly claiming the method of this research involving the literature choice, the category of literatures and so on. The last section endeavors to discuss current study conditions of this topic and draw the conclusions according to all discussions.

## **2. Literature Review**

FinTech has already impacted on risks encountered by banking industry. New benefits and challenges have occurred in numerous aspects. Meanwhile, it plays a vital role in traditional banks' risk-taking behaviors and significantly influences on corresponding risk-taking levels, which has the characteristics of heterogeneity. All these contents including related mechanism and so forth will be discussed.

### **2.1. FinTech Changes the Risks Faced by Traditional Banking Industry**

The application of FinTech has changed the common financial risks faced by the traditional banking industry, while also increasing its inherent risks (Nzevela, 2015; Zhao, 2016; Ebrahim et al., 2020). Related research categorizes FinTech risks into the following five types:

#### **2.1.1. Technical Risks**

Due to the existence of technical vulnerabilities and system defects, FinTech may face some unstable factors in the application process, so the achievement of its established goals will be affected to a certain extent. Generally speaking, financial information system technology risk is the fundamental cause of FinTech risk, but in reality, from the perspective of risk sources and composition, the technical risk of FinTech has more prominent complexity, specificity, and fragility (Yuan, 2021a).

Firstly, there are technological risks caused by inadequate digital equipment and facilities. Affected by the Internet, computers and other infrastructure, the more base stations data passes through in the long-distance transmission process, the greater the risk of leakage, and there are obvious hidden dangers in data security. Recently, FinTech has heavily relied on emerging technologies such as AI, big data, and cloud computing for the collection, transmission, and storage of data. However, if there are security vulnerabilities in this process, it can leave opportunities for criminals to exploit and cause incalculable losses to

financial users (Yi et al., 2019; Jin, 2019).

Secondly, limited by their own technological level, traditional banks generally adopt an outsourcing strategy to build data platforms. However, the quality of employees in outsourcing companies cannot be guaranteed. If they maliciously leak information, users will face great risks. Domestic FinTech has achieved a “leapfrog” development in the absence of a sound social credit system. Due to technological limitations, people are currently unable to identify newly generated financial risks, which can easily lead to the spread of risks.

### **2.1.2. Operational Risks**

With the promotion of FinTech, every move made by employees or customers in financial activities may lead to disasters and serious losses, such as severe impact on financial business operations and abnormal operation of institutions; Or it may be due to incomplete corporate governance system, inadequate implementation of regulations, and other issues that prevent timely handling of risks. In addition, under the influence of factors such as incomplete information technology, improper operations by employees can cause significant potential losses (Barakat & Hussainey, 2013; Ryu, 2018; Xia & Tang, 2020).

### **2.1.3. Legal Risks**

FinTech has greatly improved and developed traditional financial services, but has not changed the essence of finance. The application of FinTech will give birth to new financial transaction models and new rights and obligations structures. Due to the lag and incompleteness of the legal system, regulatory dislocation and absence still exist under the current regulatory system, and there are a large number of potential financial risks in regulatory gaps, leaving opportunities for criminals to take advantage of.

Law is the bottom line of FinTech, and standards are the behavioral foundation of FinTech. In the absence of timely updates to legal systems and regulatory rules, some companies evade financial regulation by developing new financial products, providing new financial services, and other means. If there is a technological failure that leads to damage to the interests of financial consumers, legal responsibility is difficult to clarify (Yuan, 2021b).

### **2.1.4. Credit Risks**

Credit risk is the risk arising from the lack of information disclosure or default by market participants. From an institutional perspective, although the overall credit environment in China is developing well, incomplete credit input data still exists. From a personal perspective, payment, personal finance and lending on mobile phones and other Internet terminals are mostly served by low-income people or young people in economically underdeveloped areas (Mohammed et al., 2021).

At present, various departments have established different types of credit information databases as needed, such as the highway transportation credit plat-

form, the national financial industry credit information database, and the database based on user behavior established by Internet enterprises. Due to the involvement of different market competitors in credit databases, relevant enterprises are unwilling to engage in data sharing in order to maintain their own data security and interests. The existence of diverse databases and credit depression has severed the connections between data and hindered the sharing of credit resources. When the economic situation declines, the lack of complete credit data and the fragmentation of credit data are likely to cause widespread repayment arrears, leading to serious credit problems (Zhou & Han, 2020; Yang et al., 2020).

