

Industrial Transfer and New Quality Productivity of Enterprises

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Abstract. Against the backdrop of the accelerated restructuring of the global industrial chain, China's traditional labor-oriented industries face a "transfer dilemma," while the overall level of new quality productivity of enterprises remains low with significant polarization. This paper, based on data from A-share listed companies from 2000 to 2016, constructs an econometric model to empirically test the relationship between industrial transfer and new quality productivity. The results show that although the overall industrial transfer presents a negative trend, it significantly promotes the improvement of new quality productivity. Heterogeneity analysis reveals that this promotion effect is more significant in state-owned enterprises and eastern regions, while non-state-owned enterprises and central-western regions show weak or insignificant effects. Mechanism tests indicate that the "quality improvement effect" of industrial transfer is realized through technology spillover, factor upgrading, and institutional adaptation, forming a "two-wheel drive model of institutional adaptation-factor restructuring." This study bridges the theoretical gap between industrial transfer and new quality productivity, providing a theoretical framework for spatial restructuring and quality transition, and offering practical references for local governments, enterprises, and national policy-making.

Keywords: Industrial transfer, New quality productivity, Global Value Chain (GVC), Enterprises, Factor reorganization

1. Introduction

At present, the global industrial chain is accelerating reconstruction, and China's labor-oriented traditional industries are experiencing weak growth and low-end overcapacity, forming a "transfer dilemma": the central and western regions are often trapped in "low-end lock" when undertaking industrial transfer, while the eastern regions are facing the risk of "hollowing out". This contradiction highlights the importance of industrial transfer research. Existing theories focus on the cost-driven mechanism, but it is difficult to explain why some regions achieve industrial chain jump while most regions fall into development traps under the same scale of transfer. The core problem is that the traditional theories ignore the characteristics of "qualitative differentiation" of industrial transfer, and it is urgent to reconstruct the analytical framework from the perspective of factor allocation efficiency.

However, the real data reflect severe challenges: although the proportion of high-tech industries in China has risen to 18.2%, the mean value of new quality productivity of A-share listed companies is only 0.114, showing an "overall downturn and polarization" pattern. The existing research mostly interprets the new quality productivity from the perspective of technology factors, but ignores its dynamic adaptation with production relations and institutional environment. The paradox is that when the whole country promotes scientific and technological innovation, the dilemma of "innovation investment increases while total factor productivity stagnates" exists widely at the enterprise level, which calls for in-depth deconstructing of the mechanism of qualitative productivity change.

There is a cognitive gap in the relationship between industrial transfer and productivity: FDI research emphasizes technology spillover effect, but ignores its adaptation cost with local innovation system; The literature on new quality productivity focuses on technological revolution, but does not systematically examine the catalytic effect of industrial spatial restructuring. A countercommon phenomenon is that this paper finds that the overall industrial transfer is negative, but it significantly promotes the improvement of new quality productivity. This paradox reveals the blind spot of existing theories: the "quality improvement effect" of industrial transfer needs to be realized through institutional adaptation and factor reorganization, which is the weak link of current research.

Research content: Based on the data of A-share listed companies from 2000 to 2016, this paper constructs an econometric model of industrial transfer and new quality productivity, and empirically tests the relationship between them. Research framework covers: 1) the benchmark return to verify effect quality of industry transfer; 2) Heterogeneity analysis reveals the moderating effect of ownership and region; 3) Mechanism test analyzes the transmission chain from three paths: technology spillover, factor upgrading and institutional adaptation. The theoretical innovation lies in proposing a two-wheel drive model of "institutional adaptation-factor restructuring", which redefines the process of industrial transfer from "cost-oriented" to "innovation symbiosis". Theoretical significance: (1) Bridging the research gap between industrial transfer theory and new quality productivity, and constructing a unified framework of "spatial restructuring-quality transition"; (2) the static limitation of traditional FDI technology spillover paradigm, institutional environment and the quality factors of dynamic adjustment mechanism.

Practical significance: (1) Provide a path for local governments to solve the dilemma of "undertaking is low-end"; (2) Provide empirical basis for enterprises to break the "innovation bottleneck" through active transfer; (3) It provides theoretical support for the country to build the industrial transfer policy system under the "domestic and international double circulation".

