

Retraction

Retracted: Research on the Risk Measurement Algorithm of Supply Chain Order Financing Based on Insurance Actuarial

Journal of Mathematics

Received 19 December 2023; Accepted 19 December 2023; Published 20 December 2023

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

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- [1] G. Li and M. Yin, "Research on the Risk Measurement Algorithm of Supply Chain Order Financing Based on Insurance Actuarial," *Journal of Mathematics*, vol. 2021, Article ID 5344205, 9 pages, 2021.

Research Article

Research on the Risk Measurement Algorithm of Supply Chain Order Financing Based on Insurance Actuarial

Gushuo Li and Menglin Yin 

Business School, University of Sydney, Sydney, New South Wales 2006, Australia

Correspondence should be addressed to Menglin Yin; hej20@mails.tsinghua.edu.cn

Received 15 October 2021; Revised 8 November 2021; Accepted 10 November 2021; Published 1 December 2021

Academic Editor: Lazim Abdullah

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In today's globalized economy, all the links of supply chain are interlinked. Most of the upstream raw material manufacturers or producers in the said chain are small- and medium-sized enterprises (SMEs) that provide the basis for the efficient operation of the whole supply chain. However, SMEs in China, especially those playing a pivotal role in China's export-oriented economy at this stage, do not have access to the corresponding financial treatment. Supply chain finance provides a new perspective to solve this contradiction. Henceforth, this paper introduces modern financial engineering risk measurement tools to measure the financial risk in supply chain finance, specifically while evaluating the single financing business. Moreover, the chief objective of this paper will be the analysis of the characteristics and connotations of order financing business model. In addition, the focus will be to analyze the risk of order financing from the perspective of banks and other financial institutions. Additionally, this paper will use the CreditRisk + model based on insurance actuarial principles to manage credit risk in order financing business based on foreign currency settlement, in conjunction with the characteristics of supply chain finance and multinational supply chain. Furthermore, a risk measurement method for the application of order financing in multinational supply chains will be provided. Ultimately, the experiments show that the solution of this paper defines and analyzes the financial risks brought by order financing business to bank financing.

1. Introduction

The globalization of economy brings the globalization of manufacturing, and with the globalization of production, investment, and market, the transnational supply chain is formed by the collaboration, exchange, and operation of information flow, logistics, and capital flow among international organizations around the nuclear enterprises in transnational trade, and the whole supply chain starts from the upstream procurement of raw materials from one or more countries and makes intermediate and final products, and finally the global sales network sells the products to consumers all over the world. Finally, the products are sold to consumers all over the world by the global sales network. China's manufacturing industry is still in the status of "world factory" in this supply chain, and a large number of small- and medium-sized enterprises are responsible for the important production and manufacturing functions in this

functional chain, but they have not received the corresponding financial treatment, many small- and medium-sized enterprises are facing the problem of difficult financing, supply chain finance can solve the problem of providing these enterprises with a new perspective, and at the same time, it also brings a huge potential market for banks and other financial enterprises. The supply chain finance can provide a solution for these enterprises from a new perspective and also bring a huge potential market for banks and other financial companies. For this reason, in recent years, especially after the financial crisis, supply chain finance business has developed rapidly and became a new business growth point for banks and other financial institutions.

However, commercial banks in China should not only see the huge benefits brought by the supply chain finance business, but also ignore the potential risks in this business, such as the risk of price changes of inventory goods in

movable warehouse receipts pledge financing, the risk of supervision of logistics enterprises in the process of warehouse receipts financing, or the risk of interperiod exchange rate in the financing of orders in cross-border trade, etc. In the whole business process, banks, logistics enterprises, and manufacturing, only after understanding the mechanism of risk formation can we avoid the risk in a timely and effective way in the actual business [1].

The customer base of China's supply chain finance is mainly SMEs, and in order to avoid the higher credit risk of SMEs, its risk control methods differ greatly from traditional bank financing when conducting business. Traditional bank financing focuses on the credit rating and financial status of individual enterprises, which sets a high threshold for SMEs, while some large state-owned enterprises that do not lack capital can easily obtain financing, resulting in an unreasonable distribution of bank credit; i.e., financing is not provided according to the actual capital box needs of enterprises [2, 3]. As a financing method based on supply chain, supply chain Gimplee pays more attention to the operation status of the whole supply chain and whether the trade background is true, while the requirements for the qualification of the main body can be appropriately reduced [4, 5].

The existing financing methods involve the risk prevention and control methods such as verification and also enterprise credit bundling, control of the right of goods, and claims of the financing enterprise (i.e., chattel pledge) and emphasize the self-repayment of repayment sources. These methods effectively avoid some of the risks in financing, but the current risk prevention and control methods of supply chain financing are still not perfect [6].

