

Research on SME Credit Risk Control Platform Based on Supply Chain Finance

Yifan Yang

School of Economics and Management
Beijing JiaoTong University
Beijing, China

Xiyan Lv

School of Economics and Management
Beijing JiaoTong University
Beijing, China

Abstract—At present, China's SMEs are facing serious credit problems. Financial institutions have adopted many credit risk control methods for SMEs, but these methods lack objective business data. As a new financing model, supply chain finance not only promotes the credit financing of SMEs, but also controls the credit risk of SMEs to a certain extent. Based on the business transaction data of core enterprises and small and medium-sized enterprises in supply chain finance, this paper builds a framework of SME credit risk platform system and controls the credit risk of the whole SME from the data source, which can effectively reduce credit risk and solve financing difficulties.

Keywords—SME; credit risk control; supply chain finance

I. INTRODUCTION

The credit risk of SMEs refers to the risk loss caused by the reduction of the debtor or the trading partner's ability to perform. It exists in all credit business and is an important risk of prevention of supply chain finance. It mainly includes: default risk, credit system risk, fraud risk and so on. At present, the credit risk control of SMEs mainly adopts the credit risk measurement model method and the credit risk assessment index system method. These methods are mainly subjective qualitative judgment and simple discriminant function analysis. The method of qualitative and quantitative analysis lacks objective data. Based on the supply chain finance, the SME credit risk platform system framework fully utilizes the core enterprise information service role, evaluates and prevents credit risks based on objective business data, and can objectively and accurately reduce the credit risk of SMEs.

II. PROBLEMS IN SME CREDIT RISK CONTROL

At present, China's SME credit risk control mainly has the following problems: the enterprise itself: information opaque, enterprise volatility, single cooperation mode,

insufficient guarantee leads to credit risk; financial institutions include: information asymmetry between financial institutions and SMEs lack of a sound credit risk control mechanism. In view of the difficulty in controlling credit risk of SMEs, financial institutions have also taken many measures, such as improving the credit risk system, optimizing the risk organization structure, strengthening credit access, and establishing a credit business tracking system. However, these measures did not deeply touch the SMEs themselves and could not solve the fundamental problems.

The credit risk platform of SMEs based on supply chain finance, which is based on core enterprises, is just enough to make up for the shortcomings of traditional financial institutions in controlling credit risk of SMEs.

III. SME CREDIT RISK CONTROL PLATFORM BASED ON SUPPLY CHAIN FINANCE

A. Introduction to Supply Chain Finance

Supply chain finance is a financing model that integrates upstream and downstream SMEs and financial institutions to obtain various types of information and provide flexible financial services and products. Different from the traditional credit business, supply chain finance is concerned with the credit status of the overall industry chain. The supply chain finance based on the core enterprise proposed in this paper is based on the enterprise credit of the core enterprise to apply for the credit line from the financial institution. The SME supplier finances the financial institution with the enterprise credit with the core enterprise credit line. (See "Fig. 1") With the credit of the core enterprise as the guarantee, the data exchange and business flow are realized, and the logistics, capital flow, information flow and business flow in the entire financial chain are realized, which reduces the credit risk of SMEs and improves the financing efficiency.

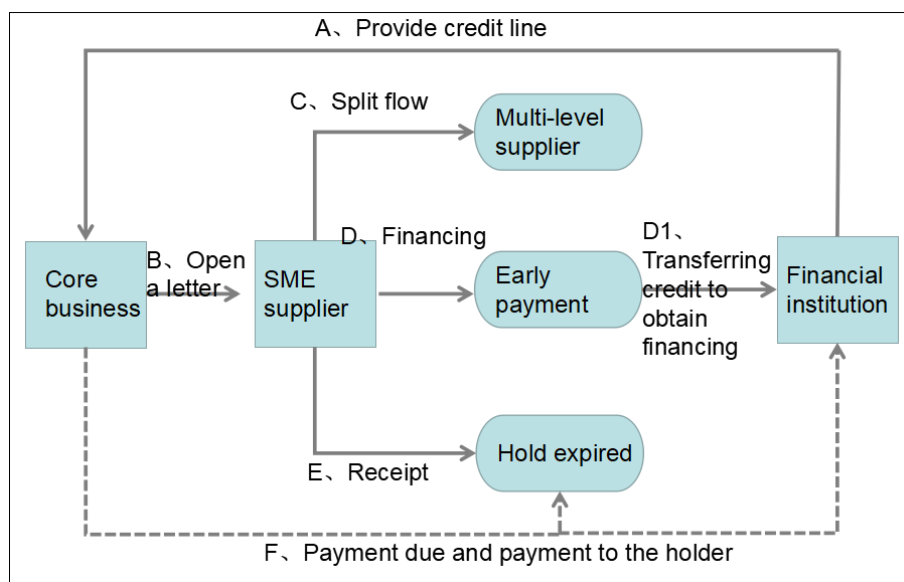


Fig. 1. SME credit financing led by core companies.

