

Supply Chain Finance and Corporate Labor Employment

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Abstract. Under the current economic environment, the financing difficulties of small and medium-sized enterprises coexist with the demand for industrial chain upgrading. As a more efficient and inclusive financial model, supply chain finance is crucial to promoting employment stability. This paper empirically analyzes the impact of supply chain finance on corporate labor employment by selecting the data of Chinese A-share listed companies from 2008 to 2021. The empirical results find that supply chain finance can significantly increase the scale of corporate labor employment. And further mechanism analysis reveals that alleviating financing constraints, expanding the scale of enterprise production and operation, and increasing the total factor productivity of enterprises are the main influence paths of supply chain finance to increase enterprise labor employment. The above conclusions provide micro-level evidence of the employment effects of financial support and offer a robust empirical foundation and precise basis for the design of targeted structural employment stabilization policies.

Keywords: Supply chain finance; corporate labor employment; financing.

1. Introduction

According to data from the National Bureau of Statistics of China, China's urban new employment was 12.56 million people in 2024, and the surveyed urban unemployment rate averaged 5.1%, down 0.1 percentage points year-on-year. Overall, progress in employment stabilization remained steady and positive. However, relevant data show that the number of college graduates in 2025 is expected to reach a record high of 12.22 million, exacerbating the supply-demand imbalance among young job seekers. In addition, the problems of “jobs without workers” and “workers without jobs” co-exist, and the structural contradiction of employment in the labor market still poses a great challenge to nationwide employment.

Employment is the foundation of people's livelihood. President Xi Jinping has pointed out that employment is the most important project for people's livelihood, the most crucial project for winning public support, and the greatest foundational undertaking. It is a vital safeguard for employment stability and must be prioritized and implemented with full commitment. Since the 18th National Congress of the Communist Party of China (CPC), the CPC Central Committee has attached great importance to employment, ranking it at the top of the “Six Stabilities” and “Six Guarantees”. Enterprises, as the core role in economic activities, are expected to fulfill their social responsibility by ensuring the stability and expansion of their own labor employment. Therefore, against the background of China's comprehensive strengthening of employment priority policy and promotion of high-quality employment, it is vital to study how enterprises can expand their labor employment scale at the micro level.

Supply chain finance refers to the whole process which starts from the supply chain and embeds financial services from raw material procurement to end sales. It provides financing support for upstream and downstream SMEs using the credit of core enterprises. First proposed in the 1980s, this theory challenged traditional credit models and has now developed into a more efficient and inclusive financial approach (Yu Haijing and Kang Canhua, 2017). In recent years, supply chain finance in China has developed strongly and attracted growing attention from academia.

So, does supply chain finance have a positive or negative effect on corporate labor employment? This is the core question that this paper tries to answer. Given this, this paper empirically analyzes the impact of supply chain finance on corporate labor employment by selecting the data of China's A-share listed companies from 2008 to 2021. The empirical results find that supply chain finance can

significantly increase corporate labor employment. Specifically, the higher the level of supply chain finance development, the larger the scale of corporate labor employment. Mechanism analysis suggests that alleviating financing constraints, expanding enterprise production and operation scale and improving the total factor productivity (TFP) of enterprises are the three influence paths of supply chain finance to improve enterprise labor employment.

The contribution of this paper is mainly reflected in three aspects. First, while traditional studies have mainly focused on the effects of supply chain finance on corporate financing, risk control or operational efficiency, this paper reveals the role played by financial instruments from a labor market perspective. Therefore it expands the theoretical boundary of research on the economic consequences of supply chain finance, and enriches the relevant literature. Second, this paper combines supply chain finance with empirical methods to test the positive role of this variable in increasing the level of labor employment in firms, whereas previous research has mostly taken the form of literature reviews or comparative case studies. In doing so, this paper expands the research paradigm of supply chain finance. Third, from a practical standpoint, in the post-pandemic era, the government urgently needs to stabilize employment from the enterprise side. The findings of this paper provide micro-level evidence of the employment effects of financial support and offer a robust empirical foundation and precise basis for the design of targeted structural employment stabilization policies.