Especially for the more advanced order financing business model in the actual case of supply chain finance, the theoretical research on its business risk identification, measurement, and later risk control is still far from meeting the real business development [7, 8]. Coupled with the advanced and operational nature of the order financing business and its application, this business model will become the main business model in the supply chain finance business model, and its business scope and business volume will account for a larger and larger proportion of the supply chain finance business, and its importance to the financing needs of SMEs and business development will become more and more prominent.

Based on the importance of order financing business, this paper will apply the principle of Jin Christmas engineering, use the modern Jin Christmas engineering risk measurement model, analyze and discuss the operational risk, credit risk, and exchange rate risk factors of coincidental order financing in tracing country trade, analyze the problem of risk identification and measurement of supply chain finance in multinational supply chain from the bank's point of view, and calculate the risk measurement for coincidental order financing by means of calculation examples and the analysis and calculation of the risk measurement of the supply chain finance from the bank's perspective [9]. Also, the modern tools for measuring the financial engineering risk are introduced, which are used to measure the supply chain finance's financial risk. This paper specifically

focuses on the analysis of the characteristics and connotations of order financing business model. Further, the paper also emphasizes the analysis of order financing's risk from banks' and other financial institutions' perspectives. Moreover, the CreditRisk+ model based on insurance actuarial principles is used to manage credit risk in order financing business based on foreign currency settlement. Furthermore, a method is provided that measures risk for the application of order financing in multinational supply chains. In addition to the said objectives, this paper also presents the experiments that verify the point that financial risks brought by order financing business to bank financing are defined and analyzed through the proposed solution. The identification, avoidance, and control of the risk led to the evaluation of the order financing business's risks. Through this article, the author proposes numerous suggestions for risk prevention and control from the banks' perspective. The intentions are to help the Chinese banks to carry out risk prevention in order financing business.

The organization of the paper is as follows:

Section 1 contains the introduction to the article. Section 2 discusses some related works. Section 3 talks about the risk measurement of order financing based on foreign currency settlement. Section 4 presents the experimental results. The discussion of the article is given in Section 5. Finally, in Section 6, the article is concluded.

2. Related Work

First of all, through the study of foreign literature on supply chain finance, we know that supply chain finance was called logistics finance in the early stage of development, and some banks and financial institutions collectively called it supply chain finance; commercial banks and other financial institutions with this business, combined with the financing requirements of financing enterprises, gradually developed, from the beginning of logistics finance to cover a wider range of supply chain finance, from the initial logistics finance to the broader scope of supply chain finance, until the development of a series of innovative financial services due to the needs of enterprise management.

Compared with the traditional supply chain finance, order financing has become a hot spot for research because of its special advantages, and in the actual bank financing cases, order financing also accounts for a significant proportion of them, including the French Bank of Zurich, the Netherlands Wanbay Bank, and the United States Citibank; and some foreign financial institutions have also set up special logistics banks, such as the United States in 1999 Morgan Stanley which invested \$350 million to Redwood Trust, a listed logistics company, in 1999, to carry out supply chain finance business, while United Parcel (UP) acquired the First International Bank of the United States and set up a special UPS finance company, so as to provide customers with a full range of supply chain financial services, to achieve its logistics, information flow, and capital flow with high degree of synchronization.

When it comes to the financial risk of supply chain finance, more foreign related literature can be retrieved, but

most of them are rather broad. Among them, Shearer and Diamond (1999) point out that the risk rating approach has played an important role in traditional commercial financing, but with the increase of competition and changes in the market environment, the risk rating approach is no longer sufficient for commercial financing.

Barsky and Catanach (2005) argue that commercial finance business control should change from a subject access-based risk control concept to a process control-based risk management concept. [10] It is worth noting that foreign scholars believe that supply chain finance itself is a means and method to reduce risk, and the research on risk is mostly focused on the use of supply chain finance technology to achieve automation and visualization through supply chain financial regulation technology for the purpose of reducing supply chain risk. For example, Martin Christopher and Hau Lee (2004) point out that one of the key factors to reduce supply chain risk is to improve the visibility of “end-to-end.” Visualization of physical supply chain metrics can certainly reduce the risk of supply chain financing significantly.

Bemabucci D. Robert (2006) argues that supply chain visibility has changed the form of trade force financing and reduced the risk of trade finance. A report by W. A. Berdeen (2007) highlights the importance of supply chain gold knockout technology platforms, which provide features such as visualization that can improve risk management and reduce costs [11]. Allen N Berger (2007) introduces supply chain finance as a new form of financing and argues that the automation of procurement, invoicing, and the use of visual trade platforms will effectively reduce supply chain finance risk. Further, they will also provide a platform where the parties to a commodity transaction and a financing transaction are interfaced, which makes key events in the supply chain transparent and provides several transaction completion markers as “financing triggers” [12].

