

How Do Rising Labor Costs Affect China's Industrialization?

Xuejie Bai, Qingrui Yu*

China's uninterrupted high-speed economic growth depends on promoting the process of industrialization. Based on provincial data during 2003—2016, this paper empirically estimates the impact of labor costs on China's industrialization and examines its mechanism and path. The results show that the rising labor costs such as wages and social security premiums may lead to China's "de-industrialization". With endogeneity excluded, the conclusion still holds. The following policy suggestions are proposed: increasing the effective labor supply in the industrial sector to slow down the increase in wages, implementing social insurance premium reform to reduce social security premium rate, reversing the situation of investment "fleeing from the real economy and into the virtual economy" in a multi-pronged manner, and optimizing the combination of labor, capital and technology in various ways.

Keywords: labor costs, social insurance premiums, industrialization, "de-industrialization", mediating effect

1. Introduction and Literature Review

From 1978 to 2016, China's manufacturing value-added increased by 226.18 times. At present, the number of employees in China's manufacturing ranks the first in the world, accounting for one third of the global manufacturing employment. The "miracle" of China's uninterrupted economic growth is supported by large-scale expansion of the manufacturing industry. China's industrialization can be attributed to the technological catch-up process of "learning by doing" with low-cost labor, and the stable supply of low-cost labor is one of the main factors to sustain this process. In 2001, the average weekly wage of manufacturing workers in China was only \$22.35, 38.33% of that in Thailand and 28.7% of that in Malaysia (Lv, 2003). In 2017, *Financial Times* quoted data from Euromonitor, showing that, after a decade of rapid growth, the average hourly wage of China's manufacturing industry in 2016 tripled that of 2005, reaching \$3.6 (about 24.7 yuan). In the same period, the hourly wage of Brazil decreased from \$2.9 to \$2.7, while that of South Africa decreased from \$4.3 to \$3.6. From the

* Xuejie Bai (email: 13642197712@163.com), Professor, Deputy Dean of College of Economic and Social Development, Nankai University, China; Qingrui Yu, Doctoral Candidate of School of Economics, Nankai University, China. Fund Project: National Social Science Fund: "The Effectiveness of Industrial Policies on Industrial Upgrading under the Background of Supply-Side Structural Reform" (18BJY100).

perspective of labor cost including wages, a more alarming set of data comes from Oxford Economics. At present, labor cost of China's manufacturing industry has approached that of the United States. China's labor productivity in 2015 was only 40% of the world average, equivalent to 7.4% of the U.S. labor productivity. The basic conclusion behind these data is that China's labor cost has been rising rapidly in the past decade. With labor productivity still relatively low, though the wage of workers has increased, it is far lower than the rising speed of the total cost of labor. The rapid rise of the total cost of labor has weakened the comparative advantage of labor cost in China, which not only led to the emigration of foreign-funded enterprises, but also indirectly intensified the shift of capital from manufacturing to finance and real estate industry, making the manufacturing enterprises in an even worse situation.

From a macro perspective, the development of China's service industry is relatively backward, and manufacturing industry is still the engine of economic growth. In case of premature "de-industrialization", the risk of falling into the middle-income trap will increase (Huang *et al.*, 2017). On the industrial level, the core competitive advantage of China's manufacturing industry has not yet been firmly formed. Premature "de-industrialization" is tantamount to a drastic cut in salary. It is likely that "Made in China" will be replaced by "Made in East and South Asia", resulting in "industrial hollowing out" in China, which is not conducive to the transformation and upgrading of the manufacturing industry. The industrial development mode that China once relied on low-cost labor determines that there may be some internal relationship between the rising labor costs and industrialization in China. Along what path does the relationship work? This is the focus of this paper.

