

Problems and Development Suggestions in Automobile Supply Chain Finance

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Abstract. With the rapid development of domestic automobile consumption, the financing problem of upstream and downstream enterprises in the automobile industry has become the focus of the industry. As an innovative financial tool, automotive supply chain finance provides a solution for small and medium-sized enterprises in the industrial chain. From the perspective of the automotive industry chain, this paper analyzes the supply side and demand side of the capital, summarizes the problems existing in the automotive supply chain finance, and finally puts forward solutions from the aspects of the industry side and the technology side to provide suggestions for the development of the industry.

1 Introduction

The automobile industry has a large economic scale, a wide range of coverage, and a strong driving effect on the national economy. According to the statistics and analysis of the China Association of Automobile Manufacturers, automobile production and sales increased rapidly both month-on-month and year-on-year in March 2021, reaching 2.462 million vehicles and 2.526 million vehicles respectively, up 63.9% and 73.6% month-on-month and 71.6% and 74.9% year-on-year. The automobile industry has a strong relevance and synergy, the upstream and downstream cooperation of the industry chain is close, and the industry-finance integration effect is obvious, thus attracting a lot of capital. At the same time, the global procurement of auto parts and the internationalization of the parts industry have blurred the "national characteristics" of automobile products, making automobiles a typical global product. The financial area of the automobile industry supply chain is gradually expanding, and the automobile industry supply chain finance is promising.

2 Development status of automobile supply chain finance

A large number of small and medium-sized enterprises (SMEs) are involved in the upstream and downstream of the automobile supply chain. These SMEs have urgent financial needs, and generally have a long accounts receivable cycle and a high risk of breaking the capital chain. It is difficult for them to realize equity or debt financing by relying on their own qualifications. According to EV100plus's research on the billing cycle of 38 listed auto parts companies, the number of days of accounts receivable and that of accounts payable of

listed auto parts companies increased in 2019 compared with 2018 (Table1), indicating that the pressure of accounts receivable is high, and reflecting the slow payment collection of upstream auto parts companies. A high-quality upstream parts company is a supplier to many downstream automobile companies, and can obtain payment from other automobile companies even if the payment collection period from a certain automobile company is long. However, some parts companies have only one downstream customer; they will face the risk of breaking the capital chain of the supply chain once the customer extends the payment cycle.

Table 1. Accounting Period of Auto Supply Chain Companies in 2018-2019

Auto Supply Chain Accounting Period	Upstream: Auto Parts	Midstream: Vehicle Manufacturing	Downstream: Auto Dealers
Days of accounts receivable in 2018	73	27	7
Days of accounts receivable in 2017	71	9	7
Days of accounts payable in 2018	79	115	7
Days of accounts payable in 2017	78	88	7

Source: Financial Reports Arrangement of Listed Companies

Under the traditional financing model of the automobile industry, SMEs in the automobile supply chain carry out financing separately. It is difficult for them to obtain loans because their credit conditions do not meet the financing standards. Under the automobile supply chain finance model, financing institutions take the core enterprise and the supply chain formed by the upstream and downstream enterprises that have stable

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trade relations with the core enterprise as the main body of credit evaluation, and transform the uncontrollable risk of a single enterprise into the overall controllable risk of the supply chain enterprises by monitoring the capital flow and logistics of the entire supply chain. Financing institutions focus their monitoring on the financial data of the core enterprise and the authenticity of upstream and downstream transactions, reviewing the operation logic and risks of the entire automobile supply chain, to provide financial services to the enterprises in the supply chain.

Under the supply chain finance model, financial institutions no longer only focus on the solvency of SMEs; they deepen cooperation with the core enterprise to jointly control the operational risks of the entire supply chain in combination with real logistics data to provide supporting financing services^[1]. This is conducive to improving the overall production efficiency of the automobile industry and promoting the development of new automobile business formats.

