

# *Capital Investment Analysis Based on Complex Supply Chain Finance*

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**Abstract:** Complex supply chain finance, as an innovative financial product that subverts the traditional financing model, can use the supply chain operation data to drive the transformation of commercial banks' credit letters, and provide supply chain enterprises with accounts receivable financing, prepayment financing, inventory financing, and strategic relationship financing, effectively alleviating capital investment. In order to better promote the development of supply chain finance and alleviate capital investment, it is necessary to transform the traditional development concept and development model of commercial banks, so that they should pay attention to innovative services such as supply chain financial accounts receivable model, prepayment model and inventory financing model. Specialization, differentiation and specialization are integrated into the overall development of supply chain finance, promoting supply chain finance synergy and win-win, providing comprehensive and diversified solutions for easing capital investment. This paper analyzes capital investment based on complex supply chain finance.

## **1. Introduction**

At present, China's financial market construction is in the exploratory period, the financial system is still not perfect, and a single indirect financing channel is difficult to meet the needs of China's capital investment, and enterprise development faces serious financing constraints [1]. Mitigating capital investment depends on financial innovation. As an innovative financial product that subverts the traditional financing model, complex supply chain finance can use the supply chain operation data to drive the transformation of commercial bank credit letters, and provide supply chain enterprises with accounts receivable financing, prepayment financing, inventory financing and strategy. Relationship financing has become an effective way to alleviate capital investment [2]. From a theoretical perspective, information economics believes that supply chain finance can reduce the degree of information asymmetry in the process of capital investment by controlling the trading background and transaction data of supply chain enterprises, and provide enterprises with more financing mode choices, thus facilitating enterprises to get rid of financing. Dilemma [3]. From a practical perspective, commercial banks can realize the interconnection between themselves and core enterprises by focusing on the overall situation of the supply chain, which is conducive to the formation of more active cooperative relations, thus better serving the upstream and downstream enterprises in the supply chain [4]. In this context, on the one hand, the core enterprises provide strategic support to the upstream and downstream enterprises in the supply

chain, and promote upstream and downstream enterprises to increase the investment of special assets, and provide support for the acquisition and optimization of the overall financial resources of the supply chain; on the other hand, the core enterprises Through equity participation or holding financial institutions, the implementation of the integration strategy of industry and finance, the transmission of soft information to commercial banks, and the promotion of commercial banks to provide financial support for core enterprises and their upstream and downstream enterprises relying on generalized loan technology.

Under China's existing financial structure, large state-owned banks that are in a dominant position are difficult to meet the investment needs of small and medium-sized capital [5]. Under the background of banking monopoly, tight monetary policy has increased the difficulty of small and medium capital investment, which has damped the enthusiasm of SMEs [6]. The strategy drive includes two types: relational and transactional. Large banks have advantages in hard information collection and are good at transactional loans. Small and medium banks mainly rely on relational loans of soft information. For enterprises with complex organizational structures, their decision-makers tend to invest in large-scale enterprises with strong strength and strong risk management capabilities due to investment risks, making it difficult for SMEs to obtain financing.

Studies have shown that the larger the bank size and the higher the industry concentration, the more difficult it is for supply chain companies to obtain loans. Therefore, based on the above analysis, this paper will integrate the theory of information economics, integrate industry and finance, strategic commitment into the framework of supply chain finance research, and use the panel data of 354 listed companies in manufacturing, construction, wholesale and retail industries in China from 2012 to 2016. The empirical analysis of supply chain finance and its interaction with strategic commitment, industry and finance, provides a useful exploration for promoting the deepening development of supply chain finance and capital investment of core enterprises.

## **2. Theoretical analysis**

### **2.1 Complex supply chain finance**

The mechanism of mitigating capital investment in complex supply chain finance is that complex supply chain finance relies on supply chain trading background and transaction information to reduce information asymmetry and transaction costs between supply chain financial liquidity risk takers and supply chain enterprises, and help supply Chain companies get financial resources.

The cash flow gap of supply chain enterprises mainly exists in the difference of accounts receivable and inventory turnover period, and complex supply chain finance can effectively solve the cash flow gap of supply chain enterprises based on basic assets such as accounts receivable, inventory and prepayments. .