Among countries, some labor-intensive manufacturing enterprises have transferred to foreign countries, creating the illusion of industrial upgrading. Among regions, the eastern regions transferred labor-intensive industries to the central and western regions to cope with the impact of rising labor costs (Cai *et al.*, 2009). Qu *et al.* (2013) proved that there was indeed a phenomenon of inter-regional transfer of labor-intensive enterprises in China based on the data of manufacturing enterprises above designated size from 1998 to 2008. Within the region, using provincial data from 2000 to 2011, Yuan and Tang (2015) empirically concluded that rising labor costs did increase the proportion of tertiary industry. It is true that the so-called upgrading effect of industrial structure caused by the rise of labor costs undoubtedly represents the direction of upgrading from the perspective of proportions, whether among industries, within industries or among regions. However, rising labor costs do not necessarily force the productivity upgrading effect or the upgrading and allocation effect of production factors to occur. The most fundamental reason is the attachment of the nature of human capital to the production factor of labor force. For example, the workers on the shoemaking production line will not be turned into the operators of machines without obstacles. Therefore, the study of the above-mentioned upgrading theory is too idealistic. The other category of literature focuses on the impact of rising labor costs

on the input and output of manufacturing enterprises from a micro perspective. There is a negative correlation between the enterprise labor wages and the enterprise's bonus rate and performance (Wei and Wang; 2019). Acemoglu (2010) provided theoretical support for the "forcing" effect of labor costs on enterprise innovation. He and Zhang (2018) empirically supported the existence of "forcing" effect with China's data.

The existing literature does not pay enough attention to this. In view of this, the marginal contribution of this paper to the existing literature is as follows. First, the unit labor cost method and the labor cost method adjusted by labor productivity are integrated to calculate the provincial unit labor cost. Different from the previous literature, this paper introduces social insurance premium as a part of labor costs into the research framework, and takes it as a starting point to alleviate the rising labor costs in manufacturing industry. Second, from the perspective of research, this paper directly puts the rising labor cost and the level of China's industrialization into the same framework, explains the problem of China's premature "de-industrialization" from the perspective of rising labor costs, and clarifies the impact mechanism of China's "de-industrialization" caused by the rising labor costs, so as to understand more accurately the profound causes behind China's premature "de-industrialization". Third, provincial panel data from 2003 to 2016 are used to empirically test the mechanism and impact of labor cost on China's "de-industrialization". Mediating effect test is conducted to provide empirical support for the hypotheses of this paper.

2. Action Mechanism of Labor Costs and "De-Industrialization"

2.1. Income Effect

Clark (1957) extended Engel's law to study the relationship between residents' income and manufacturing products in developed countries, he found that residents' consumption of manufacturing products in developed countries can be divided into two stages: in the first stage, the consumption of manufacturing products increases with the increase of income; in the second stage, the consumption of manufacturing products decreases with the increase of income. The threshold effect between manufacturing and income is also known as Bell's law. Since the reform and opening-up, China's urban monetary wage has increased by 39.23 times, and China's urban consumer price index has increased by 5.64 times, which shows that China's wage level has been greatly improved. The proportion of national consumption in service industries such as education, health care and tourism keeps increasing. It can be seen that the current increase of labor wage level in China will lead to the change of consumption demand structure through income effect, which will lead to "de-industrialization".

2.2. Structural Transformation Effect

At present, the wage of labor force in eastern China is rising. If this change can

be replaced by relatively cheap labor force in the central and western regions, the employment and output value of manufacturing industry in the central and western regions will increase, the level of industrialization will be improved, and the overall “de-industrialization” in China will be delayed. However, the reality may be that the interregional labor cost gap in China is not large enough to promote industrial transfer through labor cost advantages. Given the current development reality, many large international enterprises have not shifted from the eastern region to the central and western regions, but directly moved to Southeast Asian countries such as Vietnam, Malaysia and the Philippines. From the perspective of internal structure changes, if labor costs rise rapidly, enterprises will adopt the strategy of replacing labor with capital and technology. Manufacturing industry can improve the productivity through mechanization, automation and technology upgrading. The productivity of the manufacturing sector is higher than that of the service sector. Through technology and industrial upgrading, the productivity of the manufacturing sector is further improved. However, it is very difficult for the service sector to improve the productivity through similar methods, which leads to more serious productivity imbalance between sectors (Rowthorn and Ramaswamy, 1999). The increase of manufacturing productivity and the decrease of employment will lead to the decline of the output level of the manufacturing sector, which will have a crowding out effect on industrialization. The imbalance of labor productivity among sectors is the most important cause of “de-industrialization” in developed countries (Kollmeyer, 2009).