3 Operating mode of automobile supply chain finance

3.1 Participants of automobile supply chain finance

Participants of automobile supply chain finance mainly include participants of the supply and demand sides of automobile supply chain finance, and affiliated institutions that provide credit guarantees to the fund demander (Figure 1).

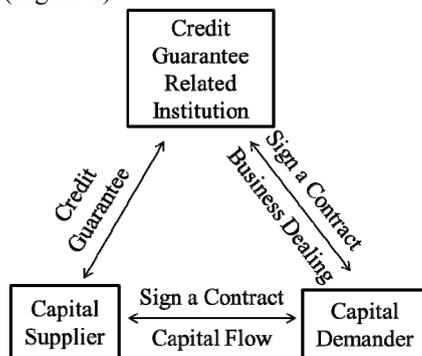


Fig. 1. Automobile Supply Chain Finance

Participants of the supply side mainly include licensed financial institutions such as commercial banks, automobile group finance companies, financial leasing companies and trust companies, as well as non-licensed automobile financial services companies that provide financial support such as small loan companies.

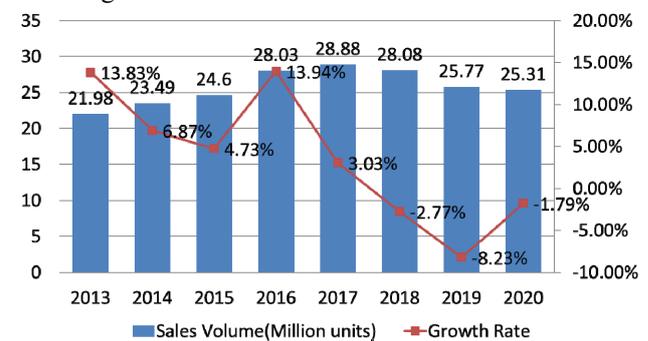
Participants of the demand side (lenders) mainly include raw material suppliers, component suppliers, automobile dealers and other upstream and downstream enterprises in the automobile supply chain.

Affiliated institutions that provide credit guarantees to the fund demander mainly include the core enterprise, guarantee companies, supply chain management enterprises, logistics enterprises, software companies, B2B platforms, etc. Such institutions often have business

dealings with the fund demander and provide guarantees for the authenticity of the financial status of accounts receivable, prepaid accounts, cash flow, orders, etc. of the fund demander.

3.2 Analysis of characteristics of automobile supply chain finance

From the perspective of supply chain finance, the automobile industry has three supply chain ecosystems. The first is the accessory supply chain ecosystem for OEMs. As a complex assembly, the automobile has as many as tens of millions of SKUs of parts and components. Its production process covers at least five levels of supply links, and the cost of parts and components accounts for 70-80% of the cost of the entire vehicle. The second is the automobile distribution supply chain ecosystem. According to statistics from the China Association of Automobile Manufacturers, China's automobile sales have ranked first in the world for many years consecutively, with an average annual sales compound growth rate of 9.84% from 2013 to 2016 and 28.88 million vehicles sold in 2017 (Figure 2). The third is the automobile aftermarket parts supply chain ecosystem. As a consumable, automobiles have a huge market demand for repair, maintenance, and replacement of spare parts. The market entities are dominated by small and micro enterprises, which are the focus of financing difficulties.



Source: China Automobile Industry Association

Fig. 2. China's Auto Sales and Growth Rate from 2013 to 2020

3.3 Business models of automobile supply chain finance

According to the three supply chain ecosystems listed in section 2.2, automobile supply chain finance has the following three business models: the accounts receivable financing model (the receivable type), the financing warehouse financing model (the inventory type), and the confirmation warehouse financing model (the prepayment type). The three models are all widely used in the three major links of the automobile supply chain. Although China's automobile supply chain finance started late, it has gradually become popular among commercial banks with the continuous advancement of automobile industry upgrade and financing market reform, and has become one of the key directions of innovative development for many commercial banks.

4 Analysis of the financing model of automobile supply chain finance

According to the analysis in section 2, the automobile industry has three supply chain ecosystems, which are used as the framework to analyze the financing model of supply chain finance.

