The Influence of Global Value Chain Integration on China's Labor Market

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Abstract: Based on input-output table WIOD and social and economic statistical account data in a table, this paper, by using the input-output model based on openness to trade competitive perspectives to build the employment effect of the added value of index of the unit, the income effect index, carry out the corresponding departments decomposition, calculated the China from 2000 to 2014 in various industries and its corresponding segmentation industry added value coefficient, completely full employment and full income coefficient, show that the added value and employment, income, the relationship. At the same time, based on the WWZ method, the vertical specialization index of various industries and their subsectors in China from 2000 to 2014 was calculated, and the impact of the integration of global value chain on employment and wage income was empirically analyzed.

1. Introduction

Since the 1990s, in the global value chain division and production division of labor cooperation under the background, the international trade of intermediate products increase quickly, as the current of the world's largest developing country, China with the situation rapidly integrated into the global production network, When China undertakes the outsourcing of labor-intensive production process in western developed countries, it will import a large number of technology-intensive products from developed countries and regard them as intermediate inputs (Liu Zhibiao and Wu Fuxiang, 2006; Ping Xinqiao, 2005).[1][2] In the process, China has created jobs for its abundant labor market and raised people's incomes. So how has the dynamic development of China's global value chain since its accession to the WTO affected employment and wages in China? What are the differences in the effects of job creation and income creation in different industries? In the level of global value chain integration deepening, the breadth of the widening situation, to explore the above issues will not only help to better understand the employment and income changes in China in recent years and the employment and income effects of China's participation in global value chains, but also provide useful references for policy makers to expand employment and increase income in the future.

2. Literature Review

Previous studies on the impact of global value chains (GVCS) on China's labor market have mainly focused on labor employment and wage income. In the study of GVCS and labor employment, a large part of scholars believe that if developing countries can be embedded in GVCS, it will increase domestic employment. Starting from the micro level of enterprise, Li Qiang (2014) has made the corresponding analysis to this, and obtained the theoretical presupposition that enterprises embedded in GVCS in the form of "trade" and "industry" have an impact on the employment quantity, wage level, demand for skilled labor force, and employment of female labor force, and made use of China's enterprise data for empirical test.[3] Cheng Yingying and Zhao Suping (2016) found that if the value added of our final product export to foreign countries would decrease, then the demand for relatively high-skilled labor from inside China would also decrease correspondingly. But if the value added from exports of intermediate goods increases, it will significantly increase China's need for a more skilled workforce.[4] Zang Xu-heng and Zhao

Ming-liang (2011) studied the mechanism of vertical specialization on the employment structure of China's labor market, and on the basis of improving the calculation method of vertical specialization, they also conducted an empirical study on the impact of vertical specialization on the employment structure of China's labor market.[5] In the research on the relationship between global value chains and wage income, Lin Ling and Rong Jinxia (2016) explored the impact of countries' participation in global value chains on the wage income gap in their countries based on the WIOD input and output table. Furthermore, it explores the relationship between GVCS participation in intermediate and final products and income disparities in countries at different levels of development.[6] At the same time, Liu Yao (2016) systematically described the value chain participation and status index of 18 industries in 56 countries from 1995 to 2011 based on the data provided by OECD-TiVA, and re-examined the impact of each country's participation in GVCS on the wage gap between skilled and unskilled labor.[7] Liu Meijie and Wang Manli (2018) studied the relationship between the comparative advantage strategy of middle-income countries and the "middle-income trap" by studying the export data of sample countries from 1995 to 2014. The results show that: the global economy presents the trend of specialized production; The upper middle income trap is actually the comparative advantage trap; A country's favorable institutional environment helps it to avoid the "middle-income trap".[8]

Using the model of non-competitive input-output, this paper constructs the coefficient of complete value added, coefficient of full employment and coefficient of complete income. At the same time, based on the WWZ method, the vertical specialization index of various industries and their subsectors in China from 2000 to 2014 was calculated. Based on the perspective of trade openness, the impact of integration degree of global value chain on employment and income gap was empirically analyzed.

