

Technological Progress and Import Trade Income Effect

Xin Gao, Yuyan Zhu

Anhui University of Finance and Economics, Bengbu, China

Abstract

In the context of "double cycle", "common wealth" and "digital economy", the income effect of import trade and the driving effect of technological progress are more important in the same frequency resonance. A panel of 30 provinces is selected to empirically analyze the impact of import trade, technological progress and their interaction on regional income disparity. It is found that: in general, import trade alleviates the regional income gap, technological progress widens the regional income gap and technological progress weakens the income effect of import trade; by region, technological progress reduces the income gap in regions with high coastal openness and widens the income gap in regions with low inland openness and the effect of technological progress on the income gap in economically and technologically more developed regions is not significant, but it has a significant widening effect on the income gap in economically and technologically less developed regions. But the income gap in the less technologically developed regions has a significant widening effect. Finally, based on the findings, China should adopt differentiated strategies according to local conditions to achieve a win-win situation of high-quality import expansion and common prosperity for all people.

Keywords

Import Trade; Technological Progress; Regional Income Gap.

1. Introduction

The overlapping of multiple strategies such as "double cycle", "high level of openness", "common wealth" and "digital economy" It means that the construction of China's high-quality development pattern has entered a critical period. The successive international import international expositions and a series of trade liberalization policies show that the real significance of high-quality import expansion has been highlighted. The regional income gap is the main manifestation of the overall income gap in China, which is one of the obstacles to the realization of balanced regional development and common prosperity in China. In addition, on September 11, 2020, General Secretary Jinping Xi pointed out that "today the world is experiencing a major change unprecedented in a century, the domestic and foreign environment facing China's development has undergone profound and complex changes, and the development of China's '14th Five-Year' period and a longer period has put forward a more urgent demand for accelerating scientific and technological innovation requirements", implying that technological progress is the main driving force for China's economy to achieve high-quality development. Therefore, how to influence the income effect of import trade through technological progress is of great practical significance to achieve the goals of "high-quality development" and "common prosperity".

The traditional theory suggests that import trade affects the domestic income gap through outsourcing productivity effect, relative price effect and labor supply effect (Grossman& Rossi-Hansberg, 2008) [1]. On December 24, 2021, the resolution of the revised Law of the People's Republic of China on Scientific and Technological Progress was passed, which means that technological progress is important for achieving high quality development. This means that

technological progress is important for achieving high-quality development, and it is an important tool for exploring "high-quality development" and "common prosperity". In the context of China's "common prosperity" policy, what is the effect of import trade on regional income disparity? How does technological progress affect the income effect of import trade?

Based on this, this paper takes China's inter-provincial level regional data from 2008-2019 as the research object, and takes technological progress as the research perspective to further empirically analyze the mechanism of the effect of technological progress on the income effect of import trade. The marginal contributions of this paper are: first, unlike previous articles, this paper focuses on the theoretical significance of import trade for high-quality import expansion in China; second, this paper focuses on the impact of the interaction effect of import trade and technological progress on the income gap; third, most existing studies analyze the income gap from the national, industry and enterprise levels, while this paper analyzes the regional income gap from the provincial level.

2. Review of Literature and Theoretical Mechanisms

Studies based on "the mechanism of the effect of technological progress on the income effect of import trade" can be divided into two categories: one is the study of the income effect of import trade; the other is the mechanism of the effect of technological progress.

2.1. Import Trade and Income Gap

The income effect of import trade refers to the impact of import trade on the income gap. Combing the relevant literature, we can find that the income gap can be roughly divided into the income gap between countries and the domestic income gap, and this paper focuses on the relationship between import trade and the income gap of domestic regions. Existing studies show that a decline in final goods tariffs reduces the labor income gap of firms through the channels of market transfer share among heterogeneous firms and factor reallocation, and this basic finding is not affected by the results of different wage inequality indicators measures (Helpman, 2013)[2]. Import trade affects the income gap mainly through the commodity price mechanism (Melitz, 2003)[3]. With the depth of research some scholars have studied from the perspective of income sources, Faggio(2010)[4] found through their study that import trade significantly contributes to manufacturing employment in China. China mainly imports capital and technology-intensive products, and these imports will impact domestic production, which in turn leads to the interests of domestic factor owners in the industry and the risk of unemployment in the short term, but in the long term, with the adjustment of the industry scale, the unemployed workers will shift to the export expansion industry to achieve re-employment. Therefore, the import trade will reduce the relative income of capital and technology owners through the price and employment mechanisms, thus reducing the regional income gap. Based on this, we propose the following hypothesis.