2. Theoretical Analysis and Research Hypotheses

2.1 Influencing factors of corporate labor employment

Enterprises, as the main body of economic performance, their labor employment scale is closely related to society-wide employment, which is a matter of national economy and people's livelihood. Currently, existing literature has explored various factors influencing corporate labor employment from multiple perspectives.

From an institutional perspective, China has launched various major national strategies in recent years, and enterprises are bound to make micro-level responses, all of which have affected their labor employment. Ye Yongwei et al. (2024) found that government data-sharing initiatives significantly increases the scale of corporate labor hiring through improving credit availability, expanding the scale of business operations, and optimizing the regional business environment. Yang Laifeng and Xiong Jiazai (2022) found that the deregulation of loan interest rates can ease financing constraints, enhance the capital adequacy of enterprises, stimulate production expansion, thus enhancing enterprises' capacity to absorb labor and raising employment growth rates. These findings provide strategic references for achieving the policy goals of "employment stabilization" and "employment protection.". From an economic perspective, the formulation of cost-benefit decisions of enterprises will change their labor employment. For example, Liu Caixia et al. (2023) found that debt financing can lead to an increase in corporate labor employment.

2.2 Influence effects of supply chain finance

Supply chain finance is a financial service based on the credit advantage of core enterprises in the entire supply chain, which is crucial to solving the financing problem of SMEs. And most existing studies on the effects of supply chain finance is based on this perspective. For instance, Yu Haijing and Kang Canhua (2017) analyzed how supply chain finance addresses corporate financing problems by mitigating adverse selection and moral hazard.

In addition, Zhang Lina et al. (2021) found that supply chain finance can reduce information asymmetry and transmit positive market signals, ease financial constraints and strengthen financial stability, improve total factor productivity and increase innovation output, thus positively boosting the digital transformation of enterprises. Zhou Lan and Wu Huijun (2022) demonstrated that supply chain finance significantly improves the market performance of firms' products by increasing input-output efficiency and input-output speed.

2.3 Supply chain finance and corporate labor employment: theoretical hypotheses

Under the operational model of supply chain financial services, the availability of capital of enterprises is enhanced, which reshapes their production activities and organizational structures. Focusing on operation modes closely related to labor employment, this paper argues that supply chain finance can alleviate financing constraints, expand business production and operation scale, and enhance total factor productivity of enterprises, and ultimately significantly increase the level of corporate labor employment.

First of all, supply chain finance can ease the financing constraints of enterprises, thereby positively promoting their labor employment. By leveraging the creditworthiness of core enterprises, supply chain finance enables receivable financing, guaranteed warehouse financing, and movable property pledge financing. This pattern compensates for the credit deficiency commonly faced by small and medium-sized enterprises, so that SMEs can access short-term credit loans from banks in timely, obtain cash flow in advance, and thus alleviate financing constraints (Chen, Lihong and Peng, Fangchun, 2008). According to Benmelech et al. (2021), there is a temporal mismatch between the wages paid by firms to employees and the future cash flow employees generate for the firm, implying that employment decisions are constrained by liquidity (Liu Caixia et al., 2023). Firms with stronger financing constraints often suffer from internal capital shortages and limited cash liquidity due to difficulties in external financing access. It may lead to reduced investment in human capital and suppressed labor demand (Tie Ying & Liu Qiren, 2021). Additionally, facing financing pressure, firms tend to adopt more flexible employment models—delaying hiring or laying off regular employees to conserve cash buffers.

Second, supply chain finance can expand corporate production scale, thereby positively promoting their labor employment. In the supply chain finance model, financial institutions make lending decisions based primarily on the performance of core enterprises. Supply chain finance provides enterprises with financial support across various stages—receivables, prepayments, and inventory, which reduces their production and operating costs (Wei Long et al., 2024). This encourages downstream firms to expand operations and improve their turnover efficiency in order to access funds more quickly. Meanwhile, upstream suppliers, with improved cash flow, also expand production to meet downstream demand. In the production function, labor is one of the key elements. As corporate production scale up, the investment in labor will simultaneously raise unless capital fully substitutes labor. Particularly under increasing returns to scale, expanded production boosts marginal profits, thus incentivizing greater hiring. Moreover, larger operational scale also drives the creation of a more complex internal workforce structure, with clearer distinctions in skill levels and management capabilities, allowing firms to increase labor employment at multiple organizational levels.

