

# ***Exploring the Emerging Financial Development Model of "Blockchain + Credit Guarantee" Based on Information Asymmetry Theory***

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**Abstract:** Small and medium-sized enterprises (SMEs) are an important part of relieving the pressure of social employment and increasing the development and vitality of the world economy. However, the disadvantages of SMEs in terms of their scale and normality have led to problems such as difficulties in financing during their development, which have increased the difficulty of their development and growth. To address this social reality, it is urgent to establish a perfect credit guarantee system for SMEs. With the continuous development of China's information technology, financial institutions are also transforming, providing new ideas for the improvement of the credit guarantee system for SMEs. Over the years, the implementation of "blockchain + credit guarantee" has brought unprecedented revolutionary impact to the financial industry. It has not only greatly expanded the application scope of blockchain technology, but also greatly improved the credit guarantee mechanism for SMEs, greatly enhanced their financing efficiency, and effectively reduced their risks, laying a solid foundation for their long-term stable development. To better support the development of SMEs, we should accelerate the digital transformation to realize the effective allocation of financial resources and enhance the market competitiveness of SMEs, to better meet their economic and social development needs.

**Keywords:** credit guarantee, information asymmetry, SMEs, blockchain

## **1. Introduction**

With the rapid development of the world economy, the number of small and medium-sized enterprises (SMEs) has risen dramatically, and they are not only an important driving force for national development but have also attracted widespread recognition and active participation from the international community. The development of SMEs presents a worldwide role in promoting technological innovation, increasing import and export rates, and maintaining sustainable economic development. In recent years, China's market economy has been reformed with great success, in which the rapid rise of small and medium-sized enterprises has brought a significant impact on the country's economy. These enterprises can improve the country's economic strength and help reduce the tax burden and promote the transformation of industries. In addition, these enterprises can bring more jobs to the country's workforce, thus maintaining the country's economic and social stability.

However, due to the disadvantages of assets and scale of development, the poor standardization of their operations, inadequate financial management systems, and poor creditworthiness of China's SMEs, it is difficult for them to gain the favor of financial institutions, and thus the capital needed for their development is relatively limited. Although SMEs in China have been making efforts to improve their financing environment in recent years, their poor financial status and internal financial pressures make it impossible for them to obtain sufficient inputs to achieve sustainable growth, thus creating a serious challenge. Therefore, to change the status quo of SMEs' financing difficulties and support their sustainable development, establishing a sound credit guarantee system for SMEs has a very important role.

With the support of national policies, China's SME credit guarantee system has progressed, but many problems have been exposed in the process of its development. Because of information asymmetry, guarantee companies are subject to huge risks and may be morally condemned [Mishkin "Monetary Finance"]. Therefore the emergence of blockchain technology brings a new solution for credit guarantees. This paper presents a literature review and a systematic presentation of the traditional credit guarantee problem and the application of blockchain technology in the financial and commercial field and proposes the practical significance of using blockchain technology in the context of the current situation of the development of the credit guarantee system for SMEs. The study will create a good credit guarantee system and financing environment for the development of SMEs, thus promoting the rapid development of SMEs.

## 2. Problems with Traditional Credit Guarantees

Under the traditional credit guarantee model, the credit rating system is mainly based on the rich experience and historical data of banks, credit card companies, and other financial institutions, but lacks transparency and fairness. As a result, some unscrupulous enterprises or individuals may obtain credit guarantees through fraud and forgery, which brings high risks.

In recent years, the study of credit guarantees for SMEs has become the focus of academia, and many enlightening ideas, thoughts, and suggestions have been put forward. This paper will delve into the main contributors in this area to provide a more comprehensive perspective on the academic community. The research focuses on the necessity of establishing a credit guarantee system, its manifestations, and countermeasures to solve the problem.

Ao Hui points out that due to information asymmetry [1], the risk of "adverse selection" and "moral hazard" exists for both financial institutions and investors. To deal with this problem, Ao Hui discusses how to establish an effective, sustainable, supervisable, traceable, and controllable credit management system for SMEs with successful cases at home and abroad, and to establish a perfect system of risk identification, monitoring, control, and assessment, as well as effective digital control. On this basis, He Yuanzhen suggests that special legislation should be made for credit guarantees for SMEs [2], establishing a risk-sharing mechanism and diversifying the funding system for SME credit guarantees. Although credit guarantees can bring short-term financing opportunities for SMEs to completely improve the situation, it is necessary to establish a sound financial service mechanism as well as improve and optimize financial services to bring SMEs to bring more development opportunities.