H1: Import trade will reduce the regional income gap.

2.2. Technological Progress and Income Disparity

With the importance of technological progress coming to the fore, many scholars have studied technological progress as an entry perspective. Import trade affects technological progress through direct and indirect effects (Allen, 2008; Acemoglu, 2010)[5-6], while technological progress affects regional income disparities through "employment effect," "skill premium effect," and "screening effect. skill premium effect" and "screening effect" on regional income disparity. Acemoglu(2002)[7] based on the study of the U.S. labor market found that skill-biased technological advances persistently widen income inequality, while the presence of economies of scale causes persistent skill premiums and thus increases regional inequality. In addition, because of skill differences among workers, workers are somewhat "region-specific,"

and the "screening effect" of technological progress changes the regional distribution of workers with different skills, thereby increasing regional inequality (Gittleman & Pierce, 2011; Lee & Pose, 2012)[8-9]. Based on the above theoretical mechanisms, the following hypothesis is proposed.

H2: Technological progress widens the regional income gap

2.3. Mechanism of the Effect of Technological Progress on the Income Effect of Import Trade

There are few existing studies that place the three in a unified model and most of them include technological progress as a mediating variable, which is biased. On the one hand, the "dry school" and "competition effect" brought by import trade liberalization will push a region's enterprises to learn advanced technology and force them to innovate to capture market share (Glaser et al., 2010)[10]. On the other hand, the technology level of a region also determines the structure of imported goods, and the structure of import trade affects the structure of labor skill demand and employment structure, which in turn has an impact on regional income disparity. Based on the above analysis, the following hypothesis is proposed.

H3: Technological progress has a moderating effect on the income effect of import trade.

3. Models, Variables and Data

3.1. Model Settings

$$\begin{aligned} Tar_{it} = & \alpha_0 + \beta_0 \ln Im port_{it} + \beta_1 \ln Inno_{it} + \beta_2 \ln Im port_{it} _ \ln Inno_{it} \\ & + \gamma Controls_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

Where Tar_{it} refers to the regional income gap in province i in year t , $\ln Im port_{it}$ refers to the openness of import trade in province i in year t , $\ln Inno_{it}$ refers to the level of technological progress in province i in year t , $\ln Im port_{it} _ \ln Inno_{it}$ refers to the interaction term between import trade openness and the level of technological progress, which is used to illustrate the mechanism of the "technological progress effect" of import trade on the income gap, γ is the control variable coefficient, $Controls$ is the control variable of interest, ε_{it} is a random perturbation term.

3.2. Variable Descriptions and Data Sources

3.2.1. Core Variables

Explained variable: regional income gap(Tar)

The current indicators for measuring regional income disparity mainly include Gini coefficient, Thayer index, standard deviation, etc., but the study found that Thayer index can not only measure the total regional economic disparity, but also decompose into regional and intra-regional disparities. Therefore, this paper draws on the study of Wan et al(2007) [11]adopts the Thiel index to measure regional income disparity, which is defined as follows.

PO_{it} refers to the total population of province i in year t , PO_{it}^1 refers to the rural population of province i in year t , PO_{it}^2 refers to the urban population of province i in year t , Y_{it}^1 refers to the rural income of province i in year t , Y_{it}^2 refers to the urban income of province i in year t , Y_{it} refers to the total revenue of province i in year t .

Core explanatory variables

Import trade volume(lnImport): This paper measures the development level of import trade in a region by taking the logarithm of import trade volume. According to the annual average

exchange rate of the year published by the People's Bank of China, the import trade volume of the year is expressed in RMB local currency.