3. Data Sources and Indicator Measures

3.1 Research Methods

In order to reflect the value composition of the three major industries more accurately, this paper adopts the non-competitive input-output model. Among them, the non-competitive input-output table provided by WIOD database includes 56 related industries, which are classified into agriculture (A), manufacturing (M) and service (S) in this paper.

According to the input-output model, the total output of each industry can be obtained as follows:

$$X = Z + F = AX + F \tag{1}$$

Where, A is the matrix of intermediate input coefficient.

$$A = Z(X)^{-1} \tag{2}$$

$$X = X'(total\ output\ =\ total\ input) \tag{3}$$

The specific form of dividing total output into three categories can be expressed as:

$$\begin{cases} Z^{AA} + Z^{AM} + Z^{AS} + F^{AC} + F^{AK} + F^{AE} = X^{A} \\ Z^{MA} + Z^{MM} + Z^{MS} + F^{MC} + F^{MK} + F^{ME} = X^{M} \\ Z^{SA} + Z^{SM} + Z^{SS} + F^{SC} + F^{SK} + F^{SE} = X^{S} \end{cases} \tag{4}$$

$$\begin{cases} A^{AA}X^{A} + A^{AM}X^{M} + A^{AS}X^{S} + F^{AC} + F^{AK} + F^{AE} = X^{A} \\ A^{MA}X^{A} + A^{MM}X^{M} + A^{MS}X^{S} + F^{AC} + F^{AK} + F^{AE} = X^{M} \\ A^{SA}X^{A} + A^{SM}X^{M} + A^{SS}X^{S} + F^{AC} + F^{AK} + F^{AE} = X^{S} \end{cases} \tag{5}$$

$X = (I - A)^{-1}F = \tilde{B}F$, Where, $\tilde{B}$ is leontief inverse matrix,

The corresponding matrix expression is:

$$\begin{bmatrix} I-A^{AA} & -A^{AM} & -A^{AS} \\ -A^{MA} & I-A^{MM} & -A^{MS} \\ -A^{SA} & -A^{SM} & I-A^{SS} \end{bmatrix}^{-1} \begin{bmatrix} X^A \\ X^M \\ X^S \end{bmatrix} = \begin{bmatrix} F^{AC}+F^{AK}+F^{AE} \\ F^{MC}+F^{MK}+F^{ME} \\ F^{SC}+F^{SK}+F^{SE} \end{bmatrix} \tag{6}$$

Then the matrix form of the output of each department is:

$$\begin{bmatrix} X^A \\ X^M \\ X^S \end{bmatrix} = \begin{bmatrix} I-A^{AA} & -A^{AM} & -A^{AS} \\ -A^{MA} & I-A^{MM} & -A^{MS} \\ -A^{SA} & -A^{SM} & I-A^{SS} \end{bmatrix}^{-1} \begin{bmatrix} F^{AC}+F^{AK}+F^{AE} \\ F^{MC}+F^{MK}+F^{ME} \\ F^{SC}+F^{SK}+F^{SE} \end{bmatrix} \tag{7}$$

Known, $X=(I-A)^{-1}F=\tilde{B}F$, Where, $\tilde{B}$ is leontief inverse matrix, whose matrix form is:

$$\tilde{B} = \begin{bmatrix} I-A^{AA} & -A^{AM} & -A^{AS} \\ -A^{MA} & I-A^{MM} & -A^{MS} \\ -A^{SA} & -A^{SM} & I-A^{SS} \end{bmatrix}^{-1} = \begin{bmatrix} B^{AA} & B^{AM} & B^{AS} \\ B^{MA} & B^{MM} & B^{MS} \\ B^{SA} & B^{SM} & B^{SS} \end{bmatrix} \tag{8}$$