B. SME Credit Financing Led by Core Companies

Effective credit risk prevention is provided for all financial institutions that cannot better grasp the objective information of SMEs. This paper proposes to establish a

credit risk platform for SMEs in supply chain finance, as shown in "Fig. 2". The platform is divided into four parts: the SME layer, the financial institution level, the core enterprise layer, and the credit risk service facility for supply chain finance.

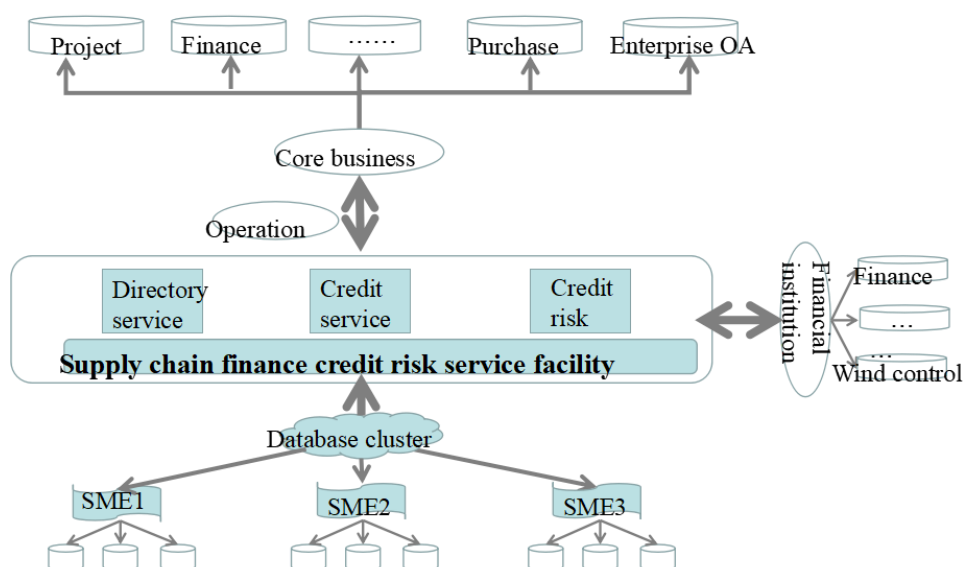


Fig. 2. ME credit financing led by core companies.

1) *SME layer*: The cylinders below the SMEs represent different business systems, and each enterprise establishes a database of different business systems for the business operations of the enterprise. These databases are grouped into database groups, and the data clusters are stored in the supply chain financial data layer, and the flow of data is

realized by the flow and interconnection of supply chain finance.

2) *Financial institution leve*: The small cylinder on the right side of the financial institution is a business system related to credit risk established for SMEs. The system stores data on the credit risk assessment of SMEs by financial

institutions. These data are stored in the data layer of supply chain finance.

3) *Core enterprise layer*: Above the core enterprise is the different business systems of the enterprise. Like the small and medium-sized enterprises, the business system stores the cooperation data with the small and medium-sized enterprises. The core enterprise is the operator of the credit risk platform, connecting financial institutions and SMEs through its dominant position in supply chain finance. Open stored data according to demand, solve information asymmetry and reduce credit risk.

4) *Credit risk service facilities for supply chain finance*: The credit risk service facility layer based on supply chain finance includes: directory service, credit service, credit risk service.

a) *Directory services*: The directory service mainly standardizes the data and uploads the data content to the cloud directory service in the data layer. After that, the directory service is divided according to the enterprise to

which the data belongs. Each enterprise data forms a data block and can be processed according to requirements. Quickly find data about related companies.

b) *Credit services*: Credit service is to ensure the accuracy and security of data in the process of business data sharing. The trust service mainly performs two tasks: first, reviewing the business credentials and data users, and second, ensuring that the incoming data is not modified according to the encryption technology of the blockchain.

c) *Credit risk service*: The credit risk service is a risk rating of data reviewed by SMEs, core companies and banks. Through the accumulation of data, credit risk services can objectively carry out risk identification, risk assessment and risk management to reduce the occurrence of credit risk.

