



# Financial Technology Development Directions and Risks (2012–2022) — A Knowledge Mapping Analysis Based on CiteSpace

Ji Ling, Yan Xiang, Chunxue Liu\*

School of Accounting and Finance, Anhui Xinhua University, Hefei 230088, Anhui, China

**Abstract:** With the advancement of science and technology, financial technology is affecting all aspects of enterprise production. This paper takes financial technology as the research object and, based on literature visualization, conducts a literature review and research outlook on the connotation, development direction, and risks of financial technology. Firstly, the definition of financial technology is clarified to specify its essence, then the development direction of financial technology is elaborated, and finally, the potential risks of financial technology are described. In combination with the current economic situation of mixed ownership in China, suggestions are put forward to effectively avoid risks in the market economy.

**Keywords:** financial technology; development direction; risks; literature visualization

## 1. Introduction

The People's Bank of China defines internet finance as a new type of financial business model in which traditional financial institutions and internet companies use internet technology and information communication technology to achieve capital financing, payment, investment, and information intermediary services. Some scholars believe that financial technology mainly describes the informatization in the financial sector and is a general term for the application of advanced technologies such as the internet, blockchain, and big data in the financial field (Deng Chuyao, 2022)[1]. At present, the development of financial technology in China is still in a growth phase, and we should fully leverage the role of financial technology in supporting high-quality economic development in the digital economy era (Luo Yunfeng, 2022)[2]. At the same time, due to the imperfection of related financial regulatory systems, a series of financial risk issues have also arisen (Liu Mengfei, 2022)[3].

## 2. Development Directions and Risk Visualization of Financial Technology

In the advanced search of China National Knowledge Infrastructure (CNKI), set the subject to FinTech, the title/abstract to development direction and risks, the literature classification to Economics and Management Science, the literature type to SCI, Peking University Core, and CSSCI, select FinTech in the main subject, set the time to 2012-2022, resulting in 415 documents after excluding reports, conference papers, and other interference literature.

(1) Annual Distribution of Document Volume.

Figure 1 shows the number of literature each year in the past ten years with fintech as the main theme. From Figure 1, it can be seen that domestic research on fintech has gradually increased since 2016, with a significant rise after 2020 compared to previous years. The highest number of publications was in 2021, reaching 135 papers.

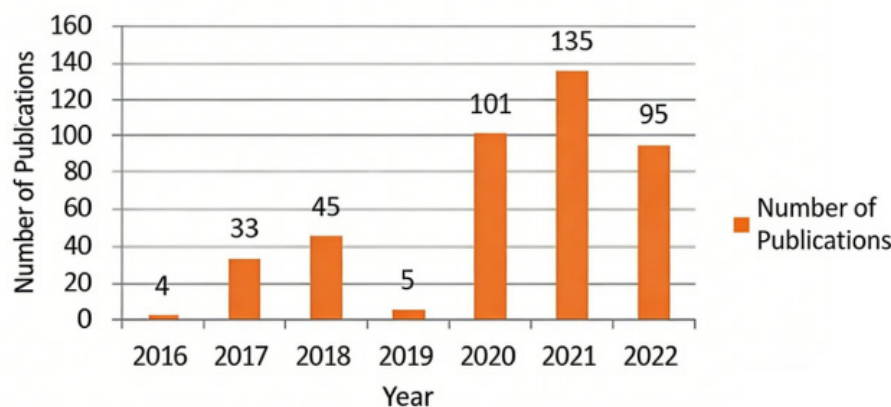


Figure 1. Number of literature with fintech as the main theme from 2012 to 2022

(2) Situation of Major Research Institutions.

As shown in Figure 2, the graph consists of colored nodes and edges between nodes. The nodes represent the objects selected for this graph, and their size represents the total frequency of occurrence of the object—in other words, the higher the frequency of occurrence, the larger the node. From 2012 to 2022, the main research institutions in financial technology were the Financial Research Institute of the Chinese Academy of Social Sciences, Dongbei University of Finance and Economics, Central University of Finance and Economics, and other universities. According to the information in the upper left corner of the knowledge graph, there are a total of 162 nodes and 87 edges in the graph.



Figure 2. Distribution map of major research institutions on financial technology from 2012 to 2022

(3) Keyword Co-occurrence Analysis.

In order to further understand the situation of keywords and clarify research hotspots, this paper counts the top ten keywords under the theme of fintech, excluding the recurring keyword 'fintech' itself, as shown in the table. As can be seen from Table 1, 'commercial banks' has the highest frequency, with a centrality of 0.34, followed by 'digital economy', with a centrality of 0.26, indicating that existing literature pays considerable attention to fintech. Overall, the research on fintech is quite active, with most literature mainly focusing on financial regulation, innovation, and big data.