According to formula (7) and (8), the sub-industries of a country are decomposed into 9 parts according to specific usage. The following is the decomposition of manufacturing output to illustrate the expansion formula:

$$X^M = B^{MA}F^{AC} + B^{MA}F^{AK} + B^{MA}F^{AE} + B^{MM}F^{MC} + B^{MM}F^{MK} + B^{MM}F^{ME} + B^{MS}F^{SC} + B^{MS}F^{SK} + B^{MS}F^{SE} \tag{9}$$

Where, $\{B^{AA},\ B^{AM},\ B^{AS}\}$, $\{B^{MA},\ B^{MM},\ B^{MS}\}$, $\{B^{SA},\ B^{SM},\ B^{SS}\}$ are expressed as the coefficient of complete consumption per unit of output of agriculture, manufacturing and service industry. The coefficient of direct value added, coefficient of direct employment and coefficient of direct income are respectively: $A_V=\left[V_j/X_j\right]$, $A_L=\left[L_j/X_j\right]$, $A_R=\left[R_j/X_j\right]$; Where, $A_V=\left[A_V^A\ \ A_V^M\ \ A_V^S\right]$, $A_L=\left[A_L^A\ \ A_L^M\ \ A_L^S\right]$, $A_R=\left[A_R^A\ \ A_R^M\ \ A_R^S\right]$, the coefficient of full value added, the coefficient of full employment and the coefficient of full income can be expressed as: $B_V=A_V(I-A)^{-1}$, $B_L=A_L(I-A)^{-1}$, $B_R=A_R(I-A)^{-1}$.

The corresponding full value added coefficient, full employment coefficient and full income coefficient of manufacturing industry are respectively: B_V^M、B_L^M、and B_R^M. In addition, the full value added coefficient, full employment coefficient and full income coefficient corresponding to the service industry are respectively: B_V^S、B_L^S and B_R^S. In order to express the employment measure and income amount generated by unit value added, this paper adopts the ratio of the coefficient of full employment and the coefficient of full value added to measure the employment amount driven by a unit of a country's actual economic growth, that is :B_L/B_V, Thus, the driving force of unit value added of manufacturing sector on corresponding employment can be expressed as :$b_L^M=B_L^M/B_V^M$; However, if we use the ratio of the complete income coefficient and the complete value added coefficient to measure the remuneration of employees driven by a unit of real domestic economic growth, that is: B_R/B_V, the pull of the unit value added of the manufacturing sector on the income can be expressed as:$b_R^M=B_R^M/B_V^M$.

This paper quotes the following formula used by Gao Yunsheng (2017) to calculate the vertical specialization level of a country's industry:[9]

$VS=u-A_v(I-A^D)^{-1}=uA^M(I-A^D)^{-1}$, including $u=(1,\ 1,\ \cdots,\ 1)$

Where, A^M is called the direct consumption coefficient matrix of import input,

$A^M=\begin{bmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{n1} & \cdots & a_{nn} \end{bmatrix}$ $\quad X^v=\begin{bmatrix} X_1 \\ \vdots \\ X_n \end{bmatrix}$ is the exit vector

$a_{ij} = M_{ij}/X_{ij}$ represents the amount of intermediate products to be imported from sector *i* for the production of a unit of *j* industry, that is, the direct consumption of *j* sector relative to the import input of sector *i*; *I* is the identity matrix; $(I - A^D)^{-1}$is leontief inverse matrix, reflecting the industry correlation and recycling effect.

Where, A^D is called the domestic consumption coefficient matrix,

$A^D = \begin{bmatrix} b_{11} & \cdots & b_{1n} \\ \vdots & \ddots & \vdots \\ b_{n1} & \cdots & b_{nn} \end{bmatrix}$, $A^D + A^M = A$, is the direct consumption coefficient matrix in the input-output table.

Since the VSS of a country is equal to the ratio of the sum of the VS of each industry to its total exports, the VSS of a country is expressed $VSS = uA^M(I - A^D)^{-1}$ as a sub-industry, and the VSS value of Chinese manufacturing in some years can be calculated by MATLAB software.