Domestic scholars’ research on the financial risk of supply chain finance is mainly based on the traditional business model of supply chain finance, mainly including quantitative and qualitative levels, among which quantitative analysis is reflected in the following aspects:

The first is the credit risk of supply chain finance. Xiao Junhong (2007) constructed an evaluation system for credit risk of SMEs in supply chain finance, evaluated the system by using multilevel gray comprehensive evaluation method, and proposed the principle and idea of using credit spread option method to transfer and manage credit risk in supply chain finance. He Tao (2007) also proposed the use of carry option method to transfer and manage supply chain finance credit risk [13]. Lou, Qiao, and Qian, Zhi-Xin (2008) predicted the repayment risk of loaning enterprises by using the technique of plain Bayesian for the credit risk of SME loans in supply chain finance.

Zhang Zhen (2009) used hierarchical analysis to determine the weights, combined with the characteristics of supply chain finance to construct a credit rating model for SMEs based on supply chain finance.

Wang Qi coincidentally used the method of decision tree in data mining to construct a credit risk assessment model for supply chain finance. The credit risk in the three

financing modes of supply chain finance is analyzed in depth, and the credit risk evaluation system is constructed, and the KMV model is used to measure the credit risk of supply chain financing [14].

The second is the research on the market risk, liquidity risk, and pledge rate setting of inventory financing mode of supply chain finance. At present, many scholars in domestic theoretical circles have used VaR for risk measurement of inventory pledge financing; for example, Li Yixue (2010) studied the setting of inventory advisory pledge rate and inventory financing market risk [9]; Chen Baofeng et al. (2009) studied inventory financing liquidity risk. Then there is a study on the risk of accounts receivable financing model. Bending Hongdi (2008) argues that the risk avoidance mechanism relied on by supply chain finance has the possibility of failure by analyzing the risk model of accounts receivable financing model.

The results of a game theoretic differentiation analysis of moral hazard in the receivables financing model by Zhou Bo (2010) show that moral analysis is influenced not only by the willingness of the nucleus to repay and the compliance of the borrower’s use of loan funds, but also by the dual influence of the relationship between the borrower and the nucleus and the relationship between the nucleus and the bank.

3. Risk Measurement of Order Financing Based on Foreign Currency Settlement

In the following, this paper will analyze the financial risks in the process through a typical business case of coincident order financing based on foreign currency settlement and the modeling of CreditRisk+ to return to the setting of financing rates of banks and other financial institutions for order financing business based on foreign currency settlement, adjusting the probability of occurrence of risks in the financing process at each stage of the financing process, and the calculation of default rate and default loss rate to analyze the risk analysis path of banks in the order financing process.

We assume that there is a typical financing SME C company, which is engaged in export trade, which has a large customer, A company from North America; today C company received an order worth 100 million US dollars from A company, to start production, in order to alleviate the financial pressure, W purchases raw materials to arrange production, and contacts local bank B for loan matters, and B handles overseas matters through company C. Through background investigation, Bank B decided to join hands with logistics company W to cooperate with Company C H in a supply chain financing project; the brief business process is shown in Figure 1.

At the starting time t , Company C receives the order, finances to Bank B, and sets up a special account in Bank B. Bank B simply lends the total amount of Company C’s order to Company C’s special account to purchase raw materials and make production arrangements, etc. At time t_1 , Company C completes the production of the coincidental order, and the goods are delivered to the W logistics company designated by Bank B. The W logistics company

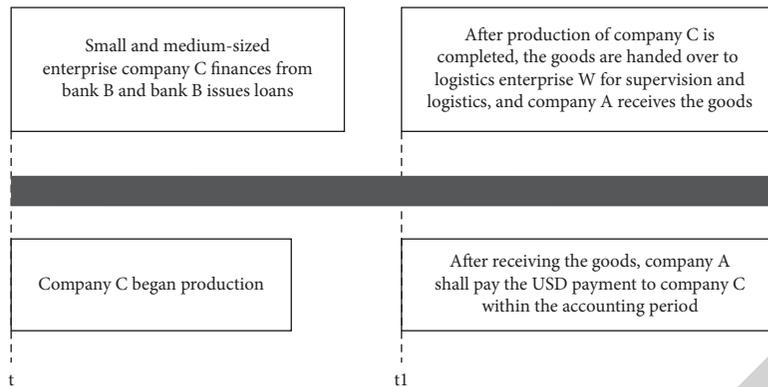


FIGURE 1: Business process of order financing based on foreign currency settlement.

makes shipping arrangements despite the W and finally at time T. Company A, after receiving the goods delivered by Company C according to the order, completes the payment for the order (in US dollars) to the special account set up by Company C in Bank B before the arrival date, and Bank B receives the payment and completes the clearing of various costs with Company C. By the design of the business process on W, according to the identification of risk factors in supply chain finance listed in the previous article, we can see that its main risk points are as follows.