Table 1. Top Ten Keywords in Fintech Frequency

Number	Frequency	Centrality	Keywords
1	38	0.13	Regulatory Technology
2	37	0.9	Financial Regulation
3	36	0.34	Commercial Bank
4	25	0.06	Financial Innovation
5	21	0.16	Regulatory Sandbox
6	17	0.01	Financing Constraints
7	16	0.01	Big Data
8	15	0.12	Inclusive Finance
9	14	0.13	Intermediary Effect
10	13	0.26	Digital Economy

(4) Analysis of Sudden Appearance of Keywords.

Using CiteSpace software, the emerging keywords in fintech research during a specific period were identified. Emerging keywords are those whose citation frequency sharply increases within a certain time frame. By analyzing these emerging keywords, one can outline the temporal trends of research topics in this field and identify new topics that are currently emerging, providing insight into the changes in research hotspots and frontiers.

As shown in Figure 3, keyword detection in SCI, Peking University Core, and CSSCI journals from 2012 to 2022 revealed 25 high-intensity emerging keywords distributed across different years. The dark areas represent the time span of the emerging keywords, indicating that the topic remained a research hotspot during that period.

### Top 25 Keywords with the Strongest Citation Bursts

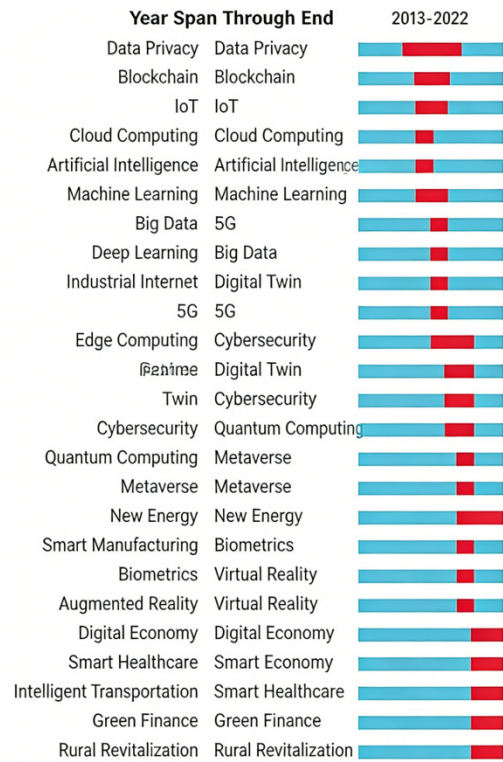


Figure 3. Knowledge Graph of Emerging Terms in Fintech

### 3. The Development History of Fintech

Fintech was born in the telegraph era and has continuously progressed from the informatization stage to the electrification stage. The informatization and electrification in the field of fintech can promote the development of the financial industry by transmitting information more quickly, conveniently, and comprehensively; with the advancement of computer technology and the emergence of the Internet, the traditional financial industry has undergone significant changes (Wang Weidong, 2020)[4]. Traditional financial industries cooperate with Internet companies, continuously expanding related businesses and promoting the growth of the financial industry; along with the emergence of big data and artificial intelligence, various technologies are applied to the financial field, driving qualitative changes in the industry. The rapid advancements in information and communication technologies such as mobile Internet, cloud computing, and big data have accelerated the development of fintech, providing technical support for Internet finance. The expansion of Internet financial services and the increase in users further promote the development of fintech. Both develop synergistically and have made significant progress in areas such as Internet financing platforms, digital currency, and the intelligentization of traditional financial services, while also facing new challenges.

Financial technology is a 'double-edged sword.' It has accelerated financial disintermediation, improved resource allocation efficiency, and reduced transaction costs, causing significant changes in financing methods, customer acquisition channels, credit evaluation, and currency circulation in the financial industry. However, this change has also blurred the boundaries of products, markets, enterprises, and industries, making financial risks more complex and difficult to control, and exposing problems such as insufficient regulatory capabilities and lack of means, posing huge challenges to financial supervision. (Li Yueran et al., 2021)[5].