3.2 Data Sources

The data in this paper are all from the input-output Tables in the world input-output table database (WIOD) and the Socio Economic Accounts. It provides the national input and output table (NIOT) of 28 EU countries and 15 major countries from 2000 to 2014, covering 56 sectors. According to Autor and Dorn (2012) 's industrial classification criteria, this paper considers that the agricultural sector is a labor-intensive industry, so it is classified as a low-skill intensive industry. In addition, all industries are divided into three categories according to the level of skills: high-skill industries, medium-skill industries and low-skill industries. The corresponding labor forces are high-skilled labor, medium-skilled labor and low-skilled labor. At the same time, based on the classification of inter-industry R&D intensity and the actual development situation of China's manufacturing industry, this paper divides the manufacturing industry into three categories: low, medium and high-tech manufacturing.

Table 1. Industry classification table

Industry	Corresponding subsectors		Classification,
High skill intensive industries	Management and business services, education, health and social services, information technology and finance		J58, J59_J60, J61, J62_J63, K64, K65, K66, L68, M69_M70, M71, M72, M73, M74_M75, N, O84, P85, Q, U
Medium skill intensive industries	manufacturing	Low-tech manufacturing industries	C10-c12, c13-c15, C16, C17, C18, C30, C31_C32, C33
		Technology manufacturing industry	C19, C22, C23, C24, C25
		High-tech manufacturing industry	C20, C21, C26, C27, C28, C29
	Retail and wholesale		G45, G46, G47
Low skill intensive industries	Transport, construction and low-skilled services		D35, E36, e37-e39, F, H49, H50, H51, H52, H53, I, R_S, T
	Agriculture and mining		A01, A02, A03, B

Source: this paper is designed and compiled based on Autor and Dorn (2012) 's industrial classification criteria.

3.3 Calculation Results

This part firstly USES the non-competitive input-occupancy output model to measure the full value added coefficient, full employment coefficient and full income coefficient of various industries in China from 2000 to 2014, and analyzes the relevant changes of comparative competitive advantage of various industries in participating in the division of labor of global value chain. Secondly, on this basis, this paper constructs the indicators of unit value added to promote employment and income. At last, this paper breaks down the employment and income coefficients

of the unit value added of low, medium and high-skilled intensive industries by departments, and analyzes their changing trends.

3.3.1 Complete Value Added Coefficient

The full value added coefficient represents the domestic value created by the final demand for a unit of product, including the direct value and the indirect value expressed through the input-output relationship. The lower the coefficient, the less domestic value created per unit product, indicating that the production of products in this industry is more dependent on the import of intermediate products. Therefore, the higher the level of division of labor in the global value chain, the less international competitiveness of this product will be. The coefficient of complete value added of each ski-intensive industry in China from 2000 to 2014 was calculated, In 2014, except for computer programming, consulting and related activities in high-skill intensive industries, and manufacturing of computer, electronics and optical products in high-tech manufacturing industries in medium-skill intensive industries, the full value added coefficient of other industries remained above 0.8 or even above 0.9. In particular, the coefficient of full added value in high-skill intensive industries was above 0.9, and that in low-skill intensive manufacturing remained above 0.8, half of which exceeded 0.9. On the whole, the mean value of full value added coefficient of low, medium and high skill intensive industries is 0.899, 0.836, 0.897. This shows that China's low-skill intensive industries play the biggest role in driving the domestic economy and have strong international competitiveness, followed by high-skill intensive industries, while medium-skill intensive industries (mainly manufacturing) are the weakest.