3.2.2. Adjustment Variables

Technological progress(InInno): At present, there are many ways to measure the level of technological progress in academia, mostly by total factor productivity and R&D input. Considering the importance of the country to technological progress, this paper uses regional financial expenditure on science and technology as an indicator to measure the level of technological progress.

3.2.3. Control Variables

Drawing on relevant studies at home and abroad, this paper introduces the following control variables in the model that have important effects on income disparity: urbanization level, industrial structure level, foreign investment amount, regional GDP per capital, and unemployment rate.

Level of urbanization(Urban). This paper measures the level of urbanization by the share of urban population in the total population of a region. The increase of urbanization level will promote the cross-regional mobility of labor factors in different regions, which in turn will affect the regional income gap. Level of industrial structure(Ind). This paper measures the level of industrial structure of a region by the index of industrial structure advanced, i.e., the ratio of the value added of tertiary industry to the value added of secondary industry. The process of industrial restructuring is always accompanied by changes in employment structure, which in turn will have an impact on income inequality. Amount of foreign investment(lnFdi). In this paper, we express the amount of actual foreign investment utilized in the region. There are two views on the role of FDI in influencing regional income gap: one view is that the inflow of FDI promotes China's economic development and the rise of technology level, thus widening the wage gap between skilled and unskilled workers and further widening the regional income gap; the other view is that labor advantage is an important factor in attracting the inflow of FDI, and foreign enterprises raise the wage level of local labor, thus narrowing the regional income gap. Regional gross domestic product per capital(lnPgdp). Regional GDP per capital reflects the level of economic development of a region and plays a very important role in income disparity. Unemployment rate(Unemployment). Unemployment rate is an important factor affecting the income gap. The unemployed have fewer sources of income, and the higher the unemployment rate, the larger the income gap between the unemployed and non-unemployed groups.

3.2.4. Data Source

The data of the explanatory variables in this paper are calculated through the original data from the CEE database and the China Statistical Yearbook of previous years, and the rest of the data are calculated through the China Statistical Yearbook, the National Research Network and the EPS database.

3.2.5. Descriptive Statistics Results

As can be seen from Table 1, the level of industrial structure development varies widely among regions, which may be related to the level of regional economic development, in addition, foreign direct investment varies widely among regions, indicating that the amount of foreign direct investment absorbed in each region is not balanced.

Table 1. Descriptive statistics results of the main variables

Variables	N	Mean	Sd	Max	Min
Tar	360	0.106	0.0506	0.256	0.0195
lnImport	360	7.009	1.667	10.27	2.358
lnInno	360	4.014	1.094	7.064	1.324
lnImport_lnInno_	360	29.64	14.02	72.35	3.746
Urban	360	0.557	0.129	0.942	0.307
Ind	360	1.222	0.685	5.234	0.527
lnFdi	360	8.271	1.405	11.81	5.069
lnPGdp	360	10.65	0.528	12.01	9.085
Unemployment	360	3.361	0.656	4.57	1.2

4. Empirical Analysis

4.1. Baseline Return

Table 2. Baseline regression analysis

Variables	(1)	(2)	(3)
lnImport	-0.011***	-0.010***	-0.010***
	(-4.14)	(-4.15)	(-4.07)
lnInno		0.011***	0.009***
		(3.29)	(2.60)
lnImport_lnInno			0.002***
			(2.71)
Urban	-0.204***	-0.208***	-0.175***
	(-4.90)	(-5.07)	(-4.14)
Ind	0.019***	0.021***	0.019***
	(3.77)	(4.18)	(3.82)
lnFdi	-0.008***	-0.009***	-0.008***
	(-2.78)	(-3.23)	(-2.90)
lnPGdp	-0.038***	-0.052***	-0.046***
	(-5.13)	(-6.16)	(-5.38)
Unemployment	0.005**	0.006**	0.005*
	(1.99)	(2.36)	(1.86)
Constant	0.715***	0.823***	0.751***
	(8.98)	(9.69)	(8.52)
i.d	Yes	Yes	Yes
i.year	Yes	Yes	Yes
Observations	360	360	360
F	77.39	75.98	73.84
R ²	0.808	0.814	0.819