2.3. Crowding out Effect and Forcing Effect

With the effect on population structure and quantity by China’s family planning policy, the demographic dividend gradually disappears, the labor supply is relatively insufficient, the cost of labor employment in manufacturing enterprises rises rapidly, and the profit space of enterprises is squeezed. There is a wave of bankruptcy in China. These rational behavior choices of enterprises may lead to the reduction of manufacturing jobs. Secondly, the rising labor costs have squeezed the profit margin of the manufacturing industry. Many manufacturing enterprises have reduced the proportion of their main business to invest in “nonproductive production”. The share of manufacturing output in the national economy has been shrinking, in sharp contrast to the rapid expansion of non-manufacturing fields such as finance, real estate and sharing economy. Many listed companies in manufacturing industry, especially state-owned enterprises, have not invested in manufacturing production, but have found flow into real estate and other industries to obtain high profits (Wen and Ren, 2015). The development effect of weak real economy and strong virtual economy brought by the rising labor costs weakens the engine role of manufacturing industry in the national economic growth. The share of manufacturing industry in the national economy drops rapidly

and the share of service industry rises rapidly on the premise that the manufacturing industry has not formed a sustained technological advantage. Although the nominal transformation and upgrading have been realized, the premature “de-industrialization” caused by the rapidly rising labor costs and the mismatch of capital between the real economy and the virtual economy may result in an unhealthy consequence.

The increase of manufacturing investment will improve the level of industrialization from the perspective of manufacturing value added. When the labor costs rise, in order to maintain operation, enterprises will increase capital investment, introduce new technology and accumulate capital, improve productivity through “factor substitution effect” to tackle the problem of labor cost rise (Romer, 1986), and promote the deepening of industrialization level, which is the “forcing” mechanism of labor cost rise to industrialization level. Based on the above analysis, we propose the following hypothesis.

Hypothesis: Rising labor costs in manufacturing industries will lead to “de-industrialization”.

3. Research Design

3.1. Data Description

The data used in this paper are from *China Statistical Yearbook*, *China Fixed Assets Statistical Yearbook*, *China Environmental Yearbook*, *China City Statistical Yearbook*, *China Labor Statistical Yearbook* and provincial statistical yearbooks. Based on the availability of data, the research data of this paper covers from 2003 to 2016. To retain generality, this paper adopts 30 provinces of China (excluding Tibet, Hong Kong, Macau, and Taiwan). In case of a missing value in the variable, this paper eliminates the relevant data of the corresponding year of the variable.

3.2. Econometric Model

In this paper, econometric model of “de-industrialization” by Rowthorn and Ramaswamy (1999) is extended to study the relationship between labor costs and industrialization, and the following econometric model is obtained:

$$\ln iva_{it} = c + \alpha_1 \ln labcost_{it} + \alpha_{i>1} z_{it} + u_i + v_t + \xi_{it} \quad (1)$$

where iva_{it} is the proportion of manufacturing value added, $labcost_{it}$ is labor costs, subscripts i and t representing provinces and years respectively; z_{it} is control variable, c is constant term, u_i and ξ_{it} are individual effect and random disturbance term respectively. In order to investigate the impact of the international financial crisis on

China's industrialization, this paper does not consider the time effect year by year. Instead, it examines the time effect (v_t) in 2003—2007 and 2009—2016.