Zhang Dalong argues that China's immediate neighbors [3], Japan and South Korea, have relatively successful development experiences that are worth learning from in China. It explores the credit guarantee mechanisms for SMEs in the United States, Japan, and other countries, proposes a new, effective mechanism for interaction, and strengthens effective early warning and effective discipline for moral hazard, as well as improving the loss payout mechanism for guarantee institutions and increasing supervision of the entire guarantee market. The purpose of this paper is to explore in depth the inspirations brought to China by foreign credit guarantee systems, but it

remains to explore and improve China's credit guarantee system more comprehensively. As a whole, these works talk about the risks of credit guarantee itself and the ways to solve them, but these ways are more or less the same, basically establishing a risk assessment system, improving the wind control system, and strengthening the supervision of related institutions.

### **3. Blockchain Technology in the Financial Industry**

#### **3.1. Blockchain Technology Concept Proposed**

At the beginning of the 21st century, the concept of blockchain technology first appeared in Satoshi Nakamoto's paper "Bitcoin: A Peer-to-Peer Electronic Cash System", which laid a solid foundation for the development of Bitcoin, and it was an important milestone in the development of Bitcoin. It also marked the birth of blockchain technology, one of the fundamental technologies of Bitcoin.

#### **3.2. Studies of Early Blockchain Applications in Practice**

Yuan Yong et al. pointed out that blockchain, as a new cryptocurrency system [4], is extremely scalable, can effectively address the limitations of third-party platforms, and can significantly reduce the cost of operations, and its distributed storage characteristics can ensure the security, reliability, and traceability of data; therefore, it has been universally regarded as the basis for the development of technology in various fields. Haishu Qiao and Shanshan Xie pointed out that the introduction of blockchain technology has greatly improved the distribution of resources by integrating all relevant users and attracting more and more people to join [5], thus completely solving the problem of "information silos" and revolutionizing the traditional information asymmetry.

Pete Rizzo emphasizes the need to increase blockchain research and apply it to various fields to enhance the efficiency and sustainability of society as a whole [6]. By introducing blockchain, we can achieve comprehensive regulation of the financial sector, thus preventing problems such as information leakage and data tampering. In addition, with the emergence of various new blockchain technologies, various social entities are becoming more and more closely connected to each other, thus facilitating various business activities. However, we have tried to combine blockchain with virtual currencies and are expanding their use.

#### **3.3. Studies of the Practical Application of Blockchain in Business Models**

Xiao Xiang states that by using blockchain information, we are expected to transform the current Internet financial institutions and promise a real credit revolution in the future [7]. This emerging information, such as distributed ledgers, asymmetric ciphers, and consensus management mechanisms, can effectively mitigate risks due to information lag and unreliability, and help promote healthy economic development. According to Zhu Yanyeon [8], by taking advantage of blockchain's node records, peer-to-peer exchange, and asymmetry, a new investment mechanism, i.e., investor investment and management, can be established to support and promote financial freedom of enterprises, thus effectively improving their financial situation and ultimately promoting global financial health and stability.

Zhang Peng pointed out that applying blockchain to traditional trade settlement can significantly improve its operation mode [9], thus promoting the sustainability of blockchain financial services in China. Zhu Meimei designed two innovative financial models of supply chain based on blockchain technology based on core enterprises and Internet financial platforms [10]. Applying blockchain technology can effectively solve the limitations of information asymmetry and strengthen the ability to resist moral hazard, thus promoting the innovative development of financial institutions. Fang

Ying Blockchain technology is considered to solve the credit authentication problems existing in traditional finance more quickly [11], efficiently, and cost-effectively, especially in payments, securities clearing, and delivery. It will become the new frontier of Internet finance and is expected to drive innovation in distributed financial transactions and achieve a change in financial history.

Jiahe Liu and Shipu Huang noted that blockchain technology is changing traditional payment methods, such as digital bills [12], and is also improving the credit experience for artificial intelligence. They also noted that traditional contracts, transactions, and records are still an integral part of today's society. However, with the development of online financial services, their important role is no longer present.