Finally, supply chain finance can enhance firms' total factor productivity, thereby positively promoting their labor employment. The total factor productivity reflects the comprehensive efficiency with which all input factors are utilized in the production process. Leveraging tight linkages across the supply chain, supply chain finance integrates various production factors and information resources such as capital, technology, etc., improving both financing efficiency and total factor productivity of enterprises (Bu Jun and Zhu Yue, 2024). On one hand, the higher the total factor productivity of an enterprise, the lower its unit output cost. The firm is able to enhance market competitiveness, capture greater market share through price advantage, and thus require more labor to support capacity expansion. On the other hand, improvements in total factor productivity are often associated with technological progress and organizational efficiency gains. Firms with higher total factor productivity are more inclined to invest in R&D and management innovation, which increases demand for high-skilled labor.

Based on the above theoretical analysis, this paper proposes the following hypotheses:

H1: Supply chain finance positively contributes to increased corporate labor employment.

H2: In the context of supply chain finance, enterprises enhance their labor employment scale through three channels: alleviating financing constraints, expanding production and operation scale and improving total factor productivity.

3. Research Design

3.1 Sample selection and data sources

This paper selects A-share listed companies from 2008 to 2021 as research samples, and the sample data are processed as follows: (1) excluding ST, *ST and PT samples; (2) excluding samples from the financial industry and real estate industry; (3) excluding samples with missing data of the main variables. After these steps, the final dataset consists of 26,722 firm-year observations. Financial data in this paper are all obtained from the CSMAR database, and the keyword frequency data are derived from textual analysis of the annual reports of A-share listed companies. To mitigate the impact of outliers, all continuous variables are winsorized at the 1% and 99% levels. Data processing and empirical analyses are conducted using STATA18.0.

3.2 Variable settings

3.2.1 Explained variable – corporate labor employment (*Staff*)

Referring to Mao Qilian and Wang Yueqing (2023), this paper uses the natural logarithm of one plus the number of employees of enterprise *i* in year *t* (i.e., the number of on-the-job employees disclosed in listed companies' annual reports) as the proxy variable of corporate labor employment.

3.2.2 Core explanatory variable – supply chain finance (*LnSCF*)

Drawing on the research methods of Zhang Lina et al. (2021) and Zhou Lan and Wu Huijun (2022), this paper measures supply chain finance by calculating the frequency of relevant keywords related to supply chain finance in annual reports, and applying a logarithmic transformation to reduce right skewness. In addition, To harmonize units across data, the supply chain finance value is divided by 10 for subsequent analysis. The specific keywords are categorized into four types based on the supply chain finance practices and products: receivables, prepayment, inventory and integrated.

3.2.3 Control variables

With reference to the relevant literature on corporate labor employment, this paper introduces a series of control variables in the regression model, as follows: average wage level (*Level*), leverage ratio (*Lev*), firm size (*Size*), return on total assets (*ROA*), cashflow ratio (*Cashflow*), shareholding concentration (*Top1*), state ownership (*Govcon*), growth potential (*Growth*), and Tobin's Q (*TobinQ*). Industry and year fixed effects are also controlled for in the regression.

3.3 Model construction

To verify the relationship between supply chain finance and corporate labor employment, the following baseline regression model is constructed:

$$Staff_{i,t} = \beta_0 + \beta_1 LnSCF_{i,t} + \sum \beta_k Controls_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where *i* denotes the firm and *t* denotes the year. The dependent variable $Staff_{i,t}$ represents corporate labor employment, the key independent variable $LnSCF_{i,t}$ is the level of supply chain finance, $Controls_{i,t}$ denotes the set of control variables, and $\varepsilon_{i,t}$ is the random error term. According to hypothesis H1, we expect that the regression coefficient of supply chain finance β_1 is significantly positive, which means that the development of supply chain finance will promote labor employment in firms.