C. Internal Structure of Credit Risk Platform

The internal process structure of the credit risk platform can be divided into four parts: data source layer, data reconstruction layer, credit risk assessment layer and credit risk management layer. (See "Fig. 3")

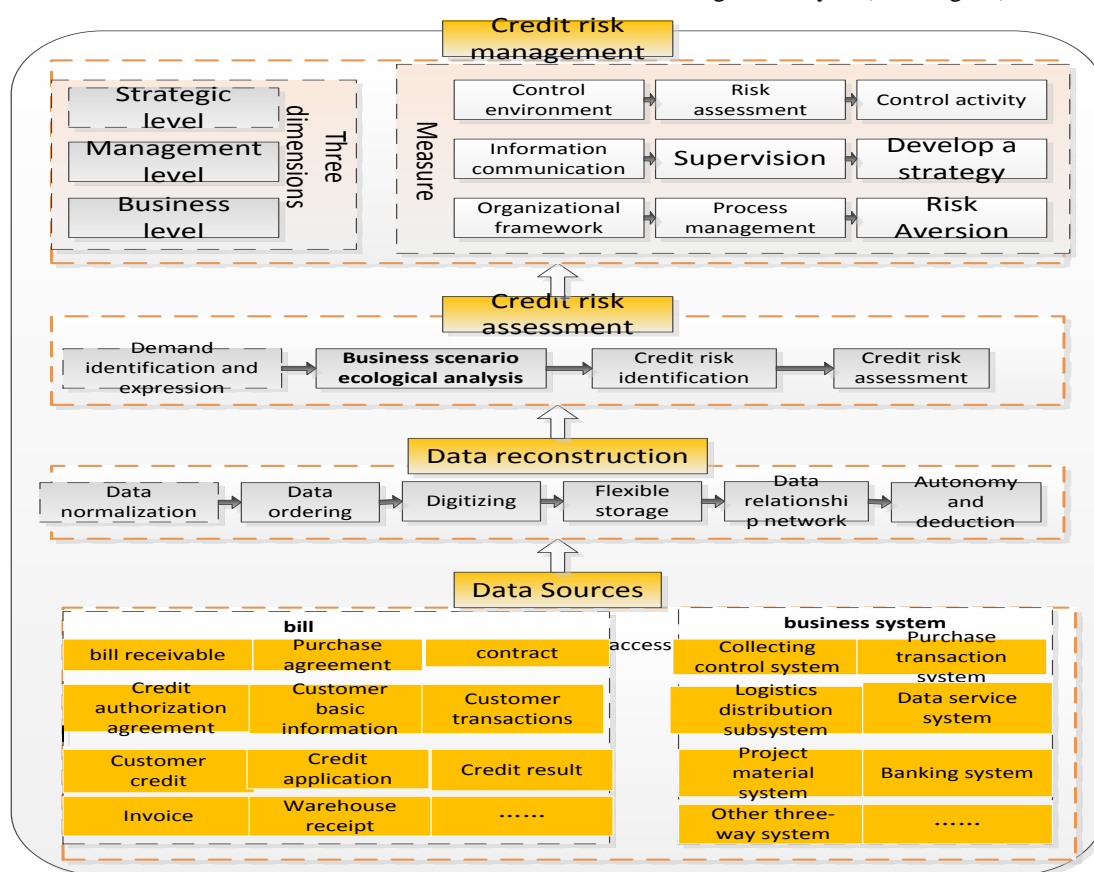


Fig. 3. Credit risk control platform internal process.

1) *Data source layer*: The data source layer is mainly to collect data and accumulate data. The core enterprise will enter long-term business transactions with SMEs into the data layer of supply chain finance through blockchain unmodifiable technology, including: contract between business, accounts receivable, purchase agreement, customer

transaction status, customer credit Bill information such as the situation, invoice, and warehouse receipt. This bill information makes up for the shortcomings of financial institutions to grasp the objective data of SMEs, and these data are based on real business scenarios, the possibility of

fraud or modification is very small, and the accuracy and authenticity of the data are guaranteed.