3.3.2 Coefficient of Full Employment

The full employment coefficient refers to the internal employment generated by the final demand for a unit product, including the employment directly generated in this sector and the corresponding employment generated in all other relevant sectors. The smaller the coefficient, the smaller the domestic employment. It is estimated that the top 11 industries in employment-creating capacity are mainly education (P85) in high-skill intensive industries, human health and social work activity (Q), unskilled skill-intensive industry in the manufacturing industry of food, beverages and tobacco products production (C10 - C12), in addition to furniture, wood, wood, cork products production; Straw material manufacturing (C16), textiles, clothing and leather products manufacturing (C10 - C12) in medium-skill intensive industries and low-skill manufacturing industries, low skill-intensive industries (I) the accommodation and catering activities, providing transportation, warehousing and support activities (H52), other service activities (R_S) collection production, crops and animals, hunting equivalent related service sector activity (A01), forestry and logging (how A02), fishing and aquaculture (A03) in low-skill intensive industries. Many of the above industries are medium - and low-skilled intensive industries, which is mainly due to the nature of the above industries and China's resource endowment.

3.3.3 Complete Income Coefficient

The full income coefficient refers to the domestic income generated by the final demand for a unit product, including the income directly generated by that sector and the income generated by all other sectors. The smaller the coefficient, the smaller the domestic pull on the income. The income figures creation ability strong top ten industries mainly concentrated in the labor-intensive industries' with high skill in public management, and defense, mandatory social security (O84), education (P85), human health and social work activity (Q), insurance, reinsurance, and pension funds, in addition to the mandatory social insurance (K65)； and low skill-intensive industrial production of crops and animals, Hunting and related service activities (A01), forestry and logging (A02), fisheries and aquaculture (A03), accommodation and catering activities (I), postal and Courier activities (H53), other service activities (R_S). Compared with the employment trend of the labor market, the income creation of various industries also presents the polarization phenomenon of "high at both ends and low in the middle". From a chronological perspective, the revenue-generating capacity of the final output of units in various industries is gradually

diminishing, For example, the full income coefficient between 2000 and 2014 fell by an average of 8.44% or more. In addition to the relatively high skill intensive industries, such as insurance, finance, law, accounting and management consulting activities, computer and information services, communications and telecommunications, management and expenditure services; Manufacturing of basic pharmaceutical preparations, computer, electronic and optical products in high-tech manufacturing in medium-skill intensive industries; The full income coefficient of air transport, accommodation and catering services and other services in the medium and skill-intensive industries generally increased year by year during the study period.

3.3.4 Employment Effect and Income Effect Of Unit Value Added

The advantage of trying to calculate the employment effect and income effect index of unit added value lies in that it can accurately reflect the employment amount and income generated by the increase of the real output of domestic economy by one unit, that is, it can reflect the relatively real ratio of labor input and output of various industries in China. By calculating the consumption of unit value added, corresponding labor and income of various industries in China, this paper will be expressed as the employment effect and income effect of added value. Further findings: first, the industry full employment coefficient of 2008 years ago (that is, the job-creation effect of traditional units of output) is less than the added value of unit corresponding job creation effect, the employment creation effect of added value is decreasing year by year. it was not until 2008 that began to change, The employment creation effect of unit value added is lower than that of traditional unit output year by year, and the difference value increases year by year. Secondly, the income creation effect of unit added value is significantly higher than the coefficient of industry full employment. It is believed that when the number of labor consumed per unit of value added increases, on the one hand, it means that the greater the contribution to the employment of domestic labor force, the higher the wage income will be. On the other hand, the amount of labor consumed per unit of value added represents the efficiency of labor production to some extent. Finally, we compare different types of industries with different technologies. The higher the technical level, the smaller the effect of unit value added on employment, but the greater the effect on income.

3.3.5 VSS Value of Vertical Specialization Level

Since China joined the WTO in 2001, China has stepped into the global value chain at a faster pace. It can be seen from the growth trend of VSS index of vertical specialization in the whole industry that China's whole industry is rapidly integrating into the global economic development. The outbreak of the financial crisis in 2008 caused the VSS value of vertical specialization in various industries in China to decline significantly, which affected the integration degree of China's global value chain. According to the calculation results, the variation trend of vertical specialization degree of each subsector of high-skill intensive industry is consistent with that of the whole industry, showing a declining development situation year by year. In particular, after the financial crisis in 2008, all subsectors showed a significant decline in 2009. Then it recovered in 2010 and showed a declining trend year by year. The degree of vertical specialization of various subsectors in medium-skilled intensive industries is consistent with the overall industry trend, which is shown as "M-type" development trend. This shows that China's participation in vertical specialization has a relatively obvious differentiation, that is to say, the corresponding vertical specialization level of labor-intensive industries is lower than that of capital-technology-intensive industries mentioned above. The vertical specialization degree trend of each subdivision of low-skill intensive industry is consistent with that of the whole industry, showing a "M-type" development trend.