2. Literature review

The earliest research on industrial transfer can be traced back to the "flying geese theory", which studies the industrial transfer mode in which the industries in one region are transferred to other regions under the guidance of "leading geese". In addition, there are later life cycle theory and marginal industry transfer theory, both of which are early studies on industrial transfer. At present, the academic research on industrial transfer mainly focuses on international industrial transfer, Foreign Direct Investment (FDI) and Outward Foreign Direct Investment (Outward Foreign Direct Investment). For example, Han and Chen et al. studied the spillover of FDI to science and technology, and both concluded that FDI has spillover to science and technology [1-2]. Li et al. studied the reverse technology spillover of OFDI and concluded that the reverse technology spillover of OFDI has obvious regional differences, and the positive reverse spillover effect occurs in the developed eastern region [3]. Ling et al. studied the difference in the role of FDI and OFDI

from the perspective of participating in the global value chain, and concluded that OFDI plays a more prominent role in establishing the high-level position of the host country in the industrial chain [4]. As for the forms of industrial transfer, Lv et al. summarized four classic modes of China's current industrial transfer: geopolitic-driven, production-cost-driven, industrial chain layout-driven and international cooperation-driven [5]. The result of industrial transfer is the industrial division of GVC model. Zhang Shaojun and Liu Zhibiao studied the GVC model and got the definition of GVC model [6]. In terms of the influence of GVC model on developing countries and the influencing factors of industrial transfer, The earliest study is the analysis of the causes of industrial transfer by Jia and Ma, which proposed exchange rate changes, uneven regional development and unbalanced scientific and technological level [7]. At present, the cost-driven mechanism is the most studied part in the academic circle. Zhang et al. took the transfer of the Japanese semiconductor industry chain as the research object to study the impact of labor cost, manufacturing cost, land cost and tax policy on the industrial transfer in the cost-driven mechanism [8].

The theoretical research on new quality productivity shows a multi-dimensional deepening trend: Chen Xiuying et al. emphasize its consistency with high-quality development and the innovation-driven strategy, which is a historical continuation in the "quality" dimension [9]; Guo Chaoxian et al. deconstruct its connotation from the three dimensions of "new", "quality", and "power" [10], pointing out that "new" lies in the innovation of industrial carriers and organizational forms, "quality" reflects the essential leap of productivity, and "power" relies on the drive of network power and computing power; Pu Qingping et al. define it as an advanced form of productivity in the information society [11-12], with the core composed of three elements: high-quality laborers, new medium labor materials, and new material labor objects; He Zhe highlights its essence as an "advanced productivity state dominated by innovation", marked by a significant increase in total factor productivity [13], and stresses the criticality of breaking down the barriers between science and technology and industrial systems; Ren Baoping et al. systematically sort out the research framework [14], calling for strengthening theoretical and empirical explanations, as well as strategies tailored to local conditions, to support the practice of Chinese-style modernization.

The industrial transfer studied in this paper mainly focuses on foreign direct investment (FDI), while the measurement of new quality productivity is mainly reflected in the drive of scientific and technological innovation, new quality production factors and new production relations [15].

On the one hand, due to the technological spillover of FDI, even if foreign direct investment cannot directly increase the industrial output of all domestic enterprises, it will also improve the overall independent innovation ability of domestic enterprises. FDI is closely related to technology spillover, technology spillover is refers to the advanced technology in the industry or sector between passive and involuntary. Technology spillover is different from the transfer of technology, the main difference between passive, involuntary, technology transfer is purposeful implement as for-profit or nonprofit enterprise for the purpose of transfer of ownership, behavior. This is mainly reflected in demonstration effect and competition effect.

On the other hand, industrial transfer will cause the adjustment of industrial structure, which is mainly reflected in the productivity improvement of the secondary industry and the tertiary industry, and the adjustment of industrial structure will match the structure of labor force, especially the education level, which is the key factor in the transfer of workers between industries. After entering the foreign market, at the same time, multinational companies will hire host country personnel work, and to hire personnel to carry out the training and education, make the host country personnel to acquire labor skills necessary multinational companies, the staff to go to other domestic enterprises

in the future, will work with the newly acquired skills, resulting in a overflow. This is the "labor spillover effect", and FDI has a promotion effect on the host country's human capital.

Finally, in terms of new production relations, the total import and export volume of foreign-invested enterprises can reflect the level of opening-up, which can reflect a circulation relationship and bring about the adjustment of production relations. The consideration of reducing the cost of multinational companies usually leads to the improvement of the host country's supporting production equipment and operation and management ability, which makes the enterprises of the host country bring more efficient production mode and production equipment through imitation, which affects the upstream and downstream of the industry.