3.3. Variable Specification

Logarithm of the proportion of industrial value added (\lniva). Generally, the indicators to measure de-industrialization mainly include the proportion of nominal value added of manufacturing industry in nominal GDP, the proportion of real value added in real GDP, and the proportion of employment in total employment. The continuous decline of any of these indicators is the representation of de-industrialization. Developed countries often use the single indicator of the proportion of manufacturing employment to measure de-industrialization, which tends to exaggerate the loss of manufacturing industry. Therefore, it is not enough to define deindustrialization only by employment proportion, and output should also be considered. Considering that few provinces published the data of manufacturing value added, this paper, referring to Wang *et al.* (2011), uses the proportion of nominal value added of manufacturing industry and the proportion of real value added as the proxy variable of industrialization level.¹ The increase of logarithm of the proportion of industrial value added represents the deepening of industrialization. This paper focuses on the impact of labor costs on the level of industrialization from the perspective of industrial nominal value-added and the perspective of real value-added, which is different from the previous approach that only takes manufacturing employment as an indicator of industrialization. In this paper, manufacturing employment is used as a mediating variable to affect industrial value-added for further analysis.

Labor costs. Considering the availability of data, and referring to Liu and Wang (2011), we use the logarithm of the nominal wage of the provincial manufacturing industry (\lnmlabcost), and the logarithm of wages adjusted by labor productivity (\lnamlabcost) in calculation. In the calculation of the nominal wage of manufacturing industry at the provincial level, with reference to Wei and Guo (2013), the per capita wage of the provincial manufacturing industry is estimated by multiplying the per capita wage of the provincial urban manufacturing industry with the coefficient of 0.981, that is:

$$mlabcost_{it} = 0.981 \times citymawage_{it} \quad (2)$$

where $mlabcost_{it}$ is the per capita nominal wage of manufacturing industry at the provincial level; $citymawage_{it}$ is the average wage of urban manufacturing industry employees at the provincial level. Based on equation (2), the nominal wage of the manufacturing industry at the provincial level is obtained, but the nominal wage

¹ Data of industrial added value in Shanxi, Liaoning, Henan, Hunan and Shaanxi are missing.

cannot truly reflect the labor costs of the manufacturing industry, so further adjustment through labor productivity is needed. Referring to Liu and Wang (2011), the formula for calculating labor productivity can be expressed as follows:

$$prob_{it} = \frac{GDP_{it} / GDP_{it-1}}{GDPDe_{it}} \quad (3)$$

where $prob_{it}$ is the labor productivity; GDP_{it} is the current GDP; GDP_{it-1} is the previous GDP; $GDPDe_{it}$ is the current GDP deflator. Furthermore, the labor costs adjusted by labor productivity can be expressed as:

$$amlabcost_{it} = mlabcost_{it} / prob_{it} \quad (4)$$

where $amlabcost_{it}$ is the wages adjusted by labor productivity in provincial areas.

Referring to Rowthorn and Ramaswamy (1999), this paper controls the logarithm of per capita GDP ($\ln pgdp$) and the squared term of logarithm of per capita GDP [$(\ln pgdp)^2$]. Export share (exp), import share (imp), FDI share (FDI) and OFDI share ($OFDI$) are all their respective shares in GDP calculated by first converting into RMB based on the exchange rate of the current year. Yuan and Xie (2014) believed that the forcing and driving effects of environmental regulation (ep) led to the contraction of the secondary industry and the prosperity of the tertiary industry. Based on this, this paper controls the environmental regulation, which is expressed by the ratio of industrial pollution control investment to industrial value added.

Table 1. Statistical Description of Variables

Variable symbols	Variables	Sample number	Mean	Standard deviation	Minimum	Maximum
<i>iva</i>	Nominal valued added share of GDP	412	0.4101	0.1115	0.1190	0.8880
<i>re_iva</i>	Real valued added share of GDP	342	0.3251	0.0937	0.1550	0.6236
<i>mlabcost</i>	Nominal wages	412	31708	16426	8774	95746
<i>amlabcost</i>	Productivity-adjusted wages	412	31218	16802	8206	94516
<i>labcost</i>	Social insurance premium	412	0.0249	0.0166	0.0010	0.117
<i>pgdp</i>	Per capita GDP	412	34499	23135	5429	115053
<i>exp</i>	Share of export in GDP	412	0.1619	0.1932	0.0084	0.9159
<i>imp</i>	Share of import in GDP	412	0.1426	0.1764	0.0005	0.8826
<i>FDI</i>	Share of FDI in GDP	412	0.0254	0.0199	0.0004	0.1052
<i>OFDI</i>	Share of OFDI in GDP	412	0.0032	0.0066	4.88e-06	0.0666
<i>ep</i>	Environmental regulation	412	0.0044	0.0041	0.0004	0.0332