### 2.1.5. Systemic Risks

FinTech has increased the sources of risk and magnified the contagion of risk. Whenever a problem occurs in a certain link, it will affect the entire system and quickly spread the risk to the entire financial system, forming a true systemic risk (Yang, 2019). Chinese scholars have summarized the changes in systemic risks caused by the development of FinTech innovation into the following three points:

Firstly, FinTech has eliminated regional barriers, making risks more likely to spill out. The systemic risk of banks has characteristics such as broad subject coverage, hidden risk, regionalism, and self enhancement (Wang, 2011). Due to the increasingly widespread use of the financial system, the relationships between the global financial systems have become closer, leading to more frequent business dealings among financial institutions in different regions, improving capital utilization efficiency and currency circulation speed. However, whenever a risk arises in a certain region, due to the existence of a complex chain of capital operations, the risk will quickly spread to other regions and eventually evolve into a large-scale financial crisis (Yang, 2017; Luo et al., 2020; Pei & Zhao, 2021).

Secondly, the development of FinTech has greatly enhanced the correlation between financial institutions, non-financial institutions, and technology companies. The investment options of investors reflect diversity and diversification under the development of FinTech. Therefore, investors will reduce their deposits, causing the loss of savings deposits in banks, increasing the frequency of financial institutions borrowing from each other, and augmenting the degree of closeness of fund relationships. If large-scale financial transactions can only be completed with the technical support of third-party technology companies, the probability of systemic risk occurrence will be greatly uplifted. Non-financial institutions mainly refer to market infrastructure operating enterprises, where market infrastructure supports new technologies and latest technologies support FinTech. In this supporting chain, any risk occurring in any link may lead to cross contagion of related risks in different industries and markets, thereby exacerbating the possibility of systemic risk occurrence (Li & Jiang, 2017).

Thirdly, the social network nodes of FinTech are numerous and dense, which

increases the likelihood of systemic risks occurring. There is a complex social network of relationships between financial institutions, between financial institutions and customers, and between customers. The failure of any node will be transmitted through network connection points, and each node will become a risk amplifier. If the source of traditional financial systemic risk is “too big to fail”, the source of FinTech systemic risk is “too related to fail” (Xu, 2018).

The innovative development of FinTech will not only change the types of risks faced by traditional banks, but also expose them to FinTech risks with new characteristics such as complexity, endogeneity, non-equilibrium, and variability (Chen & Guo, 2020).

## **2.2. The Impact of FinTech on Risk Taking in Traditional Banking Industry**

### **2.2.1. The Role of FinTech in the Risk-Taking Behavior of Banks**

Existing research has shown that information asymmetry between commercial banks and enterprises can be effectively alleviated by FinTech, reshaping the market landscape, promoting the overall transformation and upgrading of the banking industry, and enhancing the risk tolerance of commercial banks (Jin et al., 2020). The development of FinTech has a “transformation effect” on large commercial banks and joint-stock commercial banks in China, which fundamentally changes the existing business structure of commercial banks, enriches their sources of income and business models, as well as improves their ability to resist risks (Li & He, 2021). The role of FinTech in bank risk-taking behavior is mainly achieved through the following three channels that are related to the prior information, in process operation and management as well as post loss respectively.

#### 1) Prior Information Channels

FinTech utilizes the comparative advantages of information technology to empower traditional financial institutions, which can solve the problems of information asymmetry and moral hazard faced by traditional financial institutions (Wu & Wang, 2021). FinTech can break through the limitations of time and space, expand the coverage of customer information to the greatest extent, effectively solve the pain points faced by banks such as insufficient information and untimely updates, and enhance the risk identification ability of commercial banks (Liu & Jiang, 2021).

#### 2) In Process Operation and Management Channels

Technically, FinTech helps banks establish more efficient, accurate, and low-cost intelligent risk control systems, thereby improving their risk management level (Chen, 2016). Compared to traditional risk assessment methods, the intelligent risk control model brought by FinTech will enhance the effectiveness of risk pricing, default calculation, and risk monitoring, thereby achieving refined risk management. Through this channel, commercial banks can better identify, monitor, and prevent financial risks, thus having the ability to carry out

credit activities to long tail enterprises and individuals (Su & Yang, 2022). Besides, theoretically, FinTech plays a role in affecting the expense to influence the risk-taking behavior. This is because the FinTech can dwindle the cost to raise the operation efficiency rendering subsequently more profits and less risk-taking through the method of providing a string of affordable products and keeping sufficient liquidity during the process of management according to the quantitative analysis of panel data in emerging countries between 2014 and 2021 (Sajid et al., 2023).

### 3) Post Loss Channels

FinTech can assist commercial banks in achieving precise risk pricing and monitoring, which not only ensures that profits can effectively cover costs, but also reduces the likelihood and ultimate degree of loan losses. When commercial banks realize that the non-performing loan ratio of users will decrease after granting credit through FinTech, they will naturally significantly increase their enthusiasm for credit granting in advance, thereby enhancing their risk-taking behavior (Chen & Gao, 2022).

