

# Analysis of the impact of guarantee chain risk on financial institutions and countermeasures

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**Abstract:** This paper mainly introduces how to optimize the loan structure and approval process, improve the efficiency and security of capital use, improve the internal supervision mechanism and implement the accountability system in the context of guarantee chain risk. This paper analyzes the impact of guarantee chain risk on financial institutions, and emphasizes the importance of dispersing loan risk, strengthening the standardization and rigor of loan approval process, improving the efficiency and security of fund use, and establishing and improving the internal supervision system. Through the implementation of these strategies and suggestions, financial institutions can better cope with the challenges brought by the risk of guarantee chain and ensure the sustainable and steady development of their own business.

**Keywords:** Chain of guarantee risk; Financial institution; Strategic advice

## 1. Introduction

As the financial markets continue to evolve, chains of guarantee, as a common method of financing, are playing an increasingly important role in financial institutions. However, the existence of guaranty chain also brings a series of risks, such as credit default, maturity mismatch, etc. Therefore, this paper aims to analyze the impact of guarantee chain risk on financial institutions and put forward corresponding countermeasures.

## 2. Overview of chain of guarantee risk

### 2.1 Definition and characteristics of chain of guarantee risk

The so-called "guarantee chain" refers to the special interests generated by two or more enterprises through mutual guarantee or serial guarantee<sup>[1]</sup>. According to the type and nature of the institution, the guarantee chain can be divided into inter-enterprise guarantee chain, inter-financial institution guarantee chain, etc. The risk of guarantee chain has gradually become a risk source that cannot be ignored in today's financial market and enterprise management. When a certain enterprise in the guarantee system has a financial crisis, the risk will spread in the guarantee chain like dominoes, with a wide range and deep impact<sup>[2]</sup>.

The risk of guarantee chain is hidden. First of all, the relationship between enterprises in the guarantee chain is complicated, and there may be many situations such as cross-guarantee and circular guarantee. This makes it difficult to fully and accurately identify the whole picture of the guarantee chain from the financial statements of a single enterprise. Especially when enterprises participate in private lending, Internet finance and other fields by means of joint guarantee loan, the concealment of such risks will be further enhanced<sup>[3]</sup>. Secondly, the transparency of corporate financial information is not high, and the credit information system of the People's Bank of China mainly reflects commercial banks. The guarantee information of banks, while that of shadow banks is not counted, makes it difficult for commercial banks to accurately identify the guarantee situation of enterprises in the lending process, which may overestimate the repayment ability of enterprises. This information asymmetry is very easy to accelerate the outbreak of guarantee chain risks, which makes the hidden risks reflected.

The risk of security chain has the magnification effect. First, the amount guaranteed may exceed the

total amount of a company's own funds. This is because the enterprise can use its own assets to guarantee many times, so that the guarantee amount may far exceed the enterprise's net assets. In this case, once a link in the guarantee chain goes wrong, it may lead to the collapse of the entire guarantee chain, thus amplifying the risk. Second, guarantee risks are interlocking. The mutual insurance of several companies has formed a chain of contingent liabilities. Once one of the companies has a problem, other companies may also be affected, resulting in a situation where one company suffers and several companies are tied up. The transmission and amplification effect of such risks may lead to big fluctuations and shocks in a group of enterprises and even the entire social economy. In addition, the risk of the chain of guarantee may be further amplified by the breaking of the risk barrier, the existence of risk transmission carriers and the role of catalytic effect. For example, when one firm in the guarantee chain defaults, it may trigger a chain reaction among other firms, leading to the collapse of the entire guarantee chain. At the same time, risks in the guarantee chain may also spread through financial markets, supply chains and other channels, further amplifying risks<sup>[4]</sup>.

## ***2.2 Reasons for the formation of guarantee chain risks***

Mutual insurance, joint guarantee and other guarantee methods between enterprises improve the financing ability of enterprises to a certain extent, but also bind enterprises tightly together, forming a situation of "one prosperity, one loss".

First of all, some enterprises excessively provide guarantees to the outside world, which intensifies the formation of security chain risks<sup>[5]</sup>. In order to obtain more financing, enterprises do not hesitate to use their own reputation and assets as collateral, ignore their debt capacity and risk control ability, and provide a large number of guarantees, resulting in excessive debt of enterprises. Once the market environment changes or the guarantee object has problems, these enterprises are easy to get into trouble because of the break of the capital chain, and even face the risk of bankruptcy.

