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Research on the Impact of Digital Finance on Bank Systemic Risk

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Abstract

With the rapid advancement of digital technologies, digital finance has become a crucial component of the global financial industry. This trend has profoundly changed the operational models and risk management frameworks of traditional banking. This paper aims to discuss the dual impact of digital finance on banking systemic risk by analyzing the rise of internet finance companies and the digital transformation of the banking industry. The research indicates that the impact of digital finance on banking systemic risk is twofold: on the one hand, the emergence of internet finance companies may exacerbate banks' risk exposure; on the other hand, the digital transformation of the banking industry can help banks reduce risk while improving efficiency. Based on these findings, this paper suggests that regulators need to strengthen the supervision of internet finance companies while continuously encouraging financial innovation, thereby improving the risk management framework to ensure the stability and security of the financial system. This research provides a new perspective for the in-depth understanding of the relationship between digital finance and banking systemic risk and provides theoretical support for relevant policymaking.

Keywords

Digital Finance; Banking Systemic Risk; Internet Finance; Digital Transformation; Risk Management

1. Introduction

The rapid development of digital technology has been and continues to profoundly reshape the landscape of the global financial industry. With the deep and widespread application of technologies such as the internet, mobile communication, big data, artificial intelligence, and blockchain, the models, efficiency, and risk management methods of financial services have gradually undergone fundamental transformations (Gu Haifeng & Bian Yuchen, 2022). Among these, digital finance, as a product of the deep integration of technology and finance, has become a major component of the global financial industry. It has not only promoted the inclusiveness and convenience of financial services but has also redefined the roles and functions of financial intermediaries. Against this backdrop, traditional banking is facing unprecedented opportunities and challenges.

The rise of digital finance signifies the transformation of the financial industry from traditional offline models to online and intelligent approaches. Through digital technology, the boundaries of financial services are continuously expanded and extended. From payment and settlement and loan financing to wealth management and risk control, virtually all aspects of financial operations have undergone digital upgrades. For example, the widespread adoption of mobile payments enables consumers to conduct transactions anytime and anywhere, while the application of big data and artificial intelligence allows financial institutions to more accurately assess and judge customer credit risk,

optimizing resource allocation. Furthermore, the introduction of blockchain technology enhances the transparency and security of financial transactions. All these emerging technologies not only improve the level and efficiency of financial services but also reduce operating costs, injecting new impetus into the sustainable development of the financial industry.

However, the rapid development of digital finance has also brought new risks and challenges, particularly regarding its potentially significant impact on banking systemic risk. Banking systemic risk refers to the direct transmission of crises from one or more financial institutions to the entire financial system through chain reactions, leading to systemic collapse. As the core players in the financial system, the stability of banks is, to a certain extent (Zhang Xiaoyan, Li Chu, & Long Liang, 2025), related to the stability and healthy operation of the entire economic system. The rise of digital finance has impacted the traditional intermediary role of the banking industry, making financial disintermediation increasingly apparent. Internet finance companies, by directly connecting the supply and demand sides of funds, have gradually weakened the dominant position of banks in deposit and loan businesses, leading to a gradual loss of bank deposits and a narrowing of interest rate spreads.

This research has significant theoretical and practical implications. From a theoretical perspective, existing literature on digital finance has largely focused on its impact on financial efficiency and service models; however, the discussion of banking systemic risk remains relatively insufficient. This paper systematically analyzes the dual role and impact of digital finance on banking systemic risk, essentially filling this research gap and presenting a new perspective for readers to better understand the relationship between digital finance and financial stability. From a practical perspective, with the rapid development of digital finance, balancing financial innovation and risk prevention has become an important aspect and issue for global financial regulation. The findings of this paper can provide a theoretical basis for regulatory agencies to formulate relevant policies and offer practical guidance for banks in optimizing risk management strategies during the digital transformation process.

2. Concepts and Development Trends

2.1 Definition of Digital Finance

Digital finance primarily refers to a novel financial model that applies the internet, mobile communication, and other digital technologies to conduct financial business. This financial concept encompasses not only traditional aspects such as capital raising, payment settlement, loan financing, and risk management, but also significantly enhances the efficiency and coverage of financial services mainly through corresponding technological innovation and digital approaches (Bi Xiaohan, 2024). Notably, the focus and core of digital finance lie in achieving inclusive, convenient, and efficient financial services through the application of technological means, which allows financial services to effectively fill gaps in the relevant needs of individuals and businesses.

The rapid development of internet strategies, especially the widespread adoption of mobile internet, has fueled the burgeoning growth of digital finance. Through digital technology, financial institutions can quickly meet market needs, thereby providing more personalized financial services. Simultaneously, digital finance has become a driver of financial business innovation. For example, new financial models such as mobile payment, P2P lending, and crowdfunding have emerged in recent years, undoubtedly enriching the range of products and services available in the financial market.