### 2.2.2. The Impact of FinTech on the Risk-Taking Level of Banks

The diversity of FinTech development forms has had a certain impact on the level of bank risk-taking. For developed economies, the evolution of FinTech has led to a decline in financial performance, and financial intermediaries tend to take on more risks whereas for emerging economies, due to the incomplete development of their FinTech sectors, there is no specific correlation between FinTech and risk-taking levels (Bloemen, 2021). This issue is mainly studied from three perspectives: Internet finance, market risk and commercial banks' own scale.

#### 1) Internet Finance

Internet finance can increase the sources and sources of information, ensure the availability and accuracy of bank lending information, diminish information friction between banks and borrowers, and reduce risk losses (Sanchez, 2018). At the same time, it also compensates for the shortcomings of commercial banks in efficiency, profitability, and risk management, promoting the stable development of the entire industry, weakening the risk-taking motivation of commercial banks, improving their pre loan review capabilities, uplifting the flexibility of business strategies in the context of industrial structure optimization, and decreasing their risk-taking level (Liu, 2016; Li & Yang, 2021; Zheng, 2020).

#### 2) Market Risk

In the market, various factors have varying impacts on the effectiveness of bank risk-taking. Although FinTech has promoted the transformation and upgrading of traditional finance, market information transparency, quantitative investment, transaction costs, and other aspects have become paramount driving forces for the development of the banking industry, it can also cause the diversion of customer deposits in commercial banks, intensified industry competition

among banks, enhanced difficulties in industry supervision and new technological innovation thereby augmenting the risk-taking level of commercial banks (Wang, 2018; Chen et al., 2022). Contrary to this effect, the rapid development of FinTech can also diminish the level of risk taking of commercial banks. Whether it is the fixed effect model analysis of panel data of 36 commercial banks from 2011 to 2021, or through nine years of research on 283 banks in six countries, it shows that FinTech, especially its inclusiveness, has a negative correlation with the level of risk-taking of commercial banks, implying that the correct implementation of FinTech can decline the risk-taking behavior of banks (Banna & Alam, 2021; Chen, 2023).

### 3) The Scale of Commercial Banks

From the perspective of the scale of commercial banks themselves, under the background of FinTech, large-scale commercial banks can obtain more information about small and medium-sized enterprises, and have comparative advantages over small and medium-sized commercial banks in using technology systems to provide products and services (Li & Wu., 2019). FinTech has raised the proportion of investment in infrastructure and talent related to commercial banks, and its transformation has brought greater cost pressure to small-scale commercial banks: the speed of improving operational efficiency cannot catch up with large-scale commercial banks in a timely manner, the liquidity risk of funds is significantly higher than that of large-scale commercial banks, and credit risk problems are exposed more. This has led to uneven improvement in operational efficiency under the background of FinTech, resulting in differences in risk-taking levels among commercial banks of different sizes (Li & Zhang., 2020; Zhang, 2019). Additionally, the impact of FinTech on the risk-taking of commercial banks shows an inverted U-shaped relationship, which is beneficial for reducing management costs, enhancing risk control capabilities, and decreasing bank risk-taking in the later stage (Wang & Wu, 2018; Liu & Jiang, 2021).

## 2.3. The Heterogeneous Impact of FinTech on Bank Risk-Taking

The level of risk-taking effect exhibited by different types of commercial banks under the influence of FinTech exhibits heterogeneity (Chen, 2023). Related studies have obtained a general heterogeneity conclusion by estimating the random inefficiency parameter model and combining it with efficiency theory: traditional bank risk-taking will have different impacts due to different bank sizes and membership relationships (Sarmiento & Galán, 2014). Based on the Digital Finance Index compiled by the Digital Finance Research Center of Peking University, a study on 155 local small and medium-sized enterprise banks in China shows that the impact of FinTech on bank risk-taking capacity changes due to the size of commercial banks, leading to an increase in bank risk preference and exacerbating the pressure on bank risk-taking. The impact is more significant on banks with lower efficiency, more shadow banking business, and higher interest income. FinTech has changed the debt structure of banks by promoting interest

rate marketization, which has had an impact on their risk-taking (Yao & Song, 2020; Deng et al., 2021). Furthermore, there are differences in the impact of FinTech on state-owned and non-state-owned banks. State owned banks have lower marginal risks when their FinTech level improves (Wang et al., 2022). In addition, Li et al. (2022) used data from 37 Chinese listed commercial banks, including 5 state-owned commercial banks, from 2011 to 2020 to establish regression equations and further test the mediation effect model, confirming that FinTech has a significant impact on the risk-taking of state-owned banks.

### 3. Methodology

In this section, the research method and criteria of literature choice will be stated in details.

#### 3.1. Method Adopted

In order to complete this research, literature research method is adopted. This method can provide more accurate information because there might be numerous deviations or mistakes when the oral investigation happens. Besides, literature can inform plentiful knowledge without limitations of time and space to researchers. Therefore, the study can be ensured to be more accurate and more representative.