4. Empirical Results and Discussions

4.1. Benchmark Regression

Based on equation (1), this paper uses the panel ordinary least squares method to investigate the relationship between labor costs and industrialization. Although the explanatory variables are controlled as much as possible, the endogeneity caused by the omitted variables cannot be excluded. Hence, this paper uses the fixed effect (FE) estimation to tackle the endogeneity, and controls the in-group heteroscedasticity, sequence correlation and cross-sectional correlation issues. Table 2 reports fixed effect regression when heteroscedasticity, sequence correlation, and cross-sectional correlation are taken into account.

Table 2. Benchmark Regression

Variables	Logarithm of the proportion of nominal value added		Logarithm of the proportion of real value added	
	(1)	(2)	(3)	(4)
<i>lnmlabcost</i>	-0.4485*** (0.1467)		-0.1025** (0.0443)	
<i>lnamlabcost</i>		-0.4571*** (0.1389)		-0.0906** (0.0405)
2003—2007	-0.0481 (0.0412)	-0.0251 (0.0323)	0.0047 (0.0117)	0.0098 (0.0119)
2009—2016	-0.0225 (0.0198)	0.0084 (0.0230)	-0.0106 (0.0074)	-0.0054 (0.0070)
Constant term	-7.0300** (3.0721)	-6.5715** (3.0189)	-7.0482*** (1.2314)	-7.0491*** (1.2036)
Effect at the provincial level	yes	yes	yes	yes
R ²	0.3919	0.4285	0.7433	0.7429
Sample size	412	412	342	342

Note: Within the brackets are robust standard errors; *, ** and *** are significant at the levels of 1%, 5%, and 10%, respectively. R² is in-group R². Similarly hereinafter.

According to the estimated results, there is a significant negative correlation between the labor costs and the industrialization level of nominal value added. The nominal wage coefficient is -0.4485, which is significant at the 1% confidence level, indicating that the increase of nominal wages leads to the decline of industrialization level of nominal value added. The coefficient adjusted by labor productivity is -0.4571, which is significant at 1% confidence level, indicating that the increase of wages adjusted by labor productivity leads to the decline of industrialization level of nominal value added. Based on the regression results of real value added, there is a statistically significant negative correlation between nominal wages and the level of

industrialization of real value added. The estimation results of wages adjusted by labor productivity and real industrial value added show that there is a statistically significant negative correlation between the two. It can be concluded that increase of both nominal wages and wages adjusted by labor productivity cause de-industrialization of real industrial value added. The estimation results in Table 2 fully show that the rising labor costs of manufacturing industry accelerate China's "de-industrialization", which verifies the hypothesis. The comparison between the estimated results of nominal wages and productivity-adjusted wages in Table 2 indicates that the impact of nominal wages and productivity-adjusted wages on the level of industrialization of nominal value added is greater than that on the level of industrialization of actual added value. It can be seen that the rise of labor costs is an important reason for the de-industrialization of China's manufacturing nominal value added as discussed above.

In the nominal value-added industrialization equation, the period effects of 2003—2007 and 2009—2016 are not significant, so it is impossible to judge whether the speed of China's "de-industrialization" changes significantly before and after the international financial crisis. But at least it can be concluded that the international financial crisis has not accelerated China's "de-industrialization". The reasons are two-fold. On the one hand, the financial crisis has exposed the weak points of China's manufacturing industry. Some enterprises have made their own way to the transformation of innovation-driven development, improved their technical level and strengthened their ability to resist pressure. On the other hand, the Chinese government implemented a 4-trillion infrastructure investment and construction plan to minimize the impact of the international financial crisis at that time; such a concentrated and large-scale demand stimulus naturally slowed down China's "de-industrialization". In the equation of real value added industrialization, the coefficient from 2009 to 2016 is negative, but not significant, which can only show that after the international financial crisis, China's "de-industrialization" trend based on the perspective of real value added has been formed, although the effect is not significant.