First, credit risk, that is, Company C is unable to return the loan principal and interest to the bank in accordance with the time listed in the loan contract due to various unforeseen reasons in objective fact.

Second, the operational risk for C company after receiving the loan from Bank B; although it is a dedicated account operation, and through the W logistics company to purchase raw materials, it does not exclude the C company and W company collusion and misappropriation of earmarked funds; sent is the operational risk faced by Bank B. In addition, with the completion of the coincidental single shipment in Company C, its customer A company in the account period on time, full payment is also another risk factor based on credit risk.

There is another situation; when Company C starts production, it will not be able to deliver the order on time or deliver it with unacceptable quality problems because of its own factory operation, management, W, and production technology capability.

Here, because Company A pays Company C in US dollars, and at the moment when Company C receives the order and starts to start, after the production, delivery, and transportation, to the moment when Company A receives the goods and has a certain billing period arrangement, the exchange rate fluctuation of US dollars to RMB must be considered, which is the market risk in this case. To facilitate our assessment of risk, we can use a binomial tree model to define the nodes in this supply chain financing. Sequential default process of order financing is shown in Figure 2.

In this, P1, P2, and P3 are the probability of default in their respective links, but according to the Hexer concordance in commercial banks facing the risk of default, we also need to take into account the default loss rate, as default

occurs, the extent of losses faced by the bank's debt, and the recovery rate, and the sum of 1 and emphasize that the estimated default rate of loss refers to economic losses, rather than accounting book losses; economic losses must take into account the cost of recovery and the time value of money, that is, the use of a suitable discount rate to calculate the present value of the recovery cash flow; we generally use the following formula to calculate the default loss rate:

$$LGD = 1 - \frac{\sum [(recovery\ amount - recovery\ cost)_t / (1 + discount\ rate)^t]}{default\ exposure} \quad (1)$$

The model construction of LGD has always been a difficult task for banks, and the key obstacle is that the data deficiency of LGD has been serious to the local level. The lack of data in the probability of default (PD) model is mainly the lack of data required for the calculation of the independent variables, and the quality of the dependent variable data is relatively good, but the lack of data in both aspects of the LGD model is relatively serious.

In applying the above formula to calculate LGD, we will find in a more empirical scope that LGD presents a bimodal distribution, where P3 shows that if Company A is willing to pay for the order, regardless of the time duration, it will eventually pay Company C for most of the goods, which means that LGD is relatively low, the peak at the lower end of the bimodal peak, and if Company A does not subjectively have the will or ability to pay for the goods, then, since the full amount cannot be paid, it is better to completely default; that is to say, Company C will not get any money, presenting as the higher peak in the bimodal peak, but in general, it is still the majority of companies that keep their word; using the graph to represent the bimodal distribution, LGD bimodal distribution is shown in Figure 3.

The LGD is corresponding to the default node in the binomial tree model; according to the new capital agreement of Hexel, the default rate is Beta distributed, and we know that Beta distribution is the distribution of a few values in a certain space, and there are two parameters that affect the Beta distribution, and the change of parameters can lead to a great change in the graph of Beta distribution; assuming that we take the value (a, |3) for these six groups of numbers, (1, 1); (1, 2); (3, 2); (4, 2); (1, 1/2); (1/2, 1/3), the graphs of the

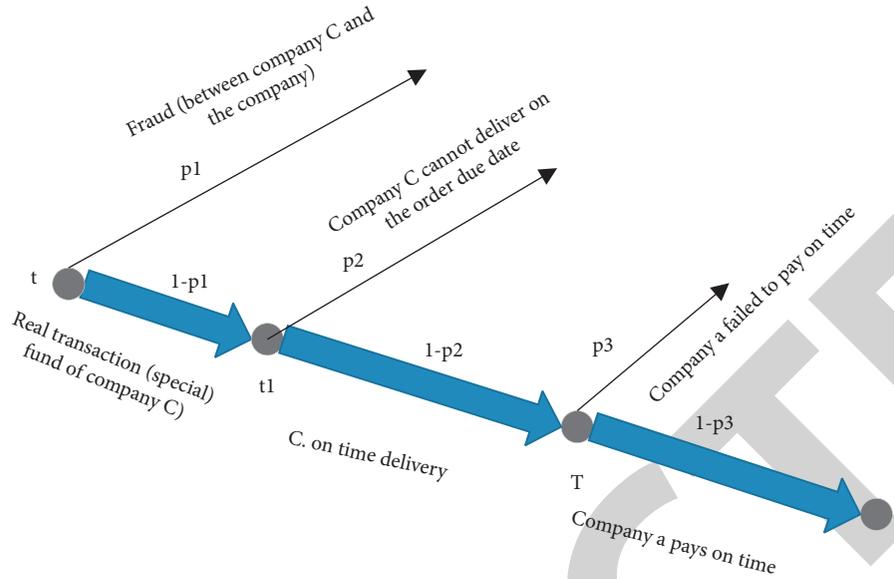


FIGURE 2: Sequential default process of order financing.