#### 3.2. Literature Opted

Three main steps, that are respectively collection, extraction and analysis, should be implemented to realize the method. The literature is searched and collected via official channels including CNKI and Google Scholar, which are two major resources of academic essays with peer-reviewed publications domestically and internationally. Simultaneously, the accuracy of study requires different aspects thereby both Chinese and English journals, conferences and other resources are entailed.

To extract the complete and functional information, articles selected must match the topic. Hence, the key words are FinTech and Bank Risk-taking. For guaranteeing the correct and total selection of literatures, AI and mind maps provided by CNKI and Google Scholar to show correlative essays are utilized. Simultaneously, references of all articles read are used to filter out the useful essays. Besides, all the articles are traced by the emails and subscriptions of matching journals, magazines and authors so once new messages appear journals are read and selected. Moreover, in order to make sure that the information is updated, the time of publication of essays is limited between 2013 and 2023. Furthermore, details are compared by the method of personal analysis with the assistance of official AI to ensure all paramount elements are contained and accurate. Meanwhile, literatures are categorized individually according to the various aspects of topics under the main discussion of FinTech and its impacts on the risk-taking of bank industry.

## 4. Discussions and Conclusion

In accordance with the literature research method, contents of literature are reviewed in terms of the theme of FinTech and its impacts on the risk-taking of bank industry. Based on these, discussions and conclusions are implemented to state the result and considerations of the whole study.

### 4.1. Discussions

Firstly, FinTech has changed the research on the types of risks faced by traditional banking industry. The existing literature on this issue has been relatively mature, and many scholars have achieved fruitful research results on systemic risk. After the application of FinTech in traditional banking, transaction efficiency has significantly increased, financial service boundaries have expanded, and financial transaction costs have decreased. However, the risk attributes of financial business have not changed, that is, they still face the risks of traditional banks. At the same time, the new risk characteristics brought by FinTech also affect the implementation of financial business.

Secondly, the topic of FinTech's impacts on the risk-taking of traditional banking industry has been studied frequently. Chinese scholars have paid significantly more attention to the study of risk-taking behavior and risk-taking levels than foreign scholars. According to practical experience, FinTech is a double-edged sword, and its development has gradually exposed negative effects. In order to seek benefits and avoid harm, relevant parties have proposed different plans and measures. In the current situation where regulation is gradually stricter, the system is more perfect, and the environment is more mature, the negative effects of FinTech on commercial banks are gradually weakened, and its positive effects will also gradually become apparent.

Thirdly, research on the heterogeneous impact of FinTech on traditional bank risk-taking is prevalent. Domestic and foreign scholars have reached similar conclusions in their research. Due to differences in the affiliation and scale of banks, as well as differences in the business scope and content of different banks, FinTech will have heterogeneous impacts on the risk-taking of different banks. For smaller, non-state-owned banks with lower efficiency, more shadow banking services, and higher interest income, they are more affected by FinTech and bear higher risks whereas for larger, state-owned, and efficient banks, they are relatively less affected by FinTech and have lower marginal risk.

Hence, it can be seen that the remote, networked, and real-time financial transactions have broken down cross-border barriers, and the transmission of financial risks has reduced scope restrictions, accelerating their spread speed. Therefore, financial risks are more complex and difficult to control; At the same time, FinTech cannot change the risks of traditional finance, such as liquidity risk, credit risk, market risk, reputation risk, etc., which have not disappeared; More and more heterogeneous entities have entered the financial market, making it more competitive. Some highly competitive enterprises have become oli-

gopolies in the field of FinTech, monopolizing and manipulating financial market transactions, thereby having adverse effects on the fairness and operational efficiency of the financial market; The data flow is inherently unpredictable, and the backwardness of financial regulatory measures is extremely detrimental to the precise monitoring of data flow changes and the inability to accurately identify the essence of risks. Existing regulatory systems may face significant challenges.

## 4.2. Conclusion

This article reviews the research conducted by domestic and foreign scholars in the past five years (2013-2023), starting from the changes in risk types faced by the traditional banking industry by FinTech. It analyzes the impact of FinTech on the risk-taking behavior of traditional banks, including the impact of FinTech on risk-taking behavior, level, and heterogeneity.

To conclude, the comprehensive promotion of FinTech has brought unconventional risk types to the traditional banking industry, causing different impacts on different banks. However, it has also overall reduced the risk-taking level of banks and improved their risk management capabilities. In order to further actively apply FinTech, commercial banks need to adopt a methodology of “looking at the present from data, looking at the future from features”, and rely on key technologies such as big data and AI to create a risk management system that covers the entire process of risk identification, measurement, decision-making, and implementation (Yuan, 2018).

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## Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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