This paper uses a two-way fixed effects model to conduct a benchmark regression analysis on the sample data, and the results are shown in Table 2. Column(1) of the table introduces only the import trade volume to measure the degree of import trade, and the results show that the import trade volume is significantly negative at the 1% level, which indicates a significant negative relationship between import trade and income inequality. Column(2) of the table adds fiscal science and technology expenditure measuring the level of technological progress, and

the results show that technological progress is a positive factor in widening the regional income gap. This is because, on the one hand, technological progress has a "skill-biased technological progress" effect, which causes the wage gap between regions to widen. On the other hand, technological progress has a "screening effect", which tends to make laborers with different skills work in specific or fixed places, thus increasing regional income inequality. Column(3) of the table analyzes the moderating effect of technological progress on import trade and income disparity. The results show that the coefficient of the interaction term between import trade and technological progress is significantly positive at the 1% level and is opposite to the sign of the main effect, so technological progress weakens the effect of import trade on reducing income inequality.

The control variables of urbanization level, industrial structure level, foreign investment amount, regional GDP per capital, and unemployment rate are added in each column of the table. The results show that the level of urbanization is significantly negative at the 1% level in all columns, which indicates that an increase in the level of urbanization leads to a reduction in the regional income gap. This is because the increase in urbanization level brings about the agglomeration of industries and optimizes the regional industrial layout and the circulation of goods, which can lead to the reduction of regional income disparity. The coefficients of industrial structure level in all columns are significantly positive at the 1% level. This indicates that the upgrading of industrial structure can cause changes in the number of employed people in secondary and tertiary industries and fluctuations in the employment rate of high- and low-skilled laborers, which can adversely affect the regional income gap. The sixth and seventh rows of the table represent the amount of foreign investment and regional per capital GDP, respectively. It can be observed that the coefficients of both are significantly negative in each column of the table, indicating that there is a negative relationship between the amount of foreign investment and regional GDP per capital and income inequality, which is significant at the 1% level. The increase in the level of foreign direct investment will bring more job opportunities and raise the wage level in each region; while the increase in the per capital GDP indicates the rise in the regional economic development level, and the increase in the overall regional economic level will bring more labor inflow, which in turn will promote the increase in the regional economic level and thus reduce the income gap. The eighth row of the table represents the level of unemployment rate, and the results show that the coefficient of unemployment rate is significantly positive in all columns, which means that unemployment rate is a positive factor leading to the widening of the income gap.

4.2. Robustness Tests

This paper ensures the reliability and accuracy of the empirical results by both replacing the explanatory variables and lagging the explanatory variables by one period. The results of the robustness tests are shown in Table 3. column 1 of the table replaces the original import trade dependence as the explanatory variable, column 2 of the table uses the regional R&D expenditure as a share of industrial value added(Tec) as a measure of technological progress, and column 3 of the table replaces both proxy variables. Compared to the baseline regression results in Table 3, the sign of the estimated coefficients of all variables remains the same and the estimated coefficient values do not change much. The significance of the coefficients of all variables remains unchanged, except for a decrease in the significance of the estimated coefficient of unemployment rate. The lagged one-period values of the explanatory variables are introduced in column 4 of the table, and the signs of the coefficients of the explanatory variables remain the same compared to the baseline regression results in Table 2, and there is only a small change in the estimated coefficient values of each variable. Overall, the robustness of the model is good.