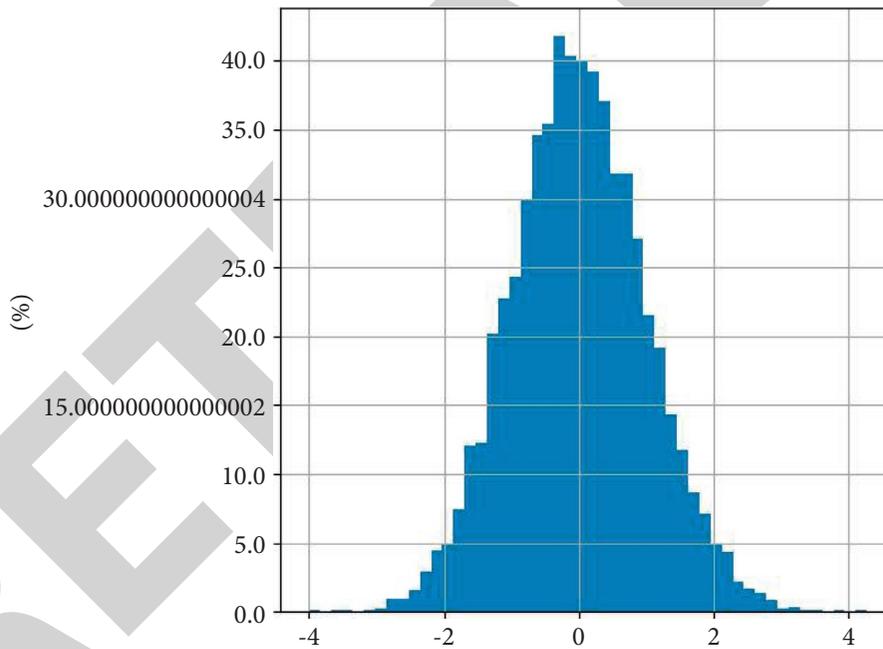


FIGURE 3: LGD bimodal distribution.

Beta distribution will also be plotted as curves 1 to 6, respectively; Beta distribution (corresponding to (a, P) taking different values) is shown in Figure 4.

In this example, we empirically set the parameters of the Beta distribution of LGD as $(4, 2)$, $(1, 1/2)$, and (6.3) for the default of $P1$, $P2$, and $P3$, respectively. In addition, given that the coincident payments in this business are based on foreign currency settlement, while Bank B settles in local currency, i.e., RMB, when extending credit to Company C, the exchange rate fluctuations in the period from t_1 to T will unquestionably bring exchange rate risk to Bank B. The general exchange rate risk refers to the possibility of on- and off-balance sheet losses

of commercial banks due to exchange rate changes, which can be divided into transaction risk, translation risk, and asset-liability mismatch risk. In this particular case, transaction risk is the most important risk factor, because in recent years, with the continuous appreciation of the RMB, commercial banks have rapidly increased the number of USD loans issued. Joining the commercial banks without actively adjusting the interest rates of USD loans with the changes of the exchange rate of RMB against USD will lead to a large transaction risk for the commercial banks.

According to the VaR model of the internal model, which is a probabilistic estimate of potential losses, the

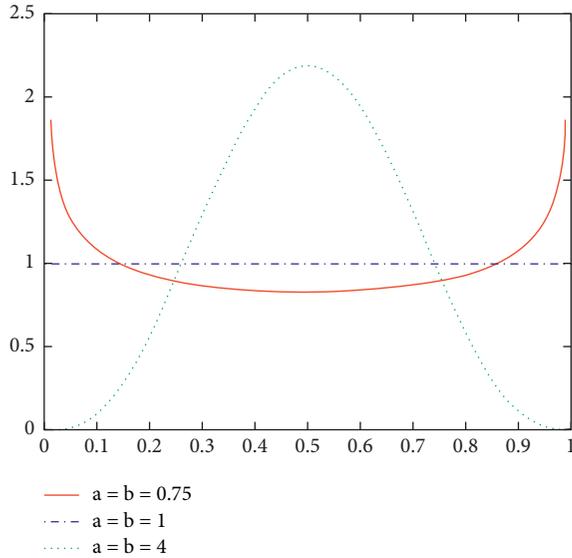


FIGURE 4: Beta distribution (corresponding to (a, P) taking different values).

general requirements of the Hexel Committee for the internal model approach are as follows.