Comprehensive the above reason, this paper put forward the assumption: the industry transfer is beneficial to promote the new mass productivity

3. Variable explanation

The data sample space of this paper is the financial statement data of A-share listed companies, and the sample interval is from 2000 to 2016, and the relevant data are processed as follows: 1) eliminating the ST and * ST listed companies with poor management; 2) eliminating the samples of financial industry and real estate industry. In order to eliminate the influence of extreme values, this paper winsorizes all continuous variables of the model at the level of 1%. The statistical software STATA14.0 was used to complete the data processing and empirical test.

The explained variable in this paper is enterprise new quality productivity (Npro), so based on the theory of two factors of productivity, this paper considers the role and value of labor objects in the production process, and uses the entropy method to measure NPRO. The specific steps refer to the new quality productivity measurement method proposed by Song et al [16], and use the form of manual collection to measure the new quality productivity level of listed companies.

The explanatory variable in this paper is industrial transfer, and we use the GVC status index of enterprises to measure the degree of industrial transfer of domestic listed enterprises. For the GVC status index of enterprises, we refer to the calculation method of Lv Yue et al., Wang Zhi et al., and koopman et al. We refer to Lv et al [17], to measure the enterprise's FVAR (enterprise's export value added abroad) and DVAR (enterprise's export value added home) to measure the GVC status index.

The size of a company (size) is equal to the natural logarithm of its total assets; The asset liability ratio (Lev) is equal to the total liabilities divided by the total assets; Return on total assets (Roa), equal to net profit divided by total assets; (Growth), equal to the company's sales growth rate Growth; The model also incorporates corporate governance variables, such as whether the (Loss) is 1 when the net profit is less than 0 and 0 when it is greater than 0; The size of the (Board) of directors is calculated by taking the natural logarithm of the number of directors in a listed company. In addition, industry effects and annual effects were also controlled.

4. Model formulation

To test the influence of the industrial transfer of the new enterprise productivity, this paper build model as follows:

$$Npro_{it} = \beta_0 + \beta_1 Gvc_{it} + \sum \beta_k Controls_{it} + \varepsilon_{it} + \mu_i + \gamma_k$$

Where, the dependent variable Npro represents the level of the enterprise's new quality productivity, which is measured by the enterprise Gvc index, where Controls represents the control

variable, represents the random disturbance term, the subscript i represents the enterprise, and the subscript t represents the time. μ_i represents the individual fixed effect, represents the industry fixed effect. γ_k According to the theoretical analysis in this paper, we expect that the regression coefficient of industrial transfer in the model is significantly positive.

Table 1. Descriptive test analysis

Variable	Obs	Mean	Std. Dev.	Min	Max
NPRO	20394	0.114	0.099	0.004	0.514
lnGVC	5383	-0.472	0.351	-7.417	-0.367
Lev	41857	0.412	0.208	0.032	0.925
ROA	41856	0.04	0.068	-0.375	0.254
Loss	41857	0.127	0.333	0	1
Growth	41834	0.148	0.38	-0.653	3.808
Board	41802	2.112	0.198	1.609	2.708

The sample data show that the mean value of enterprise new quality productivity is 0.114, reflecting the overall innovation level is low but the differentiation is significant, the range is 0.004-0.514. A few enterprises' breakthrough innovation raises the upper limit, and most enterprises are still in the early stage of transformation, highlighting the urgency of improving the new quality productivity. The mean value of lnGVC is -0.472 standard deviation is 0.351, and the whole sample is negative, indicating that the sample enterprises are generally in the stage of industry transfer, and the minimum value is -7.417, revealing the extreme cases of radical transfer of some enterprises, which needs to be aware of its interference to the regression. This distribution feature provides data rationality support for the significant positive coefficient of lnGVC in the benchmark regression: although the overall performance of industrial transfer is capacity contraction, the active transfer behavior still promotes productivity through technology spillover or resource reorganization.

Other variables further supplement the economic picture: the mean value of ROA is 0.04, but the fluctuation is large, which is consistent with the negative significance in the benchmark regression, which proves that there may be a trade-off between short-term profitability and long-term innovation. The mean value of Lev 0.412 reflects moderate debt, but some enterprises approach the bankruptcy threshold; The mean value of Growth is 0.148, but the standard deviation is 0.38, which reveals the serious differentiation of enterprise growth momentum.