2.2 Definition of Banking Systemic Risk

Banking systemic risk primarily refers to the risk of instability or even collapse of the entire banking system due to certain internal or external factors within the banking system. This risk not only affects the operation of individual banks but also potentially affects and creates problems for the entire financial system, and may even have a severe negative impact on the real economy as a whole. Banking systemic risk generally possesses characteristics of contagion, complexity, and unpredictability. Once it occurs, it is often very difficult to predict and control.

2.3 Development Trends in Digital Finance

Driven by continuous technological advancements and rapid market changes, digital finance exhibits the following development trends:

2.3.1 Integration: Deep Integration of Financial Business and Technological Innovation

The development of digital finance is inseparable from the support of relevant technologies, especially the application of emerging technologies such as the internet, big data, cloud computing, and blockchain. The profound integration of these technologies and financial businesses not only improves the efficiency of financial services but also promotes innovation in financial products and related services. For example, the use of blockchain technology makes financial transactions more transparent and secure, while big data technology allows financial institutions to more accurately conduct risk management and customer profiling.

2.3.2 Scenarization: Scenarized Application of Financial Services

A major trend in digital finance is the scenarized application of financial services. By integrating and embedding financial services into various life scenarios and contexts, financial services become more convenient and personalized. For example, mobile payments are already widely used in various aspects of daily life, such as shopping, dining, and transportation. In addition, digital finance can also cooperate with e-commerce platforms, social media platforms, etc., to integrate financial services into users' daily lives and enhance the user experience.

2.3.3 Intelligence: Application of Technologies such as Artificial Intelligence and Big Data

The application of artificial intelligence and big data technologies in digital finance can greatly enhance the intelligence level of financial services. Through big data analysis, financial institutions can conduct more precise and accurate risk assessment and customer profiling, in order to provide more personalized and intelligent financial services (Fang Yi et al., 2020). The application of artificial intelligence technology can make financial services more intelligent and automated, such as smart investment advisory, smart customer service, etc.

2.4 Evolving Trends in Systemic Banking Risks

With the rapid development of digital finance, systemic banking risks are also gradually exhibiting new development trends:

2.4.1 Increased Technological Risks

The rapid development of digital finance has made technological risks within systemic banking risks increasingly prominent. For example, technological risks such as network supply issues and data breaches can affect not only the operations of a single bank but also potentially the entire financial system. Therefore, banks need to continuously strengthen technological risk management to enhance network security and protection capabilities.

2.4.2 Increased Cross-sectoral Risks

The development of digital finance has blurred the boundaries of financial businesses, leading to an increase in cross-sectoral risks. For example, internet companies are entering traditional banking business areas through digital finance, increasing the complexity and diversity of the financial system. Cross-sectoral risks not only increase the difficulty of regulation but can also lead to the spread and dissemination of systemic risks.

2.4.3 Prominent Data Risks

The development of digital finance has made data a primary and core resource for financial businesses. However, the centralization and large-scale use and application of data have also led to the emergence of data risks. For example, risks such as data breaches and data misuse can not only affect a bank's reputation but also exacerbate systemic risks. Therefore, banks need to strengthen data risk management to enhance data security and protection capabilities.

3. The Impact of Internet Finance Companies Derived from Digital Finance on the Banking Industry

With the rapid development of digital finance, Internet finance companies have accelerated their rise, becoming a significant force in the financial system. Primarily through technological innovation and changes in business models, these companies have greatly and profoundly altered the landscape of the traditional financial industry, particularly having a far-reaching impact on the banking industry. Internet finance companies have not only changed the way financial services are provided, but have also posed new challenges to the banking industry's core business model, market competition, and risk management. These challenges primarily manifest in three aspects: the financial disintermediation effect, increased competition, and risk contagion.

3.1 The Financial Disintermediation Effect

Financial disintermediation refers to the phenomenon where suppliers and demanders of funds bypass the traditional banking system by conducting financing activities directly or through non-bank intermediaries. The rise of Internet finance companies has rapidly accelerated this process.

3.1.1 Internet Finance Companies Directly Connect Fund Suppliers and Demanders

Internet finance companies primarily use technological methods and means, such as P2P lending platforms and crowdfunding platforms, to directly connect funds to demanders (e.g., small and medium-sized enterprises, individual consumers) and suppliers (e.g., investors). This model not only breaks the monopoly of traditional banks as financial intermediaries, but also enables efficient matching between fund suppliers and demanders. For example, P2P platforms, through big data analysis and intelligent algorithms, can quickly assess the credit risk of borrowers while providing investors with diversified options.

3.1.2 Weakening the Intermediary Role of Banks, Leading to Deposit Outflow and Impacting Interest Rate Spreads

The emergence and rise of Internet finance companies have weakened the core intermediary role of banks in financial intermediation. On the one hand, investors are more inclined to invest funds in Internet finance platforms to obtain higher returns, which undoubtedly leads to a corresponding outflow of bank deposits. On the other hand, borrowers obtain lower-cost financing through Internet finance platforms, thus reducing the need for loans from banks. This dual pressure has significantly reduced the scale of banks' deposit and loan businesses, narrowed traditional interest rate spreads (the difference between deposit and loan interest rates), and consequently impacted their profitability.