4. Empirical Results and Analysis

4.1 Baseline regression

Table 1 presents the full-sample regression results of “Supply Chain Finance – Corporate Labor Employment”. Columns (1) through (3) sequentially introduced the core explanatory variable, control

variables, and fixed effects for industry and year. From the regression results, it can be seen that the coefficients of supply chain finance (*LnSCF*) on corporate labor employment (*Staff*) are 2.4664, 0.2479, and 0.3483, respectively, under the three model specifications. All coefficients are significantly positive at the 1% level, indicating a positive effect of supply chain finance on corporate labor employment. This finding supports H1. Specifically, for every standard deviation of increase in *LnSCF* (0.063), *Staff* decreases by approximately 2.2% ($0.063 \times 0.3483 \times 100\%$), which is equivalent to 0.3% of the sample mean of *Staff* ($0.022 / 7.758 \times 100\%$). As for control variables, *Lev*, *Size*, *ROA*, *Top1*, and *SOE* are significantly positively associated with corporate labor employment, while *Cashflow*, *Growth*, and *Level* are significantly negatively related to corporate labor employment.

Table 1 Baseline regression results

Variables	<i>Staff</i>		
	(1)	(2)	(3)
<i>LnSCF</i>	2.4664*** (19.941)	0.2479*** (3.246)	0.3483*** (4.930)
<i>Lev</i>		-0.0302 (-0.918)	0.1456*** (4.519)
<i>Size</i>		0.7526*** (161.310)	0.7893*** (175.258)
<i>ROA</i>		1.4342*** (16.689)	1.1829*** (14.398)
<i>Cashflow</i>		-0.1053*** (-25.715)	-0.0974*** (-24.478)
<i>Growth</i>		-0.1091*** (-8.323)	-0.0975*** (-7.972)
<i>TobinQ</i>		0.0076** (2.198)	-0.0014 (-0.398)
<i>Level</i>		-0.2397*** (-47.252)	-0.1956*** (-37.824)
<i>Top1</i>		0.0034*** (10.462)	0.0027*** (8.947)
<i>SOE</i>		0.0528*** (5.223)	0.1000*** (10.208)
<i>Constant</i>	7.6772*** (922.372)	-6.7557*** (-66.231)	-7.8021*** (-68.812)
<i>Ind</i>	No	No	Yes
<i>Year</i>	No	No	Yes
<i>N</i>	26722	26722	26722
<i>Adj-R²</i>	0.0162	0.6552	0.7275

t statistics in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

4.2 Mechanism test

The empirical results above indicate that supply chain finance significantly promotes corporate labor employment. Then, what are the internal channels through which this effect operates? On the basis of H1, this section further explores the mechanisms underlying the relationship between supply chain finance and corporate labor employment. This paper argues that supply chain finance mainly affects corporate labor employment through three channels: alleviating financing constraints, expanding the scale of enterprise production and operation, and improving total factor productivity. The following analysis tests each of these mechanisms to support Hypothesis H2.

4.2.1 Financing constraints

For the quantitative measurement of financing constraints, Kaplan and Luigi (1997) developed a multidimensional financing constraint index (KZ index) with comprehensively considering financial indicators such as cashflow, Tobin's Q and leverage (Hu Yaju et al., 2018). Hadlock and Pierce (2009) refined this approach by constructing the SA index, which is negatively correlated with firm size and firm age, and positively correlated with the square of firm size (Hu Yaru et al., 2018). Since both firm size and age are strongly exogenous variables, the SA index mitigates the limitations of other constraint measures. Following these approaches, this paper uses the SA index as a proxy for financing constraints, calculated as:

$$SA = -0.737 * Size + 0.043 * Size^2 - 0.040 * Age \quad (2)$$

Where *Size* is the size of the firm, which is equal to the logarithm of the firm's book assets; *Age* is the the firm's age in years. Column (1) of Table 2 reports the regression results of supply chain finance (*LnSCF*) on financing constraints (*SA*). The regression coefficient of *LnSCF* is -0.1470, which is significantly negative at the 1% level, suggesting that supply chain finance alleviates firms' financing constraints. Referring to the study of Luo Changyuan and Chen Lin (2012), financing constraints will limit the enterprises' access to working capital through bank credit, which in turn restricts their capacity to hire labor. That is, easing financing constraints contributes positively to corporate labor employment.