Table 3. Robustness test regression results

	(1)	(2)	(3)	(4)
Variables	Intrd	Tec	Intrd, Tec	L.lnImport/L.lnInno
lnImport		-0.012***		
		(-4.68)		
Intrd	-0.059***		-0.059***	
	(-3.86)		(-3.82)	
lnInno	0.010***			
	(2.84)			
Tec		0.418***	0.261**	
		(3.49)	(2.16)	
L.lnImport				-0.008***
				(-2.93)
L.lnInno				0.009**
				(2.22)
lnImport_lnInno				0.002**
				(2.42)
Urban	-0.139***	-0.199***	-0.132***	-0.191***
	(-3.06)	(-4.86)	(-2.90)	(-4.08)
Ind	0.013**	0.016***	0.010*	0.020***
	(2.39)	(3.25)	(1.81)	(3.65)
lnFdi	-0.011***	-0.008***	-0.010***	-0.008**
	(-3.81)	(-2.68)	(-3.32)	(-2.40)
lnPGdp	-0.060***	-0.041***	-0.051***	-0.048***
	(-7.27)	(-5.57)	(-6.92)	(-5.10)
Unemployment	0.005*	0.005*	0.004	0.005*
	(1.96)	(1.81)	(1.54)	(1.70)
Constant	0.846***	0.744***	0.770***	0.759***
	(9.89)	(9.46)	(9.60)	(7.85)
i.d	Yes	Yes	Yes	Yes
i.year	Yes	Yes	Yes	Yes
Observations	360	360	360	330
F	75.32	76.38	74.33	58.47
R ²	0.813	0.815	0.811	0.789

4.3. Heterogeneity Test

To examine whether the impact of import trade and technological progress on regional income gap is regionally heterogeneous, 30 provinces and cities are divided into economically developed and economically underdeveloped regions, high technology and low technology regions according to the economic development level and technology level factors. The empirical results are shown in Table 4. The impact of technological progress on the regional income gap varies due to different degrees of openness and factor endowments. According to the empirical results, technological progress helps to alleviate the income gap in the more economically and technologically developed regions of China, while it helps to widen the income gap in the economically and technologically weaker regions of China. This is because specifically, technological progress helps to narrow the inter-regional income gap in the more economically developed coastal regions of China; while it helps to widen the inter-regional income gap in the economically underdeveloped inland regions of China. This is because the skill premium level of high- and low-skilled labor has been basically stable in the more

technologically developed regions of the economy due to the existence of their own high technology level, in which case the impact of technological progress on the skill premium level will be very weak; while the skill premium level of high- and low-skilled labor has an unstable trend in the weaker regions of the economy due to the existence of their own defects in technology level, due to the fact that once The skill premium level will also change once the technology level increases.

Table 4. Results of the first heterogeneity test

Variables	Region by degree of economic development		Region by technical level	
	Economic Development	Underdeveloped economy	High Technology	Low-tech
lnImport	-0.013***	-0.012***	-0.005	-0.011***
	-0.003	-0.003	-0.004	-0.003
lnInno	-0.004	0.012**	-0.002	0.010**
	-0.003	-0.006	-0.004	-0.005
lnImport_lnInno	0.001	0.003*	0.001	0.003**
	-0.001	-0.001	-0.001	-0.001
Urban	-0.120***	-0.333***	-0.102***	-0.263***
	-0.026	-0.089	-0.033	-0.075
Ind	0.020***	0.001	0.025***	0.001
	-0.004	-0.008	-0.004	-0.007
lnFdi	0	-0.011**	-0.002	-0.012***
	-0.002	-0.005	-0.003	-0.004
lnPGdp	0.004	-0.060***	0.020**	-0.051***
	-0.007	-0.013	-0.009	-0.011
Unemployment	-0.003	0.011**	0.001	0.010***
	-0.002	-0.004	-0.002	-0.004
Constant	0.250***	0.981***	-0.004	0.860***
	-0.08	-0.137	-0.106	-0.112
i.d	Yes	Yes	Yes	Yes
i.year	Yes	Yes	Yes	Yes
Observations	132	228	93	267
F	104.701	35.523	45.164	48.06
R ²	0.955	0.787	0.936	0.806

To further consider whether there is heterogeneity in the effect of import trade and geographical location on regional income disparity, 30 provinces and cities are divided into regions with higher openness and regions with lower openness, coastal regions and inland regions according to trade dependence and geographical location. The empirical results are shown in Table 5. The results show that the estimated coefficient sign is negative for the more open regions and coastal regions, while the estimated coefficient sign is positive for the less open regions and inland regions, and technological progress has a weakening effect on the income distribution effect of import trade. This is because the coastal areas are well developed in import trade due to their geographical location, while the inland areas are less open and relatively backward in terms of trade. Due to the developed transportation system and high degree of economic openness in coastal areas, the technological progress in one region will have a linkage to the technological progress in other regions, and thus the technological progress raises the overall wage level of workers; while the regions with low dependence on

inland foreign trade have less economic linkage between regions due to the geographical location factor and the variability of economic development level, and the impact of technological progress in one region on other regions There is a lag, which leads to technological progress having a widening effect on the income gap between regions.