4.2. Endogeneity Test

To some extent, the panel ordinary least squares method can overcome the endogeneity caused by missing variables. However, due to the reverse causal relationship between labor costs and industrialization, the level of industrialization in turn affects labor costs, and the panel ordinary least squares method may have the problem of estimation error. The ideal solution is to find an exogenous variable that affects the level of industrialization through only labor costs. For this reason, this paper chooses the number of grassroots trade unions as the instrumental variable of nominal wages and wages adjusted by labor productivity. The role of trade union is to protect the basic rights and interests of workers. At present, many domestic enterprises have established trade

union, which has a direct impact on improving the wages of workers. Wei *et al.* (2013) supported the conclusion that the labor unions improved the labor wage rate from the empirical perspective by using the data of the national private enterprise sampling survey. In particular, the channel for trade unions to influence output is to increase the labor costs of enterprises. Therefore, this paper considers that trade unions meet the exogenous conditions of instrumental variables. Table 3 reports the 2SLS estimations with the logarithm of the number of unions (*lnunion_num*) as the instrumental variable. Columns (1) and (3) report estimations with logarithms of the number of unions as instrument variable of nominal wages, and columns (2) and (4) report estimations with logarithms of the number of unions as the instrumental variable of productivity-adjusted wages. In the first stage, the estimated logarithm coefficients of trade unions are all significantly positive, and the F statistic values are all greater than 10.

Table 3. Regression Results of Instrumental Variables

Variables	Logarithm of the proportion of nominal value added		Logarithm of the proportion of real value added	
	(1)	(2)	(3)	(4)
<i>lnunion_num</i>	-0.7893*** (0.2326)	-0.7496*** (0.2146)	-0.2325** (0.1104)	-0.2077** (0.0993)
Control variables	yes	yes	yes	yes
Provincial effect	yes	yes	yes	yes
R ²	0.3374	0.3748	0.6891	0.6849
First-stage F statistical value	27.255	22.335	21.946	22.193
Sample size	412	412	316	316

The estimated results of Table 3 show that the coefficients of the logarithms of the number of trade unions are significantly negative, indicating that there is a negative correlation between the rising labor costs and the level of industrialization of nominal value-added and the level of industrialization of real value-added. It can be seen that the conclusion of benchmark regression is still valid. The comparison with the benchmark regression results shows that, with the gradual settlement of endogeneity, the absolute value of labor costs coefficient increases gradually, indicating that the negative impact of rising labor costs on the level of industrialization is underestimated because of endogeneity.

4.3. Further Discussions Based on Social Insurance Premiums

At the third plenary session of the 19th CPC Central Committee, it was decided that the basic endowment insurance premium, basic medical insurance premium,

unemployment insurance premium and other social insurance premiums should be collected by the tax authorities from January 1, 2019. This measure is a powerful impetus to further reduce the social insurance premiums. This is the fifth time since 2015 that the State Council has adjusted the social insurance rate. The previous four adjustments have reduced the proportion of social insurance premiums in total wages from 41% to 37.25%, saving nearly 315 billion yuan for enterprises. In horizontal comparison, China's current social insurance rate is about 40%, higher than most countries. Although social insurance premiums and wages are paid in different forms, both need enterprises to pay for employees, which belong to the scope of labor costs of enterprises. This part mainly analyzes empirically the relationship between social insurance premiums and industrialization level.