4.2.2 Scale of business operations

For the quantitative measure of firms' scale of production and operation, with reference to the study of Sun Weizeng and Guo Dongmei (2021), this paper uses the natural logarithm of total operating revenue to reflect. Column (2) of Table 2 reports the regression results of supply chain finance (*LnSCF*) on business operation scale (*LnOR*). The regression coefficient of *LnSCF* is 0.8770, which is significantly positive at the 1% level, suggesting that supply chain finance significantly contributes to the expansion of firms' scale of production and operation. Theoretically, according to the Cobb–Douglas production function theory, when capital (K) and technology (A) remain relatively stable in the short term, an expansion in production scale ($Q = AK^\alpha L^\beta$) inevitably requires an increase in labor input (L). In practice, production and operational scale expansion often leads to the refinement of the production process, upgraded services, and even the adoption of technologically biased reforms, giving rise to new jobs and increasing labor demand.

4.2.3 Total factor productivity

To measure total factor productivity, this paper adopts the Levinsohn–Pettrin (LP) method, following the approaches of Lu Xiaodong and Lian Yujun (2012) and Ren Shenggang et al. (2019). Compared to another widely used semi-parametric Olley–Pakes (OP) method, which requires a strictly positive investment proxy variable, the LP method, which is further developed from the OP method, uses a more readily available indicator of intermediate inputs as a proxy variable, avoiding the loss of a large number of observations. Column (3) of Table 2 reports the regression results of supply chain finance (*LnSCF*) on total factor productivity (*TFP*). The regression coefficient of *LnSCF* is 1.0514, significantly positive at the 1% level, indicating that supply chain finance significantly improves firms' total factor productivity. Higher TFP leads to cost savings and efficiency gains, thereby enhancing the profitability of the enterprise. After profit growth, according to Syverson (2011), firms are more likely to reinvest in production expansion, new products development, or entry into new markets, all of which drive increased labor demand.

Table 2 Mechanism test results

Variables	<i>SA</i>	<i>LnOR</i>	<i>TFP</i>
	(1)	(2)	(3)
<i>LnSCF</i>	-0.1470***	0.8770***	1.0514***

	(-6.194)	(14.800)	(17.345)
<i>Control</i>	Yes	Yes	Yes
	Yes	Yes	Yes
<i>Ind</i>	Yes	Yes	Yes
<i>Year</i>	Yes	Yes	Yes
<i>N</i>	26722	26722	26722
<i>Adj-R²</i>	0.3244	0.8768	0.7602

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5. Conclusion and Policy Recommendations

As an important link connecting the industrial end and the financial end, supply chain finance exerts a substantial influence on the real economy. Using panel data from A-share listed firms in China from 2008 to 2021, this study empirically examines the effect of supply chain finance on corporate labor employment. The findings reveal that, firstly, supply chain finance has a significant positive promotion effect on corporate labor employment, that is to say, the higher the level of enterprise supply chain finance, the more workers it employs; secondly, supply chain finance mainly affects corporate labor employment through alleviating financing constraints, expanding the scale of production and operation, and enhancing total factor productivity.

Based on the above findings, this paper puts forward the following policy recommendations: (1) Optimize the supply chain finance policies to enhance enterprise financing accessibility. To ensure that the supply chain financing needs of more enterprises are met, the government and financial institutions should strengthen their support, particularly for SMEs. Policymakers should establish dedicated funds for supply chain finance and expand credit assessment frameworks, so as to broaden their financing channels, reduce financing costs, promote enterprises to expand production and increase employment. (2) Strengthen regulatory oversight to mitigate systemic financial risks. Relevant authorities should improve the supply chain finance regulatory system, require enterprises to enhance financial transparency, and at the same time reduce the risk of capital chain disruptions through credit guarantees. Enterprises are expected to collaborate with the government to establish a transparent and fair financial mechanism, create a fair and stable supply chain finance environment, and ensure the fairness of market competition. (3) Proactively establish a supply chain finance system to promote mutual benefits for both upstream and downstream enterprises. Core enterprises should develop scientific financing plans, actively engage with supply chain financial services. They could establish accounts receivable management platforms, facilitate the confirmation and circulation of receivables between suppliers and customers, and reform their own employment structures. (4) Accelerate the construction of digital supply chain to boost productivity. Riding the wave of digital transformation, enterprises can leverage data sharing and intelligent supply chain management to improve the efficiency of financial circulation, reduce capital mismatches, and enhance the stability of labor employment.