Table 5. Second test of heterogeneity

Variables	Region by geographic location		Area by openness	
	Coastal	Inland	High openness	Low openness
lnImport	-0.024***	-0.009***	-0.005	-0.013***
	-0.005	-0.003	-0.005	-0.003
lnInno	-0.008*	0.016***	-0.014***	0.016***
	-0.005	-0.005	-0.004	-0.004
lnImport_lnInno	0.006***	0.004***	0.003***	0.004***
	-0.001	-0.001	-0.001	-0.001
Urban	-0.030	-0.412***	0.027	-0.323***
	-0.042	-0.074	-0.029	-0.089
Ind	0.031***	0.005	0.036***	0.004
	-0.006	-0.008	-0.003	-0.008
lnFdi	-0.026***	-0.009**	-0.002	-0.009**
	-0.004	-0.004	-0.004	-0.004
lnPGdp	-0.030***	-0.055***	-0.010	-0.050***
	-0.010	-0.012	-0.006	-0.012
Unemployment	0.006*	0.005	-0.006**	0.008**
	-0.003	-0.004	-0.003	-0.003
Constant	0.823***	0.927***	0.256***	0.838***
	-0.117	-0.117	-0.090	-0.116
i.d	Yes	Yes	Yes	Yes
i.year	Yes	Yes	Yes	Yes
Observations	132	228	107	253
F	49.499	49.503	57.455	55.432
R ²	0.902	0.832	0.935	0.833

5. Research Conclusion and Policy Recommendations

5.1. Research Results

Based on Chinese provincial panel data from 2008-2019, this paper analyzes income inequality and its influencing factors at the provincial and regional levels, focusing on the role of import trade and technological progress on income inequality. Through the study, the following conclusions are obtained:(1) import trade will reduce the regional income gap; technological progress will increase the degree of income inequality, in addition, technological progress will weaken the effect of import trade on the reduction of regional income gap; (2) the level of urbanization, the level of foreign investment, and the increase of regional GDP per capital will reduce the regional income gap, while the increase of industrial structure level and the expansion of unemployment rate will increase the (3) In terms of the degree of economic development and regional heterogeneity of technology levels, technological progress is conducive to widening the income gap in economically underdeveloped regions and low-technology regions, but the effect on the income gap in economically developed high-tech

regions is not significant; in terms of geographical location and openness levels, technological progress is conducive to narrowing the income gap in coastal regions and other regions with higher openness, but it will aggravate the income gap in inland regions with higher openness. However, it will aggravate the income gap in less open regions such as inland.

5.2. Policy Recommendations

Based on the above research findings, this paper puts forward some targeted policy recommendations as follows.

First, import trade can significantly reduce the regional income gap. Therefore, on the one hand, we should insist on import trade liberalization and improve the regional opening pattern. Make use of international import fairs, the "Belt and Road" initiative, the RCEP agreement and the construction of free trade zones to lower import tariffs, reduce non-tariff barriers, strive to expand imports, and drive domestic competition with imports, thus using the price mechanism to reduce the relative wages of capital and technology owners and narrow the regional income gap; on the other hand, use the expansion of imports to achieve the reallocation of production factors, promote the adjustment of employment structure, and narrow the wage gap between high-skilled labor and low-skilled labor.