### **2.2 Combination of industry and finance**

The combination of industry and finance is an effective way to solve the problem of capital investment. The integration of industrial capital and financial capital is realized mainly through the participation of entities in the enterprise and the holding of financial institutions. From the perspective of information economics theory, the combination of industry and finance can promote the internalization of external financial institutions and further reduce the degree of information asymmetry between entities and financial institutions. In terms of expansion, while the entity-invested banks increase their corporate debts, their bank borrowings will also increase. The external financing of enterprises in this way can alleviate the financial pressure of enterprises to a certain extent. By participating in non-bank financial institutions, entities can promote closer

cooperation between banks and banking financial institutions, expand capital investment channels, and reduce capital investment cost pressures. Specifically, the combination of industry and finance can solve the problem of information asymmetry through the following three mechanisms: First, the combination of industry and finance can significantly affect the allocation of credit resources of financial institutions, which helps to reduce the difficulty for enterprises to obtain financing. Second, enterprises can rely on production. The relationship network formed by integration and integration establishes good relations with other financial institutions, thereby expanding its access to financial resources. Third, the actual controlling shareholder can manage the corporate surplus through control.

From the perspective of enterprise practice, external financing can improve the liquidity of the company's own funds and effectively alleviate the financing constraints of the enterprise. Enterprises gain control of financial institutions through participating financial institutions, can participate in their credit decisions, and reduce capital investment costs. In the case of insufficient control, companies can participate in financial institution credit decisions by joining with other shareholders. The economies of scale, scope and synergies formed by the combination of industry and finance can enable financial institutions to provide financial services and production and operation information that are more suitable for enterprise development in supply chain enterprises, which is conducive to the management and control of supply chain risks and the balance between risks and benefits.

In terms of empirical research, the study found that the combination of industry and finance can effectively alleviate the pressure of innovative R&D funds and support enterprise innovation activities. Realizing the impact of enterprises on financial institutions through equity investment, etc., is conducive to enterprises to achieve rapid financing, and can significantly reduce capital investment costs.

### **2.3 Strategic commitment**

The strategic commitment of the core enterprises provides more development opportunities for upstream and downstream enterprises, enabling the entire supply chain to share information and improve the competitiveness of the entire industry chain. In other words, the core companies provide strategic commitments to supply chain companies, enabling upstream and downstream companies to exchange more information and make the entire supply chain work more closely.

From a practical point of view, supply chain finance obtains supply chain transaction data, analyzes supply chain financing gaps, and creatively designs financial products, so that enterprises in the supply chain can obtain better development opportunities and avoid development difficulties caused by financing.

## **3. Research design**

### **3.1 Sample selection and data source**

In order to analyze the relationship between supply chain finance and capital investment, this paper takes the data of 354 listed companies in China's manufacturing, construction, wholesale and retail industries from 2012 to 2016 as samples, through the annual report of listed companies, Guotai'an database, and Wande. (Wind) database and other channels to obtain relevant indicator data. In order to ensure the validity of the research sample, the sample is screened, one is to delete the listed company with missing sample data; the other is to select the data with the variable value between 1% and 99% to avoid the influence of singular value.

## 3.2 Variable selection

1) The variable being interpreted. Namely capital investment constraint (FC). The existing literature of discovery, research on capital investment controversial, has not been given the same index. Considering the need for research and the availability of data, corporate cash flows represent capital investments.

2) Explain the variables. The first is supply chain finance (SCF). Companies to ease the liquidity shortage in the short term will be short-term loans, supply chain finance also includes supply chain financing accounts receivable as collateral. At the same time, discounting bills of exchange and as a major tool for supply chain finance, to more directly reflect the development of supply chain finance. Therefore, short-term borrowings and notes payable at the end of the sum of the ratio of total assets to represent the supply chain finance. The second is the integration of industry and finance (IFC). Use dummy variables to represent the combination of industry and finance. If the enterprise participates in a financial enterprise, it is represented by 1; if the enterprise does not participate in a financial enterprise, it is represented by 0. The third is strategic commitment (SC). The strategic commitment of the supply chain core enterprises to the supply chain is characterized by the upstream and downstream enterprises investing in the supply chain to increase the closeness of the supply chain enterprises. Therefore, from this perspective, Tirole's capital accumulation indicators can effectively reflect the strategic behavior of enterprises, emphasizing the usefulness of production capacity investment in understanding corporate strategies. The difference between the direct investment level of the enterprise and the average value of the direct investment of the industry is divided by the standard deviation of the direct investment level of the industry in that year. If the value is greater than the industry average, it is 1, otherwise it is 0.