Secondly, financial institutions also have problems in the identification, prevention and control of security chain risks that cannot be ignored<sup>[6]</sup>. Due to the lack of effective risk assessment and monitoring mechanisms, it is often difficult for financial institutions to detect and respond to chain of guarantee risks in a timely manner. This makes financial institutions in a passive position in front of risks and unable to take effective measures to resolve risks in a timely manner. This passive situation also intensifies the formation and diffusion of the risk of the chain of guarantee to a certain extent.

The formation of guarantee chain risk is the result of many factors. In addition to the above mentioned factors of enterprises and financial institutions, they also include changes in the market environment, the impact of policy adjustment and the absence of laws and regulations. These factors are intertwined and influence each other, which together constitute the complex face of the risk of the chain of guarantee.

In order to effectively prevent and resolve the risk of the chain of guarantee, it needs the joint efforts of enterprises, financial institutions and government departments<sup>[7]</sup>. Enterprises need to strengthen their own risk management and control capabilities, reasonably assess their debt capacity and risk tolerance, and avoid excessive guarantees. Enterprises also need to establish sound risk early warning and prevention mechanisms to detect and respond to possible risk problems in a timely manner. Financial institutions also need to strengthen the construction of risk assessment and monitoring mechanisms, and improve their ability to identify, prevent and control chain of guarantee risks. This includes establishing a sound risk assessment system, strengthening the review and monitoring of guarantors, and taking effective risk response measures in a timely manner. Through the implementation of these measures, financial institutions can better grasp the changes in the risk of the chain of guarantee, so as to make more accurate and timely decisions. Government departments also need to play an active role in the prevention and resolution of chain of guarantee risks. This includes strengthening the construction and improvement of relevant laws and regulations, promoting the establishment of risk-sharing mechanisms, and providing necessary policy support and guidance. Through the implementation of these measures, government departments can provide enterprises and financial institutions with a better legal environment and policy support, and promote the effective resolution of chain of guarantee risks.

The formation of security chain risk is the result of many factors. In order to effectively prevent and resolve guarantee chain risks, it is necessary for enterprises, financial institutions and government departments to work together to strengthen risk management and prevention and control. Only through the implementation of comprehensive risk management and prevention and control measures can we

ensure the stability and security of the guarantee chain, and provide a strong guarantee for the healthy development of enterprises and the stability of the financial market. This also requires us to constantly sum up experience and lessons, and continuously improve and perfect the risk management and prevention and control mechanism to cope with the changing market environment and risk challenges.

### 2.3 The impact of chain of guarantee risks on financial institutions

In the complex network of the financial world, the risk of chain of guarantee threatens the operational security of financial institutions. This kind of risk comes from the intricate guarantee relationship among financial institutions. Once there is a problem in one link, the risk will be transmitted quickly and trigger a chain reaction. Chain of guarantee risks may not only lead to the deterioration of the asset quality of financial institutions and the surge of non-performing loans, but also tear the bond of trust among financial institutions and trigger a crisis of trust.

Due to the highly contagious and amplifying effect of chain of guarantee risks, in the globalized financial system, financial institutions are increasingly connected, and the speed and scope of risk transmission is also expanding. Once a chain of guarantee risk breaks out, it will quickly spread to the entire financial system like a virus, affecting multiple financial institutions and industries. Under such circumstances, even strong financial institutions can hardly stay immune.

The extreme consequence of chain of guarantee risks is to trigger systemic financial risks. Systemic financial risk refers to the risk faced by the entire financial system, which may lead to the collapse of the financial market and a severe recession of the economy. Many financial crises in history were triggered by the outbreak of systemic financial risks, which brought huge losses to the global economy. For financial institutions, it is urgent to prevent and resolve the risk of the chain of guarantee.

In order to effectively deal with guarantee chain risks, financial institutions need to strengthen internal risk management and build a sound risk control system. This includes establishing a sound risk assessment mechanism and conducting regular assessment and monitoring of chain of guarantee risks; Strengthening risk early warning and prevention to detect and deal with potential risks in a timely manner; And optimize risk management processes to improve the efficiency and accuracy of risk response. Financial institutions also need to strengthen staff training, improve their risk awareness and risk response capabilities, and ensure that correct decisions and actions can be made quickly in the face of risks.