4. Empirical Analysis and Data Description

4.1 Model Setting and Variable Description

In order to analyze and discuss the relationship between global value chain integration, labor employment and income gap in different countries from the perspective of trade openness, the econometric regression model established in this paper is as follows:

$$ln\,(EMP_{it}) = \beta_0 + \beta_1 ln\,(VSS_{it}) + \beta_2 ln\,(EXP_{it}) + \beta_3 ln\,(IMP_{it}) + \beta_4 ln\left({}^{K}/_{X}\right)_{it} + \beta_5 ln\,(X_{it}) + year_i + u_i + \varepsilon_{it} \quad (10)$$

$$ln\,(Lab_{it}) = \alpha_0 + \alpha_1 ln\,(VSS_{it}) + \alpha_2 ln\,(EXP_{it}) + \alpha_3 ln\,(IMP_{it}) + \alpha_4 ln\left({}^{K}/_{X}\right)_{it} + \alpha_5 ln\,(X_{it}) + year_i + u_i + \varepsilon_{it} \quad (11)$$

In the above formula, *EXP* industry export dependency is measured by the proportion of exports/total output of a certain industry. *IMP* industry import dependency is measured by the proportion of imports/total output of a particular industry. *K/X* The ratio of capital output represents the relationship between the total stock of capital in the inter-industry productive sector and the output within the industry. Vertical specialization level (VSS_{it}) is an important variable in the research of this thesis, which come from the WWZ research methods mentioned above, that is, a country's exports will be decomposed into the domestic and foreign, respectively, for production of value-added approach to industries is used to calculate the internal value of VSS, VSS value 0 to 1, The closer it is to 0, the less intermediate input products from abroad will be in the internal exports of the industry. ε_{it} is varies with individuals and with time. Where $year_i$ and u_i are control variables, control time effect and industry fixed effect. X_{it} is the production of the industry, reflecting the overall situation of the industry development.

Since the sample is cross-industry and multi-year comprehensive data, it is a problem to be solved whether to include fixed effect in the regression. In this paper, the time span is relatively large, so time fixed effect should be added. However, most of the explanatory variables reflect the characteristics of the industry and compare the results of whether fixed effect is added or not. Panel estimation model includes fixed effect model and random effects model, after Hausman check for using fixed effect model, The regression using GMM estimation method solves the possible autocorrelation problem due to wages and employment, Table 2 below shows the regression results of fixed effect (FE), mixed effect (OLS) and GMM. The constant term (_cons) e is the average of all industry effects u_i , and "rho=0.94" indicates that the variance of the complex disturbance term $(u_i + \varepsilon_{it})$ is from the change of industry effects u_i .

4.2 Empirical Results and Analysis

Table 2. Results of GVC integration and labor employment and income regression

lnemp	FE	OLS	GMM	lnlab	FE	OLS	GMM
LNVSS	0.723*** (0.147)	0.723*** (0.152)	0.723*** (0.062)	**LNVSS**	0.711*** (0.145)	0.711*** (0.151)	0.711*** (0.052)
lnexp	0.034 (0.020)*	0.034 (0.020)*	0.034 (0.009)***	**lnexp**	0.016 (0.018)	0.016 (0.019)	0.016 (0.007)**
lnimp	0.066 (0.033)*	0.066 (0.034)*	0.066 (0.016)***	**lnimp**	0.084 (0.051)	0.084 (0.053)	0.084 (0.019)***