Based on the idea of building unit labor cost proposed by Ma (2015), the logarithm of the ratio of total income of social security fund of manufacturing industry to total value added is used to measure the social insurance premium of each province ($\ln labcost_{it}$). The level of social insurance premium of manufacturing industry in each province is expressed by the total income of social security fund multiplied by the proportion of manufacturing industry employees in all employees. The total income of social security fund is the sum of endowment insurance, basic medical insurance and unemployment insurance. The data is from *China Labor Statistics Yearbook*. The data of manufacturing industry employees and total employees come from statistical yearbooks of provinces and cities and *China Urban Statistical Yearbook*. Table 4 reports the GMM estimations of social insurance premium with one and two lag periods as instrumental variables. It can be seen that there is a significant negative correlation between social insurance premium and China's industrialization level, indicating that the rise of social insurance premium will aggravate the process of China's "de-industrialization".

Table 4. Estimations Based on Social Insurance Premiums

Variables	Logarithm of the proportion of nominal value added	Logarithm of the proportion of real value added
	(1)	(3)
$\ln labcost$	-0.2697*** (0.0471)	-0.1487*** (0.0238)
Control variables	yes	yes
Provincial effect	yes	yes
Anderson LM statistical value	96.272	83.181
Cragg-Donald Wald F Statistical value	66.320	57.922
Sargan test P value	0.9071	0.6623
R ²	0.3988	0.6247
Sample size	352	292

5. Conclusions and Implications

Manufacturing industry is the engine of a country's economic growth and the only way for the late industrializing countries to catch up. The evolution of industrialization has its own regularity, "de-industrialization" is also an inevitable phenomenon in the late stage of industrialization, and a benign "de-industrialization" process should be supported by the improvement of labor productivity and technological progress. At present, the labor productivity of China's manufacturing industry is not high, and the contribution of technological progress to industrial development and economic growth also needs to be improved. Presently, "de-industrialization" will affect the quality and speed of China's economic growth, which is a great resistance to China's "big but not strong" manufacturing industry facing the task of high-quality development. Based on the empirical analysis of provincial panel data from 2003 to 2016, this paper finds that both manufacturing wages and social insurance premiums are significantly negatively correlated with China's industrialization level.

Based on the conclusion of theoretical analysis and empirical test, this paper puts forward the following four suggestions. (1) Increase the effective labor supply in the industrial sector and delay the rising trend of wages. First of all, promote the agricultural industrialization through agricultural modernization and rural revitalization, and transfer a large number of surplus rural labor force that still exists in the central and western regions from the agricultural sector to the non-agricultural sector by way of human capital training, especially the modern agricultural manufacturing sector derived from agricultural industrialization, so as to supplement the labor input of the manufacturing sector, and prevent manufacturing wages from going up fast due to shortage of the labor supply. Next, in the long run, the embarrassing situation that the 10000-yuan salary cannot recruit the high-quality skilled labor force will be solved only by implementing a more relaxed population policy and gradually optimizing the age structure of the labor force, especially strengthening the skill education of the vocational and technical labor force and optimizing the quality structure of the labor force through the reform of the education system. (2) Implement social insurance reform and reduce social insurance premium rates. The wage of labor force is rigid. It is very difficult to reduce the labor costs of enterprises by reducing the wage. At present, China's pension is enough to ensure timely and full payment. The breakthrough of reducing the labor costs may be to reduce the social insurance premium rates. Therefore, regions can be allowed to flexibly reduce the social insurance premium rates according to the payable period of the accumulated fund balance. The longer the payable period of the accumulated fund balance is, the greater the reduction can be. This is also the specific reflection of implementing the tax reduction and fee reduction policy of the central government. (3) Reverse the situation of investment "fleeing from the real economy and into the virtual economy" in a multi-pronged manner.

On the one hand, the reform of interest rate liberalization should be accelerated to allocate credit resources by the market and eliminate the distortion of investment incentives caused by interest rate regulation. On the other hand, efforts should be made to strengthen the supervision on the trend and scale of financial institutions' funds to prevent excessive funds from circulating in the financial sector or investing in the real estate market illegally, unreasonably and illegally. At the same time, the investments of manufacturing enterprises should be regulated to prevent manufacturing capital from excessively fleeing from the real economy and turning to investment in securities, real estate and other fields. (4) Optimize the combination of labor, capital and technology in various ways. For labor-intensive industries with strong substitutability of production activities, in addition to increasing the guidance of inter-regional industrial transfer, measures should be taken to gradually promote the industrial upgrading process of machinery replacing low skilled workers, increase the application of industrial robots, and improve the human capital level of enterprises by means of vocational education and training, so as to relieve the pressure of rising labor costs by improving the labor productivity of enterprises.