### 3. Fund utilization and risk point identification of financial institutions

The use of funds exchanged by financial institutions is an important part of the operation of financial markets. Through in-depth analysis of historical data, we can better understand the operation logic of the market and where the risk points are. It also provides us with valuable experiences and lessons to help us manage risks and seize opportunities more prudently in our future financial practices.

The data of funds used by financial institutions are shown in Table 1 and Table 2.

Table 1: Data on the use of funds in financial transactions (transactions with financial institutions)

Year	National financial transaction funds used among financial institutions (100 million yuan)
2016	15377.98
2017	29013
2018	9643.42
2019	-12815.98
2020	17854.72
2021	9289

As can be seen from the table data, the use of national financial transaction funds among financial institutions has experienced great fluctuations in recent years. In particular, between 2017 and 2018, there was a sharp decline in the use of funds, which was as high as 66.76%, and in 2019, there was a negative number. However, this was followed by strong growth in 2020, with a growth rate of 239.32%, but it fell again in 2021. Such large fluctuations in the amount of funds used may reflect the challenges of financial institutions in risk management and capital allocation. When the amount of funds used increases significantly, financial institutions may face excess funds and investment pressure, and need to find high-yield investment opportunities; When the amount of funds used drops sharply, it may face

the problem of liquidity risk and shortage of funds. Financial institutions need to pay more attention to the balance between risk management and fund allocation, and establish a sound risk management system and fund operation strategy to cope with market uncertainty and volatility. It is also necessary to strengthen internal control and supervision, ensure the compliance and security of the use of funds, and maintain the stability and healthy development of the financial market.

*Table 2: Financial transaction funds use (financial institution transactions \_ Financial institution sector) data*

Year	Use of funds for financial transactions in financial institutions across the country _ Transactions of financial institutions (100 million yuan)
2016	12245.20
2017	24886
2018	8282.98
2019	-8430.13
2020	21951.52
2021	11707

As can be seen from the table data, the financial institutions in the country show great volatility in the use of financial transaction funds, especially the capital flow between financial institutions. Between 2016 and 2017, the amount of funds used increased significantly, with a sequential growth rate of 103.23%, indicating a significant increase in market activity. However, in the following 2018 and 2019, the amount of funds used declined continuously, and even showed a negative number in 2019, which may be related to factors such as the reduction of market risk appetite and the strengthening of risk management of financial institutions. Fortunately, there was a strong rebound in the use of funds in 2020, with a quarter-on-quarter growth rate of 360.39%, showing the resilience of the market and the adaptability of financial institutions. However, in 2021, the amount of funds used fell again, down 46.67% from the previous month, which may mean that financial institutions are seeking a new balance between risk and return. It is suggested that financial institutions should pay more attention to the balance between risk management and return stability in the use of funds, and avoid excessive pursuit of short-term returns while ignoring long-term risks. At the same time, it is also necessary to strengthen the research and prediction of market trends in order to better adapt to market changes and maintain the robustness of the use of funds.

The continuous development and innovation of the financial market has promoted the diversification of capital flows, reflected the vitality of the financial market, and also brought new challenges and opportunities. Risk points in capital flows cannot be ignored. Credit risk is a hidden danger that counterparties may default, which directly affects the stability and security of financial transactions. In the market environment, the level of credit risk is often closely related to the credit status of the counterparty. When conducting financial transactions, it is essential to fully understand and evaluate the credit standing of the counterparty. Market risk is the potential loss caused by market price fluctuations. In financial markets, price volatility is the norm, while market risk is the uncertainty brought by price volatility. For investors, market risk cannot be completely avoided, but its impact can be reduced through reasonable investment strategies and risk management measures. Liquidity risk is the difficulty that trading can face when the market is illiquid. In the financial market, liquidity is the lifeline of the market, which is related to the stability and development of the market. When the market is illiquid, investors may find it difficult to buy or sell financial assets at a reasonable price, thus facing losses. When conducting financial transactions, attention and analysis of market liquidity are essential.