4.1 Automobile production parts supply chain

In the upstream link of automobile production, manufacturers of auto parts and accessories are the main body of supply chain financing. These enterprises are in a weak position relative to the OEMs and have weak bargaining power, and therefore face the problem of regular billing cycles. Compared with other supply chains, the automobile supply chain has longer billing cycles, generally about three months and for first-tier suppliers of the OEM, 80-100-day billing cycles. Therefore, there is a stable financing demand among suppliers. In practice, the supply chain financing services of the production link mainly include account receivable pledge, commercial bill discount, inventory pledge financing, and order financing.

4.1.1 Account receivable pledge

For component suppliers, their downstream OEMs have strong bargaining power with generally a billing cycle of several months to postpone payment. Financial institutions can use accounts receivable as collateral to grant credit to upstream suppliers after checking and confirming that the accounts receivable are authentic. The OEM's payment is the source of repayment. This model is suitable for upstream suppliers with long-lasting and stable supply chain operations and strong OEMs. This financing model can effectively solve the problem of capital shortages of upstream suppliers due to deferred payment, and is conducive to the continuous and stable operation of enterprises.

4.1.2 Commercial bill discount

When OEMs pay upstream suppliers in the form of commercial acceptance bills, commercial banks can handle discounts for the upstream suppliers within the discount quota. This financing model can strengthen the liquidity of commercial bills, help suppliers quickly obtain funds, and reduce the capital occupation of bills receivables. The commercial bill discount model requires at least two conditions to be met: first, the core enterprise has a good credit qualification; second, the core enterprise has a complete industry chain and commercial bills can be efficiently circulated among suppliers at all levels.

4.1.3 Raw material inventory pledge

Inventory pledge is based on the cooperative relationship between the core manufacturer and the upstream supplier. The dealer finances through the funder, pays the money

to the supplier, and pledges the purchased goods to the funder. The pledged goods are placed in the custody of a third-party regulatory agency, and the funder gradually releases the pledged goods according to the dealer's progress in collecting the sales payment.

4.1.4 Order financing

After checking and confirming the authenticity and correctness of the order between the supplier and the demander, the financial institution uses the future revenue to be generated by the order as the source of repayment to provide the upstream enterprise with short-term financing that meets the capital needs of the order's raw material procurement, production and transportation.

4.2 Automobile distribution sales supply chain

In the sales link, multi-level dealers are the financing entity. They are mainly trading enterprises with outstanding asset-light characteristics and tight capital turnover, and need to adjust their business strategies in time according to changes in consumption time. Therefore, their demand for funds is very strong. However, these factors make credit risk concentrated and banks have many concerns about the dealers. A typical model of supply chain finance is as follows:

(1) Advance financing

The business process of advance financing is complicated. Before the dealer pays off the loan, the purchased vehicle is actually pledged to the financial institution and the dealer does not have the ownership of the purchased vehicle. The pledged vehicle is monitored by a third-party logistics enterprise throughout the entire process, and the dealer remits the sales payment to the margin account agreed with the financial institution after the sale of the vehicle. The financial institution reviews whether the margin is sufficient to decide whether to notify the third-party logistics enterprise to release the vehicle.

(2) Inventory pledge

In this case, inventory and other movable properties are used as pledges, and the downstream dealer applies for loans from the financial institution. The ownership of the inventory or purchased vehicle is placed in the financial institution and the whole process is monitored by a third-party logistics enterprise designated by the bank, and pledge is released after the payment is collected. The credit risk of movable property pledge financing lies in the liquidity of the dealer's inventory; if the dealer's sales ability is not strong, there may be a risk of debt default, which is concentrated on the dealer.

(3) Credit insurance financing

Through cooperation with insurance companies, the bank introduces guarantee insurance in the purchase link of downstream dealers. The insurance company recommends car dealers that meet the bank's access requirements to the bank, and the dealers enter the financing acceptance link after being reviewed by the bank. Meanwhile, the dealers need to complete the automobile storage pledge procedure with the insurance

company and issue an insurance policy with the bank as the insured to the bank before the bank releases a loan. The credit funds will eventually enter the account of the dealer's upper-level automobile trading company's account through entrusted payment to be used for special purposes.