- (i) Banks are required to calculate VaR values and meet capital requirements on a daily basis
- (ii) The capital requirement is the higher of the two under W; the VaR value of the previous day and the average VaR value of the previous 60 business days X (multiplier factor + additional value), and the formula for measuring market wind pickup capital is

$$\text{MRC} = \max \left\{ k \frac{1}{60} \sum_{i=1}^{60} \text{VaR}_{t-i}, \text{VaR}_{t-1} \right\} + \text{SRC}_t, \quad (2)$$

where k is the correction factor multiplier and SRC is the special risk accrual capital.

$$R' = E \left\{ \frac{A_0(1+r)}{F_0} (1 - \text{LGD}) P_1 + \left[\frac{A_0(1+r)}{F_0} (1 - \text{LGD}) P_3 + \frac{A_0(1+r)}{F_0} (1 - P_3) \right] (1 - P_2) + \frac{A_0(1+r)}{F_0} P_2 (1 - \text{LGD}) \right\} (1 - P_1) S_T, \quad (4)$$

where work is 0.04 (set interest rate constant) (equation (3)).

Combining the key H default nodes, P_1, P_2, P_3 , we can follow the definition of the CreditRisk+ model:

$$P(n) = \frac{(\mu t)^n e^{-\mu t}}{n!} \quad n = 1, 2, 3, \dots \quad (5)$$

4. Experiment

Within a time length of 1 year (t is 1), we first assume that the average default among 1000 SMEs in need of financing is 50 ($i = 50$) in the first link of the binomial tree (P_1), which is

The method on W , by analyzing the characteristics of each risk factor, and through the method of model calculation, can provide certain quantitative analysis methods in giving commercial banks in making order financing business decisions, so as to further decide the relevant financing ratio and cost.

We know that according to the Black Turbine-Scholes pricing model, the distribution of the forward exchange rate can be obtained by applying the pricing formula to

$$S_T = S_t \exp \left[\left(\mu - \frac{1}{2} \sigma^2 \right) (T - t) + \xi \sigma \sqrt{T - t} \right], \quad (3)$$

where ξ is the normal distribution, and then the agreed exchange rate is S_t ; we set it to 6.3, with μ with an expected exchange rate increase of -0.02, $T-t$ of 0.5, and σ with 8 percent.

In addition, at moment t to T , we assume a time duration of six months for the default loss rate of the whole supply chain process, according to its characteristics:

- (i) The value of LGD is limited to $[0, 1]$, and the empirical study shows that its distribution is Beta or bimodal, but not normal.
- (ii) LGD takes the value on $[0, 1]$ continuously; we use Beta distribution to simulate LGD here; we set the bank at the beginning according to the order quota (100 million US dollars) according to the agreement exchange rate issued to the C company's RMB loan of A_0 RMB, and the corresponding default loss rate of P_1, P_2, P_3 , respectively, is $\text{LGD}_1, \text{LGD}_2, \text{LGD}_3$, and in the whole supply chain operation process time of the interest rate is fixed at r . Then the revenue distribution of Bank B in the business of sending a supply chain Jinlan, that is, the corresponding formula for calculating the risk exposure, is

distributed as follows: the first ten groups of the (1000) data set are taken as an example.

Bringing P_1, P_2, P_3 and $\text{LGD}_1, \text{LGD}_2, \text{LGD}_3$ into equation (1), respectively, we calculate the value of R in this example in the interval $[0.988104, 1.05418]$ scraping, below we use the graph to visualize the distribution frequency of R in this interval, and we go up in this interval and divide it into 30 partitions, so that the distribution frequency histogram of the final R value can be made. Distribution frequency histogram 1 is shown in Figure 5.

Similarly, we do a sensitivity analysis for the average number of defaults M per unit of time for the distribution of bank returns min; we take H corresponding to P_1, P_2 , and P_3 as (40, 30, 50) and (30, 50, 40), respectively. $\text{LGD}_1, \text{LGD}_2$,