LNKX	0.049 (0.110)	0.049 (0.114)	0.049 (0.051)	**LNKX**	0.115 (0.101)	0.115 (0.105)	0.115*** (0.039)
LNX	0.699*** (0.108)	0.699*** (0.112)	0.699*** (0.048)	**LNX**	0.831*** (0.113)	0.831*** (0.117)	0.831*** (0.432)
_cons	0.845 (1.353)	1.378 (1.602)	1.378** (0.667)	**_cons**	0.959 (1.331)	1.894 (1.600)	1.894***(0.576)
Industry fixed effect		YES	YES	**Industry fixed effect**		YES	YES
Time fixation effect	YES	YES	YES	**Time fixation effect**	YES	YES	YES
N	647	647	647	**N**	647	647	647

Note: cluster robust standard error is shown in brackets. ***, ** and * represent significance levels of 1%, 5% and 10%, respectively.

It is found from table 2 that GVCS integration and total output have the greatest impact on labor employment and wage income. The coefficients of vertical specialization variables $ln\,(VSS_{it})$ for fixed effect (FE), mixed effect (OLS) and GMM regression were all significantly negative. This shows that GVCS integration has a significant negative impact on China's labor employment and wage income, and the deeper the integration, the greater the impact.There are two mechanisms of action: on the one hand, the integration of global value chains (GVCS) will enhance the technological level of enterprises due to "learning through hard work", resulting in the "labor saving effect" of technological progress; On the other hand, with China's gradual entry into the global value chain, China's industrial structure has shifted to capital-intensive industries, and the substitution of capital for labor has been further strengthened, leading to a decline in labor input intensity in many sectors. The phenomenon that capital replaces labor force is quite common, which will further cause the substitution effect of capital on labor. The coefficients of the explanatory variables $ln\,(X_{it})$ were all significantly positive. This shows that the total output of China's labor force employment and wage income has the opposite positive impact. After entering WTO, China introduced a large amount of capital and advanced technology through FDI from developed countries, and through outsourcing, China's labor force has been fully employed. The development of domestic labor-intensive industries has also promoted the increase of domestic employment and income.Export dependency has a positive effect on employment in various industries, while import dependency has a negative effect on employment in various industries, which is significantly higher than 10%. The correlation regression coefficient of horizontal variables $ln\,(K/X)_{it}$ related to capital output on employment is positive, but has a negative impact on income. China's capital investment is generally the expansion of the scale of production, thus promoting the demand for the labor market, the corresponding increase in employment. However, the negative effect on income may be explained by the fact that the increase in capital input replaces less skilled labor, such as the input of automation equipment, with a corresponding reduction in manual labor, while the abundant supply of low-skilled labor forces in China forces wages to fall. The regression coefficients of the variables of industry size $ln\,(X_{it})$ are all positive and significant at the 1% level. It shows that the expansion of the industry will increase the demand of the labor market and increase the level of employment and income.

5. Conclusion and Recommendation

In this paper, the world-renowned WIOD database is used to measure the full added value, the full employment coefficient and the complete income coefficient of China, and on this basis, the

indicators of employment effect and income effect of unit added value are constructed to measure the employment amount and income level generated by unit added value. Based on the above conclusions, this paper puts forward the following policy Suggestions: (1) Give full play to the "surplus" of comparative advantages and continue to play the driving role of low-skill intensive industries in China's labor force employment. (2) Increase the opening up of high-skill intensive industries, especially producer services, and promote the integrated development with other industries. (3) Pay attention to human capital, optimize labor skills, and provide talent reserve for China's industrial upgrading and industrial structural adjustment. (4) China should constantly improve its business environment by virtue of "One Belt and One Road" and the internationalization process of free trade zones. Actively layout the global industrial chain, supply chain and value chain, so as to speed up the transformation and upgrading of Chinese industries to the middle and high end of the global value chain, thus speeding up the overall pace of China's economic upgrading.

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