3.2 Increased Competition

Internet finance companies, due to their convenience, innovation, and efficiency, have attracted a significant number of customers, which constitutes strong support and competition for traditional banks.

3.2.1 Convenience and Innovation of Internet Finance Companies Attract a Large Customer Base

Internet finance companies offer more convenient and personalized financial services through technological innovation. For example, mobile payment platforms (such as Alipay, WeChat Pay, etc.) have greatly simplified the payment process and improved the user experience. Smart robo-advisors provide users with customized investment advice through algorithms, lowering the barrier to entry for investment. These innovative services pose a threat to the customer base of traditional banks (Huang Menghan, 2024).

3.2.2 Traditional Banks Face Increased Market Competition

The rise of internet finance companies has placed unprecedented competitive pressure on traditional banks. To address this challenge, banks must accelerate their digital transformation to improve service quality and efficiency. For example, many banks have launched their own mobile banking applications, optimizing online service processes and enhancing the user experience. In addition, banks are strengthening their competitiveness by acquiring or collaborating with internet finance companies to leverage their technological advantages.

3.3 Risk Contagion

While the rapid development of internet finance companies injects vitality into the financial system, it also introduces new risks, particularly increasing the potential for risk contagion.

3.3.1 Insufficient Risk Control Capabilities of Some Internet Finance Companies

The risk control capabilities of internet finance companies vary. Some companies lack comprehensive risk management systems, making them prone to credit risk, liquidity risk, and other issues. For example, some P2P platforms, due to lax risk control, have experienced significant bad debts, ultimately leading to the platform's collapse. Consequently, these risks not only affect the internet finance companies themselves but can also be transmitted to the banking system through the financial markets.

3.3.2 Credit Risk Transmitted to the Banking System Through Financial Markets

Complex financial relationships exist between internet finance companies and traditional banks. For example, banks may provide financial support to internet finance companies or indirectly participate in their business by purchasing financial products issued by them.

4. The Dual Impact of Digital Finance on Bank Systemic Risk

The rapid development of digital finance has had a profound impact on the banking industry, particularly concerning bank systemic risk. It presents both new challenges and creates entirely new opportunities. Through technological innovation and changes in business models, digital finance both intensifies risks within the banking industry and provides banks with new tools and means to improve risk management capabilities and operational efficiency. The following sections elaborate on these impacts, addressing negative and positive aspects:

4.1 Negative Impacts

Internet finance companies, through technological innovation and efficient services, rapidly attract a large number of customers, thereby reducing the market share of traditional banks. For example, P2P lending platforms and mobile payment platforms directly connect the supply and demand sides of funds, reducing customer dependence on traditional banks and increasing their operational risks (Yang Tao & Cheng Lian, 2023; Che Zhihong, 2009).

4.2 Positive Impacts

Digital finance not only promotes the digital transformation of the banking industry but also significantly improves risk management and operational efficiency, primarily through the introduction of technologies such as big data and artificial intelligence. For example, through big data analysis, banks can more accurately assess the credit risk of borrowers, reducing non-performing loan rates.

5. Personal Insights and Industry Perspectives

Drawing from my experience in the banking sector, I have observed firsthand the transformative impact of digital finance on banking operations. Digitalization has become a crucial driver for banks to address current market pressures, prompting many to adopt data-driven strategies for their next phase of transformation.

5.1 Challenges Faced by Banks

In practice, several challenges have become apparent during banks' digital transformation journeys:

(1) Integration of Technology and Business: Some banks implement new technologies without fully aligning them with business needs, resulting in a disconnect that hampers transformation effectiveness.
(2) Talent Shortages: Digital transformation requires professionals adept in both technology and business domains. The scarcity of such hybrid talent in the market poses a significant constraint on transformation efforts.
(3) Lagging Risk Management: Digitalization introduces new risks, including cybersecurity threats and data privacy concerns. Some banks' risk management frameworks have not evolved sufficiently to address these emerging challenges.

5.2 Potential Strategies

To navigate these challenges, banks could consider the following strategies:

(1) Formulate Clear Digital Strategies: Develop comprehensive digital transformation roadmaps that align technological initiatives with business objectives, ensuring seamless integration
(2) Invest in Talent Development: Focus on training and recruiting professionals with combined expertise in technology and business to support and drive digital initiatives
(3) Strengthen Risk Management Frameworks: Update and enhance risk management practices to effectively identify, assess, and mitigate risks associated with digital operations

6. Conclusion

The impact of digital finance on the systemic risk of banks is twofold. On the one hand, the emergence and rise of internet finance companies intensifies financial disintermediation and market competition, increasing the possibility of bank systemic risk. On the other hand, digital finance technologies provide banks with new tools and means to enhance risk management capabilities. Therefore, banks need to actively address the challenges posed by digital finance while fully leveraging their technological advantages to optimize risk management and improve operational efficiency, thereby ensuring their competitiveness and stability in the era of digital finance.

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