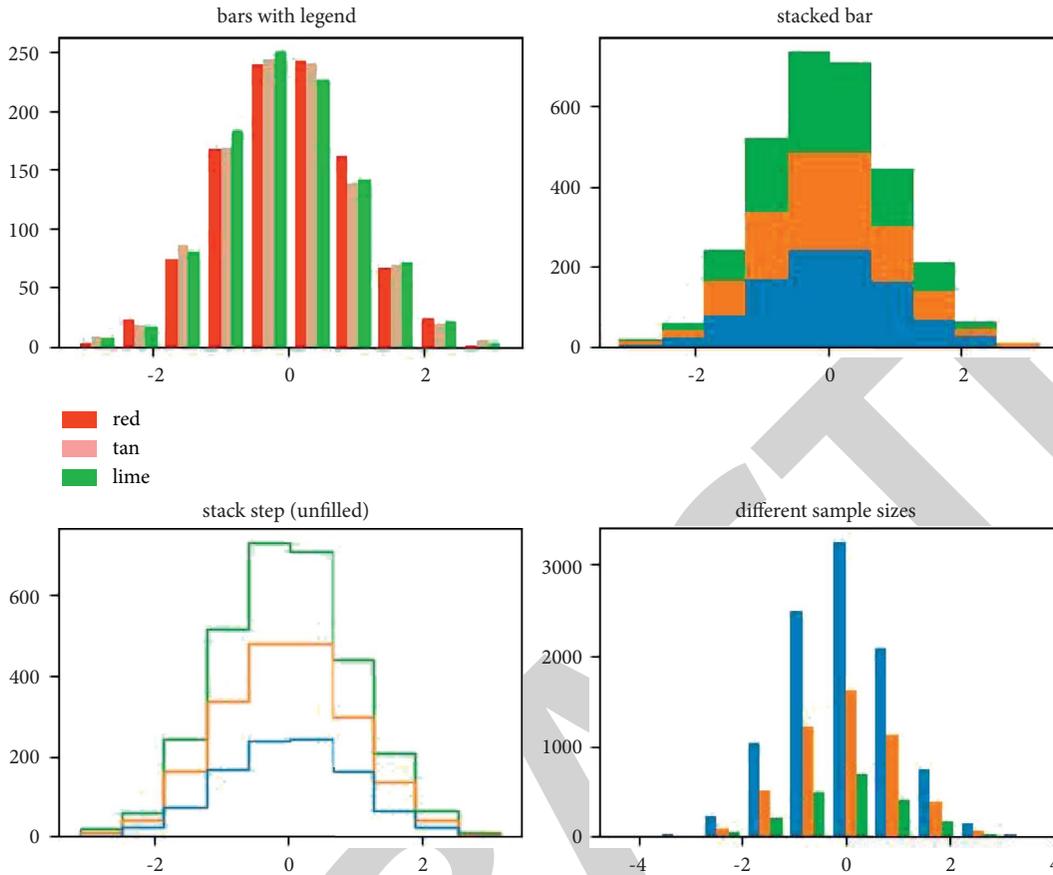


FIGURE 5: Distribution frequency histogram. (a) Bar with legends. (b) Stacked bar. (c) Stack step (unfilled). (d) Different sample sizes.

and LGD3 still keep the parameters unchanged, and the histograms of different distribution frequencies of the min obtained by BEA are shown in Figure 6.

In our hypothetical business process, the smaller the probability of a risk factor (e.g., P_1), the smaller the standard deviation of LGD1, LGD2, LGD3, and finally the distribution of returns in the bank, and the more concentrated the distribution is, the larger the expected value of W and returns is. The smaller the standard deviation, the more concentrated the distribution, and the larger the expected value of W and return, and vice versa.

We now only use P_1, P_2, P_3 to do a limited stochastic distribution of the value of the measurement, according to the needs of the bank credit line; we can also do a more comprehensive distribution of this default probability analysis and deduce the credit line and P_1, P_2, P_3 in the sensitivity analysis. This provides a theoretical basis for banks to control their risk exposures more accurately.

The above statistical analysis, by means of modeling examples, first verifies that when a bank conducts order financing business, when the probability of a certain risk factor becomes smaller and larger, after the financing business is completed, the interval of the bank's earnings distribution will also become larger and the distribution will be more spread out, which means that the bank's exposure to risk will also be larger.

5. Discussion

The ultimate purpose of evaluating the risks of order financing business is to identify, avoid, and control the risks. Through the research and coincidental evaluation of the risks of order financing business on W , combined with the current situation of order financing business in China, the author puts forward several suggestions for risk prevention and control from the perspective of banks, hoping that it can be helpful for Chinese banks to carry out risk prevention in order financing business.