### **3.4. Future Development of Blockchain Technology**

Wulf et al. delve into how blockchain technology can improve the future of businesses [13], and they point out that blockchain can bring unprecedented and challenging transformations, and therefore, only by making full use of it can businesses achieve the true digital transformation that can drive continuous social and economic improvement. Jiahe Liu and Shipu Huang mentioned that although blockchain technology brings many conveniences to online financial services [14], it still faces many shortcomings, such as the lack of strict laws and regulations that must be followed and the lack of sustainable regulatory mechanisms, and therefore, it still has the potential to bring more possibilities to online financial services [12].

Mimi Zhang and Lu Yang pointed out that the potential of blockchain is not only limited to finance [14], but it can also spread to other industries such as green finance and inclusive finance; therefore, the government needs to enforce blockchain finance laws more strictly and actively promote the construction and improvement of blockchain-based financial security guarantee system to ensure its normal and reasonable operation and promote the healthy and stable development of the financial industry.

## **4. Advantages of the “Credit Guarantee + Blockchain” Model**

By using blockchain technology, we can better manage the credit guarantee process. For example, financial institutions can store customers' credit data on the blockchain, which allows for a more secure and transparent exchange of information and prevents data from being tampered with, lost, or frozen. At the same time, blockchain technology can also enable fast verification of users' identities and credit, making credit guarantees more efficient and reliable.

Blockchain technology can also help enable a wider range of financing sources and investment channels. Through smart contracts, investors can provide financing directly to the project sponsor and receive a corresponding return. This process not only saves costs by eliminating intermediary links but also reduces the potential for disputes. Because the entire process is on the blockchain and is tamper-evident and transparent, it can greatly enhance financing security.

According to Yao, Guozhang [15], the future approach to credit management is expected to use blockchain technology. This method is capable of automatically collecting and retaining data related to financial activities and transmitting them through the network. The advantages of this method include high transparency of information, inability to be tampered with, and ease of operation. In addition, this approach can significantly improve the integrity, accuracy, and timeliness of banks' credit data.

According to Yi-Fu Tang [16], blockchain technology has several distinct advantages, such as the absence of central government intervention, the implementation of decentralized records, the implementation of common management, and complete data security, all of which will greatly facilitate risk management and regulation of security institutions, thus revolutionizing the traditional

financial services model and driving the rapid growth of this field. Through the incorporation of distributed secure authentication, artificial intelligence, secure cloud storage, and big data processing technologies as proposed by Xian Yong et al. [17], and the use of blockchain technology support, the intelligence of credit systems can be greatly enhanced, thus making the recording, auditing, and supervision of credit more efficient and convenient.

Xue Yuzhe and Zhang Mingyuan point out that to effectively use blockchain technology to promote the enhancement of credit guarantees [18], it is necessary to strengthen the cooperation between the government, guarantee associations, and other relevant institutions to form an effective synergy mechanism to achieve a win-win situation. In addition to this, they advocate building policy-based finance specifically for SMEs, improving the financial management system, and transferring certain decision-making powers to financial regulatory authorities. To promote the development of SMEs, we suggest that banks and other financial institutions should strengthen their support for their credit ratings.

Song et al. found that the establishment of a platform-based institutional mechanism is conducive to promoting the mutual establishment of credit between the guaranteeing parties [19], but cannot completely eliminate risks. The emergence of blockchain technology can be used as a core mechanism to maximize the possibility of risk generation, thus compensating for the shortcomings of the traditional establishment of a credit guarantee risk control system and providing a new high-quality way for credit guarantee.

## 5. Conclusion

Looking at today, the seamless connection, reliable data flow, and complete data records of blockchain technology make it an important support for the future society. Therefore, the future application of blockchain technology to the credit management field undoubtedly possesses great potential, thus promoting the change of the financial industry. In addition, the development of this field has great potential because it has a better data management mechanism that makes the flow of data easier, more accurate, more timely, and more flexible, thus providing consumers with more convenient services. By improving these measures, we can significantly improve the financing capacity and risk level of SMEs. While there are still multiple risks and challenges in this area, it will undoubtedly have a profound impact on the transformation and innovation of the financial sector.

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