Table 2. Benchmark regression analysis

	(1)	(2)
	NPRO	NPRO
lnGVC	0.0046*	0.0049**
	(0.00)	(0.00)
Lev	0.0434***	0.0443***
	(0.01)	(0.01)
ROA	-0.0546	-0.0572*
	(0.03)	(0.03)
Loss	-0.0065	-0.0070
	(0.00)	(0.00)
Growth	0.0025	0.0020
	(0.00)	(0.00)
Board	0.0082	0.0082
	(0.01)	(0.01)
cons	0.0673***	0.0055
	(0.02)	(0.06)
N	3657	3657
R2	0.009	0.013
industry	no	yes
Fe	yes	yes
adj. R2	-0.374	-0.376

Standard errors in parentheses

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

The benchmark regression results confirm that lnGVC has a significant positive driving effect on new quality productivity, and the effect is further strengthened after controlling industry heterogeneity. From the statistical point of view, when only the individual fixed effect is controlled, the coefficient of lnGVC is 0.0046, which is significant at the 90% confidence level. When industry fixed effects are introduced, the coefficient increases to 0.0049, and the significance jumps to 95% confidence level. The standard errors are all 0.00, indicating that the estimation accuracy is high, and the signs are consistent and the significance is enhanced after industry control, which verifies the robustness of the results. In economic terms, for every 1% increase in lnGVC, the new quality productivity of enterprises will increase by 0.0049 units on average. This finding reveals that although the overall performance of industrial transfer in the sample is capacity transfer, it significantly promotes the innovation efficiency and productivity quality change of enterprises through technology spillover, value chain reconstruction and resource optimization, which provides an empirical anchor for the core proposition.

Table 3. Heterogeneity test

	(1)	(2)	(3)	(4)	(5)
	NPRO	NPRO	NPRO	NPRO	NPRO
lnGVC	0.0085**	0.0028	0.0077	-0.0023	0.0066**
	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)
controls	yes	yes	yes	yes	yes
_cons	0.1488**	0.0622	0.0868	0.1003**	-0.0017
	(0.07)	(0.05)	(0.07)	(0.05)	(0.06)
N	1457	2200	363	617	2677
R2	0.029	0.029	0.025	0.017	0.019
Ind	yes	yes	yes	yes	yes
fe	yes	yes	yes	yes	yes
adj. R2	-0.334	-0.379	-0.428	-0.357	-0.374

Standard errors in parentheses

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

Through the two-dimensional heterogeneity test of ownership and region, this study reveals that there is a significant structural differentiation in the promotion effect of industrial transfer on new quality productivity and its effectiveness is highly dependent on the adaptation of institutional environment and regional development stage. To be specific:

(1) At the level of ownership, lnGVC has a significantly positive impact on the soes samples, indicating that every 1 unit increase in industrial transfer can drive the new quality productivity of soes to increase by 0.85%; However, in non-state-owned enterprises, the impact does not reach a significant level, which reflects that non-state-owned enterprises are limited by resource acquisition barriers and technology transformation capacity shortcomings, and it is difficult to effectively undertake the transfer of high value-added industries. This differentiation is further supported by the controlled variables: the contribution of financial leverage and profitability to the new quality productivity of non-state-owned enterprises is significantly stronger, highlighting the deep dependence of their innovation activities on endogenous capital, which is in sharp contrast to the mode of state-owned enterprises relying on policy dividend.

(2) At the regional level, the effect of industrial transfer shows a gradient characteristic of "strengthening in the eastern region and weakening in the central and western regions": the coefficient of lnGVC in the eastern region is significantly positive, which proves that its mature industrial chain supporting and market mechanism can effectively catalyze technology spillover; The coefficient of the central region is negative and insignificant, suggesting that the industrial transfer may fall into the trap of low-end capacity undertaking and fail to drive substantive innovation; Although the coefficient in the western region is positive, it is not statistically significant, reflecting that the lack of infrastructure and talent reserve restricts the transfer efficiency transformation. The regional differentiation is also reflected in the control variables: the significant positive effect of leverage ratio and profitability of enterprises in eastern China highlights their advantages in innovation factor allocation efficiency, while the insignificance of most control variables in central and western China reveals the bottleneck of insufficient systemic support.

5. Conclusion

Although industrial transfer is generally in a state of outflow, it significantly promotes the improvement of new quality productivity of enterprises. Its quality improvement effect is achieved through technology spillover and factor recombination. Heterogeneity analysis shows that state-owned enterprises benefit significantly, while non-state-owned enterprises are constrained by resource barriers. The eastern region, with its mature industrial chain, has a prominent positive effect, while the central region falls into the "Low-end acceptance trap", and the western region is constrained by factor shortages. The research proposes a "system adaptation-factor recombination" dual-wheel drive model, revealing that industrial transfer needs to be dynamically matched with advanced factors to promote quality transformation.

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