3) Control variables. In order to control the influence of other variables on research issues, this paper takes sales income, asset-liability ratio, total asset turnover rate and capital expenditure as control variables. Among them, sales revenue (SR) is expressed as the ratio of the main business income to the total assets at the end of the year. The asset-liability ratio (ALR) is expressed as the ratio of total corporate liabilities to total assets. Total asset turnover (TAT) is the main business income. The ratio of total assets to the end of the period indicates that capital expenditure (CE) is expressed as the ratio of cash paid for the purchase and construction of fixed assets, intangible assets and other long-term assets to cash recovered from disposal of fixed assets, intangible assets and other long-term assets.

## 4. Empirical analysis

### 4.1 Descriptive statistics

This study provides descriptive statistics on sample data. See Table 1 for details. In order to avoid the influence of multicollinearity on the analysis results, this paper tests by the variance expansion factor. It can be seen from the test results that the variance expansion factor of each variable is smaller than the critical value, so it can be considered that there is no multicollinearity between the variables.

Table 1 Descriptive statistics and correlation analysis of variables

Variable	Mean	Variance	FC	SCF	IFC	SC	SR	ALR	TAT	CE
FC	5.37	30.47	1.00							
SCF	0.14	0.25	-0.49*	1.00						
IFC	0.09	0.29	-0.03	0.04	1.00					
SC	0.27	0.45	-0.01	-0.03	0.08**	1.00				
SR	0.87	2.22	-0.01	0.31**	-0.03	-0.14*	1.00			
ALR	0.49	1.19	-0.01	0.26**	0.01	-0.03	0.22**	1.00		
TAT	1.05	6.13	-0.01	0.01	-0.01	0.01	0.05	0.03	1.00	
CE	4.67	2.51	0.02	-0.08	0.02	0.05	-0.09	-0.08	-0.05	1.00

Note: \*, \*\* indicate significant at the significance level of 0.1 and 0.05, respectively.

## 4.2 Variable stationarity test and cointegration test

To avoid false regressions, a stationarity test needs to be performed before the regression. Existing studies usually use CD test and unit root test to determine the cross-section independence and stability of the variables. It is found through the test that the variables in this paper have cross-sectional dependence and stationarity at the 1% significance level, and no false regression will occur.

## 4.3 Regression analysis

The analysis model of supply chain finance and capital investment is constructed based on research questions and related variables. details as follows:

$$FC_{it} = \beta_0 + \beta_1 SCF_{it} + \beta_2 IFC_{it} + \beta_3 SC_{it} + \beta_4 (SCF_{it} \times IFC_{it}) + \beta_5 (SCF_{it} \times SC_{it}) + \sum_{i=6}^{10} \beta_i CON_{it} + \varepsilon_{it}$$

Among them,  $FC_{it}$  represents the capital investment constraint of enterprise  $i$  in  $t$  years,  $SCF_{it}$  represents the supply chain finance of enterprise  $i$  in  $t$  years,  $IFC_{it}$  represents the integration of industry and finance of enterprise  $i$  in  $t$  years,  $SC_{it}$  represents the strategic commitment of enterprise  $i$  in  $t$  years,  $CON_{it}$  Represents a set of control variables, and  $\varepsilon_{it}$  represents a random error term.

## 5. Conclusion

This paper systematically explores the relationship between supply chain finance and capital investment, deeply analyzes the impact mechanism between the two, and finds the adjustment role of industry-finance combination and strategic commitment. Specifically, this paper proposes relevant research hypotheses by establishing a conceptual model of supply chain finance and capital investment, and validates the research hypotheses based on data from 354 commercial banks. The results show that supply chain finance has a significant impact on capital investment, and the combination of industry and finance and strategic commitment play a significant role in regulating supply chain finance and capital investment.

The traditional financing model predicts the company's cash flow and repayment ability based on the premise of the unchanging trend of the enterprise. Due to information asymmetry and lack of

capital flow and information flow, the company faces moral hazard, which forces financial institutions to improve. Risk premiums and increased collateral to create negative incentives that cause companies to face financing constraints. Supply chain finance is based on the core business credit of supply chain and the real trading background between upstream and downstream enterprises. Through closed operation, it has a clear grasp of capital flow, information flow, personnel flow and material flow in business operations, which can enhance supply. The overall liquidity of the chain companies eases or even eliminates capital investment. Therefore, the development of supply chain finance is the basis for solving the problem of financial realism and strengthening the development momentum of enterprises. From this perspective, commercial banks should change their traditional development concepts and development models, pay attention to innovative business such as supply chain financial accounts receivable model, prepayment account model and inventory financing model, and integrate them into supply from the perspective of specialization, differentiation and specialization. Chain financial development overall, promote supply chain finance synergy and win-win, provide comprehensive and diversified solutions to alleviate capital investment.

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