2) *Data reconstruction layer*: This layer is the reconstruction of the data collected and accumulated by the data source layer, which is an important link in the credit risk platform. First, normalize different types of data; then sort the data that has been processed according to the importance of affecting credit risk. Digital processing, elastically storing the processed data into the supply chain financial data layer, the operator can view the data according to requirements; establish a data relationship network map, and perform information mining according to the correlation between the data; Finally, based on the data relationship diagram, the future development trend of the company is estimated, and countermeasures are taken in time.

3) *Credit risk assessment layer*: According to the specific needs of financing between financial institutions and SMEs, the reconstructed layer data is analyzed by dynamic scenario, and the factors affecting credit risk are identified in the process of scenario analysis, and the risk assessment is carried out according to the importance of the factor.

4) *Credit risk management*: Credit risk management is the top-level design of credit risk, which mainly involves three dimensions: strategic layer, management layer and business layer. The control environment, information communication, and organizational framework are considered from the strategic level. Risk assessment, supervision, and process management belong to the business layer. Control activities, formulation strategies, and risk avoidance belong to the management layer.

D. Credit Risk Control Platform Features

1) *Information interchange*: The platform is led by the core enterprise and realizes the unified management of data by storing the specific business data of each enterprise in the storage layer of the supply chain finance. Realizing data at home, unified management, and services in the cloud, the information flow of supply chain finance has improved the information asymmetry between financial institutions and enterprises. Due to the transparency of information, SMEs can cooperate with more companies and change the single mode of cooperation.

2) *Comprehensive control of corporate credit risk*: The credit risk platform implements comprehensive control from credit risk identification and assessment to prevention management. The use of distributed accounting vouchers ensures the authenticity and irreparable modification of data sources; standardized enterprise data reconstruction ensures that data is sourced one by one, making it easy to trace risks; Based on the real business scenario, credit risk assessment can be better carried out; risk management and control can be carried out from the risk dimension according to the credit risk assessment result. Achieve comprehensive control of corporate credit risk.

3) *Guarantee of assets and interests*: The addition of the credit risk platform has ensured the asset rights and business transactions in the supply chain finance. First, the core enterprise can identify the credit risk of SMEs according to the credit risk platform to determine whether to continue to cooperate with the enterprise; financial institutions can decide whether to invest in SMEs according to the credit risk platform, which can not only reduce the loss of bad debts, but also avoid Missing customers; SMEs rely on credit risk platforms to improve financing speed and efficiency, improve business model drawbacks, and broaden corporate cooperation models. Overall, the credit risk platform is a security door for supply chain finance, ensuring asset security in the supply chain, enhancing information communication and improving financing efficiency.

IV. CONCLUSION

In order to better develop SMEs and obtain credit financing, financial institutions urgently need to strengthen credit risk control of SMEs. The measures of traditional financial institutions cannot solve the credit risk of SMEs very well. The development of supply chain finance provides a new method for SME credit risk control and financing. The credit risk platform of SMEs based on supply chain finance proposed in this paper guarantees the objective and accurate and unchangeable modification of data from the source according to the specific business data. With the information interconnection and business flow of supply chain finance, the objective data is used as the home. Unified management, services in the cloud. The platform communicates with core enterprises, financial institutions and small and medium-sized enterprises, and realizes the evaluation and prevention of credit risks based on objective data, safeguards the asset rights and interests of the entire supply chain finance, reduces financing costs, and provides new ideas for solving SME credit financing.

REFERENCES

- [1] Di Xiangqi, "Research on the Impact of Supply Chain Finance on SMEs' Financing," [J]. China International Finance, vol. 10, pp. 230, 2017.
- [2] Song Hua, "Internet Supply Chain Finance," M. Beijing: China Renmin University, pp. 691-693, 2017.
- [3] Long Zhengqing, "Research on Credit Risk Management of SMEs in China's Commercial Banks," [J]. Financial Economy: Theoretical Edition, vol.3, pp. 140-142, 2015.
- [4] Guo Qingma, "Research on Supply Chain Financial Model and Risk Management," [J]. Financial teaching and research, vol.2, pp. 1-9, 2010.
- [5] Wang Kaihua, Li Furong, "Research on Credit Risk Management of SMEs Based on Supply Chain Finance," [J]. Management & Thinking, vol.02, pp. 155-156, 2018.