### 4. Financial technology risks

Since 2020, under the impact of the new crown pneumonia epidemic, the century-old changes have accelerated, and the external environment has become more complex, severe and uncertain. In August 2021, the 10th meeting of the Central Financial and Economic Commission pointed out that it is necessary to "coordinate the prevention and resolution of major financial risks" and "resolve systemic financial risks with high-quality economic development". In December 2021, the

Central Economic Work Conference emphasized that "it is necessary to correctly understand and grasp the prevention and resolution of major risks". It can be seen that how to effectively respond to abnormal fluctuations in the financial system and accurately deal with risks in major areas is an important issue faced by China during the "14th Five-Year Plan" period, which also makes systemic financial risks a major topic that needs to be studied urgently at this stage. At this stage, China's economic development is facing multiple pressures, the external environment is becoming more complex, severe and uncertain, the financial risk points are multifaceted, and the local and potential financial risks should not be underestimated. (Yang Zihui, 2022) [6] Systemic financial risk is not only affected by micro factors, such as the size of financial institutions, but also liquidity, leverage, cost-to-income ratio, etc., as well as the business structure and geographical diversification of financial institutions. It also includes the impact of some macroeconomic factors, such as macroeconomic operation, financial market development, government intervention, etc. Specifically, it is reflected in asset price bubbles, risk management constraints, market uncertainty, economic policy instability, macroeconomic sequence fluctuations, and panic indexes. (Chen Wei, 2022) [7].

## 5. Conclusion and Outlook

In the early stage of financial technology development, the industry order was not yet standardized, financial fraud was rampant, and protecting small and medium investors was a top priority for regulation. As the industry entered a growth stage, digital technology became deeply integrated with financial services, and regulatory arbitrage could accumulate systemic financial risks, making the prevention and resolution of financial risks the main focus of regulation. At the current stage, issues such as data abuse and platform monopolies are becoming increasingly severe, not only seriously infringing on consumers' legitimate rights and interests but also hindering the creation of an inclusive, innovative, and fair competitive market environment. Therefore, consumer protection and maintaining market fairness have become important regulatory tasks. Facing new situations and challenges in the development of financial technology in China, financial technology regulation should shift toward comprehensive, multi-level, and three-dimensional regulation, aiming for inclusiveness, stability, fairness, and consumer protection, continuously improving the data and platform governance system, and promoting steady and long-term development of financial technology. (Gong Qiang, 2022) [8] Currently, scholars are optimistic about the vigorous development of financial technology, but it also brings risks and challenges.

## Acknowledgments

This paper was supported by 2024 Anhui Provincial University Research Project: A Study on the Mechanisms Underlying the Impact of Digital Transformation in Manufacturing on High-Quality Economic Development and Practical Implementation Pathways in Anhui Province (2024AH052530).

## References

---

- [1] Deng Chuyao, Fintech, Innovation Resource Allocation, and Total Factor Productivity. *Technology Economy and Management Research*, 2022(09): pp. 26-32.
- [2] Luo Yunfeng, Wang Huilong, and Li Wenlong, Fintech, Corporate Financial Flexibility, and Innovation Investment Driving. *Finance and Accounting Monthly*, 2022(11): pp. 66-73.
- [3] Liu Mengfei and Luo Xiaowei, Fintech, Risk Contagion, and Banking Systemic Risk. *Comparative Economic and Social Systems*, 2022(03): pp. 72-87.
- [4] Schallmo, D., C.A. Williams, and L. Boardman, Digital Transformation of Business Models—Best Practice, Enablers, and Roadmap. *International Journal of Innovation Management*, 2017. 21(08): p. 1740014.
- [5] Li Yueran and Chen Zhongyang, Developing Fintech: Impacts and Countermeasures. *Science and Technology Management Research*, 2021. 41(24): pp. 18-26.
- [6] Yang Zihui, Chen Yutian, and Lin Shihan, Literature Review on Systemic Financial Risk: Status, Development, and Outlook. *Financial Research*, 2022(01): pp. 185-206.
- [7] Chen Wei, Research on Risk Audit of Fintech Biometric Identification Systems. *Accounting Friend*, 2022(12): pp. 2-7.
- [8] Yang Zihui and Zhou Yinggang, Global Systemic Financial Risk Spillover and External Shocks. *Chinese Social Sciences*, 2018.

## Author Bio

Ji Ling (born June 2000), female, Han Chinese, from Anhui, Master's degree. Professional title: University Assistant Lecturer. Research interests: Fintech and corporate investment and financing.

Yan Xiang (born November 1990), female, Han Chinese, from Anhui Province, Master's degree, Associate Professor. Research interests: corporate risk management and investment and financing.

Corresponding author: Chunxue Liu (born March 1999), female, Han Chinese, from Anhui, Master's degree, Research interests: corporate risk management and investment and financing.