5.1. Strengthen the Monitoring Capacity of Third-Party Professional Logistics Enterprises Themselves. In the order financing business, although the partners with the bank are quite strong and have a good business reputation and related technical capabilities, the guarantors of the logistics enterprises need a strong sense of responsibility, are more active to cooperate with the bank, and constantly improve their monitoring capabilities. Logistics enterprises should have a perfect warehouse management system, a standardized inlet and outlet management system, internal control system and business operation process, and a more complete training system; warehouse managers should have rich professional experience and have the ability to identify the specifications,

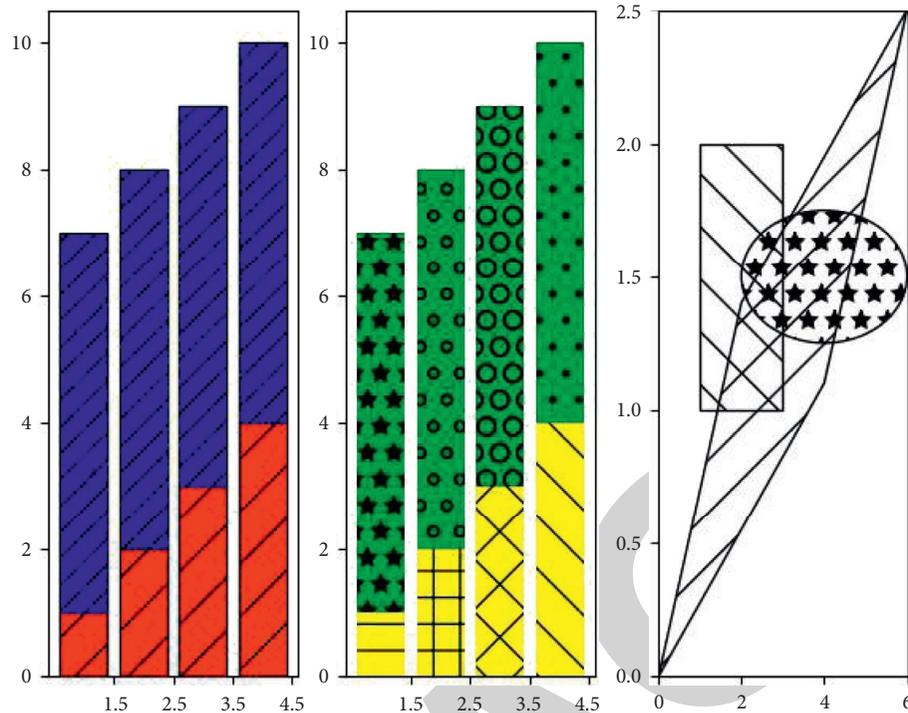


FIGURE 6: Distribution frequency histogram.

quality, and grade of the goods of the financing enterprises under their supervision. In addition, logistics enterprises should also improve commodity inspection, laboratory testing, testing technology, and equipment or related channels and strengthen enterprise software and hardware facilities, including information systems and network security and other aspects of the construction.

5.2. Strengthen the Monitoring of the Process of Order Realization by Financing Companies. The monitoring of the financing company's order fulfillment process is the focus of the bank and the logistics company's risk control. The financing enterprise will hand over the purchased raw materials to the H-party logistics enterprise for storage and supervision, and the logistics enterprise will assist in the full range of logistics services and distribution of final products, thus making the logistics enterprise integrate into the order fulfillment process of the financing enterprise, helping the floating enterprise to relieve capital pressure and reduce the risk of its order fulfillment process. In the process of sending some, logistics enterprises should standardize the registration system for the receipt of raw materials required by financing enterprises, the quantity received, the number of raw materials, the recipient, and the time of receipt; the approver and the issuer must be registered in accordance with the regulations. In the capital flow business, it should also contact the bank in a timely manner to obtain confirmation and permission from the bank according to the relevant business requirements. At the same time, the products produced by the floating enterprises should be delivered to the logistics enterprises for storage, and the products should be registered in the warehouse. Logistics companies can also collect market

information for evaluation, using statistical data, to understand the product market capacity and other related situations, in product refinement management.

5.3. Focus on the Audit of Nuclear Tunnels and Enterprises. When banks carry out order financing business with logistics enterprises, they need to review the creditworthiness of the downstream NEAs that issue orders. In this process, banks and logistics enterprises should consider the industry category of the NEAs, the industry status of the NEAs, their creditworthiness, and credit history. Moreover, the bank should make an assessment of the strength of the non-institutionalized credit bundle the relationship between core companies and financing companies, and this is to control the risk. For example, it can examine the situation related to the strictness and enforceability of the system of access, exit, incentives, and penalties in the supply chain.

6. Conclusions

This paper introduces modern financial engineering risk measurement tools to measure the risk of financial risks in supply chain finance, especially in order financing business. Specifically, this paper has analyzed the characteristics and connotations of order financing business model. Moreover, we also analyzed the risk of order financing from the perspective of banks and other financial institutions. Furthermore, CreditRisk+ model based on insurance actuarial principles was used to manage credit risk in order financing business based on foreign currency settlement. Additionally, a method for the measurement of risk for the application of order financing in multinational supply chains was delivered.

The experiments verify that the proposed solution defined and analyzed the financial risks brought by order financing to bank financing. The advantages of the current study include the important suggestion that it will be helpful for Chinese banks to carry out risk prevention in order financing business.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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