References

- [1] Yu H, Kang C. Research on Financing Mechanism of SME Based on Supply Chain Finance[J]. Nankai Economic Studies, 2017, (4): 141–152.
- [2] Ye Y, Wu J, Liu G. Government Data Sharing and Enterprise Labor Employment[J]. Economic Management, 2024, 46(12): 60–80.
- [3] Yang L, Xiong J. Interest Rate Liberalization, Labor Employment and “Employment Stabilization” Effect—A Quasi-Natural Experiment Based on the Full Liberalization of Lending Rates[J]. Journal of Shanxi University of Finance and Economics, 2022, 44(9): 31–44.

- [4] Liu C, Chen X, Xie Y. Does “Stable Finance” Conflict with “Stable Employment”——From the Perspectives of Debt Financing and Firm Labor Employment[J]. Journal of Shanxi University of Finance and Economics, 2023, 45(2): 59–72.
- [5] Zhang L, Su X, Yuan L. Supply Chain Finance and Digital Transformation of Enterprises: Heterogeneous Features, Channel Mechanisms, and Effect Differences in an Untrustworthy Environment[J]. Journal of Financial Economics Research, 2021, 36(6): 51–67.
- [6] Zhou L, Wu H. Supply Chain Finance and Product Market Performance[J]. Journal of Financial Economics Research, 2022, 37(6): 99–112.
- [7] Chen L, Peng F. Supply chain finance: A new financing path for SMEs[J]. Hubei Social Sciences, 2008, (11): 101–103.
- [8] Benmelech E, Bergman N, Seru A. Financing Labor[J]. Review of Finance, 2021, 25(5): 1365–1393.
- [9] Tie Y, Liu Q. Banking Deregulation, Credit Constraints and Human Capital Upgrading[J]. Finance and Trade Economics, 2021, 42(11): 116–130.
- [10] Wei L, Cai P, Pan A. Supply chain shock, diversification strategy and firm resilience: Evidence from major natural disasters in China[J]. China Industrial Economy, 2024, (9): 118–136.
- [11] Bu J, Zhu Y. Can Supply Chain Finance Improve the Total Factor Productivity of Enterprises?[J]. Research on Financial and Economic Issues, 2024, (5): 89–104.
- [12] Mao Q, Wang Y. Employment Effects of ESG: Evidence from Chinese Listed Companies[J]. Economic Research Journal, 2023, 58(7): 86–103.
- [13] Kaplan S N, Luigi Z. Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints?[J]. Quarterly Journal of Economics, 1997(1): 169–215.
- [14] Hu Y, Chen D, Liu Z. Financing constraints, cyclicity and smooth mechanism of firms' R&D investment: based on the perspective of ownership[J]. Industrial Economics Research, 2018, (2): 78–90.
- [15] Hadlock C J, Pierce J R. New Evidence on Measuring Financial Constraints: Moving Beyond the KZ Index[J]. SPGMI: Compustat Fundamentals (Topic), 2009.
- [16] Luo C, Chen L. Could Financial Constraints Cause Labor Income Shares to Decline? Evidence from Data at Firm Level in China[J]. Journal of Financial Research, 2012, (3): 29–42.
- [17] Sun W, Guo D. The Impact of Information Infrastructure on Enterprise Labor Demand: Change of Labor Demand Scale and Structure, and Its Influence Channel[J]. China Industrial Economy, 2021, (11): 78–96.
- [18] Lu X, Lian Y. Estimating total factor productivity of China's industrial enterprises: 1999–2007[J]. China Economic Quarterly, 2012, 11(2): 541–558.
- [19] Ren S, Zheng J, Liu D, et al. Does Emissions Trading System Improve Firm's Total Factor Productivity——Evidence from Chinese Listed Companies[J]. China Industrial Economy, 2019, (5): 5–23.
- [20] Syverson C. What Determines Productivity?[J]. Journal of Economic Literature, 2011, 49.