4.3 Automobile after-sales service supply chain

The after-sales link is mainly in the automobile spare parts market, forming an industrial chain from automobile manufacturers to spare parts service providers to maintenance and consumption terminals. A number of financing models have been explored in this area, such as policy financing, parts financing, and inventory financing. Form commercial bank, after-sales business entities are mostly small, medium and micro enterprises with dispersed operations, small financing amounts per enterprise, weak risk control methods, difficult asset disposal and obvious lack of willingness to involvement. Supply chain finance in this link is mainly dominated by some professional third-party platforms.

5 Problems in automobile supply chain finance

5.1 Common problems

5.1.1 Increased credit risk of core enterprises

At present, China's automobile industry is in a period of cyclical adjustment, with automobile production and sales facing downside risks and automobile enterprises under greater pressure to survive. There is a contractual relationship between upstream and downstream enterprises in the automobile supply chain, and therefore, if one of the enterprises defaults, credit risk will be passed along the supply chain to the other enterprises, which may lead to a break in the capital chain of the entire supply chain, so that supply chain financing centered on OEM credit is greatly affected.

5.1.2 Information asymmetry between the parties to the transaction

The information asymmetry between transaction subjects in supply chain finance is not only reflected in the mismatch of information between banks and enterprises -- the borrower may conceal negative information or transmit false information, such as forging trade contracts and transaction records or inflating accounts receivable, or both the buyer and the seller may fabricate transactions to obtain bank financing; but also reflected in the opaque information in the financial industry and the imperfect credit system, enabling dealers to embezzle pledged vehicles or repeatedly pledge or finance with the same commodity.

5.1.3 Insufficient risk control over dealers

In practice, such as before granting loans, financial institutions often weaken the verification of borrower's credit and financial status^[2], including corporate credit records, personal credit records of operators, financial status of affiliated enterprises, and sources of repayment funds, guarantee methods and guarantee capabilities. In terms of post-loan management, financial institutions need to agree on the pledge and redemption method of quality certificates, determine the dealer's repayment method and track the repayment process after issuance. When the financing vehicle arrives at the dealer's warehouse, the OEM / credit party (an authorized third party) needs to verify the documents, inspect and accept the vehicle and mark the physical objects to facilitate regular inventory in the future. Inadequate regulation and inaccurate information provided by third parties are usually the focus of post-loan risks.

5.1.4 Credit risk under credit sales trade

Credit sales are commonly used by auto parts enterprises as a payment method. The most typical scenario is that auto parts distributors buy on credit from upstream component suppliers and sell on credit to downstream dealers. First, the entire transaction process is based on the customer relationship, namely, the buyer's commercial credit, and the transaction entity does not review the counterparty's operations, purchases, historical contract performance, financial status, and repayment sources. Therefore, the credit sales enterprise not only face the problem of fund squeeze, but also bear the risk of bad debts caused by the default or refusal of payment by the counterparty. Second, the parties to the transaction conduct regular or irregular reconciliation and settlement, and the enterprises may face severe pressure on liquidity shortages when the external environment changes. Third, although the degree of informatization of auto parts circulation enterprises has improved in recent years, each enterprise has its own ERP system, which makes it difficult for the parties to reconcile and collect payment, easily leading to disputes.

5.2 Problems in new energy vehicle supply chain finance

5.2.1 Insufficient judgment of financial institutions on the potential risks of the new energy vehicle supply chain

The new energy vehicle industry is generally at an early stage of development and the industry maturity is low. At the same time, supply chain financial institutions often lack a team of professionals in the field of new energy vehicles and cannot fully understand the potential risks of current new energy vehicle supply chain finance, and therefore cannot comprehensively and systematically control the risks of new energy vehicle supply chain finance.