#### **4. Suggestions on coping strategies for financial institutions under chain of guarantee risks**

##### **4.1 Strengthen risk identification and assessment capabilities**

By using big data and artificial intelligence technology, financial institutions can greatly improve the accuracy and real-time performance of risk assessment, so as to gain deeper insight into risk dynamics and provide solid data support for decision-making. This will not only help financial institutions maintain a sound operation in a complex and volatile market environment, but also help them gain a head start in the fierce market competition. In view of the uniqueness of chain of guarantee risks, financial institutions also need to carry out special risk assessment. Explore the hidden risk factors in the guarantee chain to help financial institutions find and deal with hidden risks in a timely manner. In order to further strengthen the ability of risk identification and assessment, financial

institutions should also pay attention to the cultivation of internal risk culture. Through regular risk training and education, the risk awareness and risk identification ability of all staff should be improved. In the practice of risk identification and assessment, financial institutions need to constantly explore and innovate risk assessment methods. Traditional risk assessment methods are often difficult to fully reveal the complexity and dynamics of chain of guarantee risks, so financial institutions need to actively introduce new risk assessment techniques and tools, such as stress testing, scenario analysis, etc., in order to have a more comprehensive and in-depth understanding of the risk situation. Through the application of these advanced methods, financial institutions can carry out more accurate quantitative and qualitative analysis of risks, and provide more powerful support for risk management.

#### ***4.2 Optimize the loan structure and approval process***

To effectively address this risk, financial institutions need to adopt a series of refined strategies, especially in optimizing loan structures and approval processes. The adjustment of loan structure is a key link to reduce risk in the chain of guarantee. Financial institutions should prudently analyze their existing loan portfolios to identify excessive concentration risks for a single customer or industry. A diversified and balanced loan structure can be achieved by gradually reducing the amount of loans to high-risk customers or industries, while increasing support for low-risk and high-growth customers or industries. In the process of optimizing loan structure, financial institutions should make full use of big data analysis and risk assessment tools to have a comprehensive and in-depth understanding of customers' credit status, repayment ability and industry prospects.

With this strict loan approval process is another important line of defense to guard against chain of guarantee risks. Financial institutions should establish and improve the loan approval system to ensure that every loan is strictly reviewed and evaluated. In order to improve the efficiency and accuracy of loan approval, financial institutions should also actively introduce advanced technological means. For example, using artificial intelligence and machine learning technology, an intelligent loan approval system can be built to realize automatic verification of customer information and automated processing of risk assessment.

#### ***4.3 Improve the efficiency and security of fund use***

In terms of fund management, financial institutions should first pay attention to fund liquidity management. By making a reasonable plan for the use of funds, financial institutions can predict the future cash flow situation and arrange the financing and use of funds according to it. In terms of investment channels, financial institutions need to actively expand diversified investment channels under the premise of controllable risks. Diversified investment can not only improve the efficiency of the use of funds, but also reduce the dependence on a single investment channel and reduce the investment risk caused by market fluctuations. In terms of fund safety supervision, financial institutions should improve the fund safety supervision mechanism to ensure the safety of funds. This includes establishing sound internal control systems, strengthening internal audit and risk management, and strictly complying with external regulatory requirements.

#### ***4.4 Improve the internal supervision mechanism and implement the accountability system***

The establishment of a sound internal supervision system is the basis for dealing with the risk of the chain of guarantee. Financial institutions should improve the internal supervision system, clarify the responsibilities and authority of various departments in the guarantee business, and form mutual restriction and effective supervision among departments. This includes formulating a detailed guarantee business operation process, clarifying the risk control points and responsible persons of each link, and ensuring the standardized operation of guarantee business. Establish a sound information reporting and disclosure system to ensure that the management can timely and accurately grasp the risk status of the guarantee business, so as to make scientific decisions. In the process of improving the internal supervision mechanism, financial institutions also need to pay attention to strengthening the internal audit and audit work. By carrying out internal audit and audit on a regular basis, they should conduct comprehensive and in-depth inspection and evaluation of the guarantee business, discover and correct violations in a timely manner, and ensure the compliance and robustness of the guarantee business. Financial institutions should also actively make use of the strength of external audit institutions to supplement and improve the internal audit work and improve the independence and objectivity of the audit work. In order to better cope with chain of guarantee risks, financial institutions also need to take

a series of other measures. For example, strengthen the construction of risk management and internal control systems, improve risk prevention awareness and response capabilities; Strengthen staff training and education to improve their awareness of risk and compliance; And strengthen communication and cooperation with the government, regulators and other financial institutions to jointly deal with chain of guarantee risks.

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