References

- Acemoglu, D. (2010). When Does Labor Scarcity Encourage Innovation? *Journal of Political Economy*, 118 (6), 1037-1078.
- Cai, F., Wang, D., & Qu, Y. (2009). Flying Geese Paradigm of China's Industrial Upgrading. *Economic Research Journal (Jingji Yanjiu)*, 9, 4-11.
- Clark, C. (1957). *The Conditions of Economic Progress*, London: Macmillan Press.
- He, J., & Zhang, X. (2018). Impact of Rising Labor Costs on Enterprise Innovation. *The Journal of Quantitative & Technical Economics (Shuliang Jingji yu Jishu Jingji Yanjiu)*, 8, 57-74.
- Huang, Q., Huang, Y., He, J., & Jiang, F. (2017). China's Industrialization Strategy for the Middle and Upper Income Stage. *Social Sciences in China (Zhongguo Shehui Kexue)*, 12, 94-116.
- Kollmeyer, C. (2009). Explaining Deindustrialization: How Affluence, Productivity Growth, and Globalization Diminish Manufacturing Employment. *American Journal of Sociology*, 114 (6), 1644-1674.
- Liu, H., & Wang, D. (2011). Impact of Rising Labor Costs on China's Comparative Advantage in International Competition. *World Economy Studies (Shijie Jingji Yanjiu)*, 3, 9-13.
- Lv, Z. (2003). Comparative Advantage of China's Industry. *China Industrial*

- Economics (Zhongguo Gongye Jingji)*, 4, 3-8.
- Ma, S. (2015). Has Rising Labor Costs Weakened China's Export Advantage? A Comparative Study Based on Different Trade Modes and Regions. *Finance and Trade Research (Caimao Yanjiu)*, 4, 53-62.
- Qu, Y., Cai, F., & Zhang, X. (2013). Has the Flying Geese Paradigm Appeared? —Analysis of China's Manufacturing Industry from 1998 to 2008. *China Economic Quarterly (Jingjixue Jikan)*, 12, 5-24.
- Romer, P. M. (1986). Increasing Returns and Long-Run Growth. *Journal of Political Economy*, 94 (1), 1002-1037.
- Rowthorn, R., & Ramaswamy, R. (1999). Growth, Trade, and Deindustrialization. IMF Staff Papers, 46 (1), 18-41.
- Wang, Q., Wang, Y., & Du, Q. (2011). Current Situation of China's Deindustrialization. *Contemporary Finance & Economics (Dangdai Caijing)*, 12, 7-15.
- Wei, H., & Guo, Y. (2013). A Comparative Study on the Unit Labor Cost of China's Manufacturing and Its International Comparison. *Statistical Research (Tongji Yanjiu)*, 8, 104-112.
- Wei, X., Dong, Z., & Huang, J. (2013). Does the Labor Union Improve the Share of Labor Income? Theoretical Analysis and Empirical Evidence from China's Private Enterprises. *Economic Research Journal (Jingji Yanjiu)*, 8, 16-28.
- Wen, C., & Ren, G. (2015). Separation and Development of Virtual Economy and Real Economy: Evidence from Chinese Listed Companies in 2006—2013. *China Industrial Economics (Zhongguo Gongye Jingji)*, 12, 117-131.
- Yuan, X., & Tang, C. (2015). Labor Costs, Transaction Costs and Industrial Structure Upgrading. *Journal of Zhejiang University (Humanities and Social Sciences) (Zhejiang Daxue Xuebao)*, 5, 123-133.
- Yuan, Y., & Xie, R. (2014). Adjustment Effect of Industrial Structure of Environmental Regulation: Empirical Test Based on China's Provincial Panel Data. *China Industrial Economics (Zhongguo Gongye Jingji)*, 8, 57-69.