5.2.2 New energy vehicle enterprises unwilling to grant credit to upstream and downstream supporting enterprises

Due to the uncertainty in the downstream new energy vehicle market demand, vehicle manufacturers cannot guarantee that the vehicle can be sold for payment; on the other hand, vehicle manufacturers enjoying new energy vehicle subsidies have to wait for a long time to obtain the subsidies after they sell the vehicle, so that they are under high pressure of payment collection. Therefore, vehicle manufacturers are not willing to grant credit to supporting SMEs. New vehicle manufacturers are often established not long ago with small asset scales, and their vehicle products are also in the exploratory stage with small mass production scales, and therefore are weak in providing guarantees to SMEs.

5.2.3 Discount risk of collaterals and pledges such as new energy vehicles and power batteries

Banks and other financial institutions mainly consider the liquidity of accounts receivable and the ability of collaterals and pledges to maintain value in supply chain finance. Due to the early-stage development and quick update of new energy vehicles, combined with the recent decline in state financial subsidies for new energy vehicles, the market prices of collaterals and pledges such as new energy vehicles, power batteries, accessories and components may change drastically, and it is difficult to accurately measure the ability of collaterals and pledges to maintain value. Therefore, the ability of collaterals and pledges to maintain and realize their value has been affected, which hinders financial institutions from carrying out relevant financial credit business.

6. Conclusion and Suggestions

Based on the authenticity of the trade relationship as well as the core customer credit, supply chain finance business for the customers, and downstream customers of the integration of industrial chain to provide certain help, thus much easier to get bank financing, this business model can not only help medium, small and micro enterprise financing, and conducive to the business development, for the real economy is significant.

6.1 Rely on core enterprises to build an automobile supply chain finance information platform

Rely on OEMs and other core enterprises to build an automobile supply chain finance information platform for suppliers, OEMs, dealers, financial institutions and third-party guarantee agencies to realize online and digital transactions between upstream and downstream enterprises in the supply chain, provide real-time vouchers for financial institutions to penetrate actual transaction parties, transaction scenarios and transaction

modes, and enhance the risk control capabilities of financial institutions.

6.2 Financial institutions cooperate with core enterprises to enhance business development capabilities

Automobile supply chain finance business is based on core enterprises. Through in-depth cooperation with core enterprises in the supply chain such as OEMs, battery companies and listed parts companies, financial institutions can provide relevant financing services for upstream and downstream supporting SMEs of core enterprises while providing financing services for core enterprises. On the one hand, financial institutions can quickly develop supply chain finance business relying on cooperation with core enterprises; on the other hand, the support of core enterprises can also improve the risk control capabilities of financial institutions over supply chain enterprise financing.

6.3 Financial institutions and technology companies cooperate to build a supply chain finance risk evaluation system

Financial institutions can build a complete supply chain enterprise risk evaluation model and system based on their own accumulated supply chain finance data by cooperating with technology companies in the fields of blockchain, big data and artificial intelligence. At the same time, they can expand and improve supply chain finance databases and optimize supply chain enterprise evaluation systems by sharing information with peer institutions, building databases, standardizing data collection and unifying index standards^[3].

6.4 Multiple parties collaborate to promote the compliant use of data

Technology companies, banks and automobile supply chain enterprises may jointly improve the construction of data technology infrastructure, establish reasonable data grading standards, build a big data platform for the automobile industry, and improve data acquisition dimensions and data volume. On the other hand, they may formulate relevant guidelines, reasonably restrict the use of data and determine which levels of data should be shared unconditionally or conditionally to solve data openness and data leakage problems and achieve compliance use of data.

Acknowledgment

The authors are grateful for the financial support of the Youth Innovation Project of Key Platform of Colleges and Universities in Guangdong Province (2016WQNCX188) ; and the Project of Teaching Team of Internet Finance Course (2019T002) in Xinhua College of Sun Yat-sen University ; the 2016

Department of Education of Guangdong Province Key
Discipline “Public Administration” research project;

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