Second, generally speaking, the import trade is more developed in economically developed or coastal areas, and the "technology spillover" and "dry school" effects brought by import trade will encourage technological progress to occur in these areas first, but the government can regulate the direction of technological progress by expanding science and technology expenditure. However, the government can regulate the direction of technological progress by expanding science and technology expenditure. Therefore, China should vigorously implement the innovation-driven development strategy, and the policy support for different regions should adopt a differentiated strategy. The coastal areas are more developed in terms of technology level, and they should further take advantage of their own advantages to undertake foreign industrial transfer in the future, and they should further increase the technical support for inland areas, give more preferences to enterprises in inland areas, establish industrial clusters as well as advantageous industrial parks to attract more foreign investment to enter, strengthen the cooperation between universities and enterprises in inland areas in production, learning and research, and attract university talents to enter with the introduction of regional talent policy. smooth the employment channels of college talents.

Third, the level of technological progress suppresses the income effect of import trade. We need to clearly understand that this is not proof that technological progress is negative for quality development. Quite the contrary, it provides insights for us to enhance people's well-being. On the one hand, technological progress has restructured the skill demand of our labor force. The development of digital economy and Internet technology has reduced the demand for low-skilled jobs, which has raised higher requirements for the quality of China's labor force and prompted our workers to take the initiative to learn skills to meet the market demand, which is also an important support for the implementation of China's strategy of "strengthening the country with talents". On the other hand, the level of technological progress affects the regional import trade structure and thus the consumer demand structure of a region, so attention should be paid to technology-driven changes in industrial structure and industrial transfer to attract diversified industries to enter and meet the increasingly rich needs of consumers to enhance people's happiness.

Fourth, the level of industrial structure is positively correlated with regional income disparity. This indicates that the "convergence" of China's industrial structure leads to income inequality. It is necessary to accelerate the development of the unique advantages of industries in each region to avoid the convergence of industries. The development of industries in each region should take into account the actual situation of regional resources and environment, and adopt d

ifferentiated strategies to avoid "one size fits all". Coastal regions with advanced economic and technological development have a relatively high level of industrial structure, so they can give full play to their own advantages when developing industries to promote industrial upgrading in inland regions with weaker economic and technological development, forming a mechanism of complementary advantages and positive interaction in regional relations.

Fifth, the level of urbanization, the level of foreign investment, the unemployment rate, and the level of per capita income are negatively correlated with the regional income gap. This indicates that on the one hand, economic development should be accompanied by attention to the coexistence of speed and quality of urbanization development. Local governments should strengthen cooperation, and economically and technologically underdeveloped regions should learn from the excellent experience of developed regions, reach strategic cooperation with developed regions, promote the formation of a hardware environment with sound infrastructure, complete industrial chains, and a business environment with relaxed markets and convenient investment, and narrow the regional income gap through assistance between developed regions to less developed regions. on the other hand , the introduction of foreign investment is used to increase jobs and open up employment channels. Relaxing the market access standards, the entry of foreign capital will bring more jobs and ensure the smooth flow of information between enterprises and workers, so that labor and jobs can be matched most quickly.

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References

- [1] Grossman, Gene M., and Esteban Rossi-Hansberg, Trading Tasks: A Simple Theory of Offshoring. *American Economic Review*, 2008(98), pp1978-1997.
- [2] Helpman, E., O. Itzhak, M. A. Muendler, and S. Redding, Trade and Inequality: from Theory to Estimation. NBER Working Paper, No. 17991, 2013.
- [3] Melitz, M. J. The Impact of Trade on Intra-industry Reallocations and Aggregate Industry Productivity [J]. *Econometrica*, 2003, (71): 1695-1725.
- [4] Faggio, G., K. Salvanes, and J. Reenen, The Evolution of Inequality in Productivity and Wages; Panel Data Evidence. *Industrial and Corporate Change*, Vol. 19, No. 6, December 2010, pp. 1919-1951.
- [5] Allen, R. Farm to Factory: A Reinterpretation of the Soviet Industrial Revolution [J]. Princeton University Press, 2008.
- [6] Acemoglu, D. When Does Labor Scarcity Encourage Innovation [J]. *Journal of Political Economy*, 2010, 118 (6): 1037-1078.
- [7] ACEMOGLU D. Technical change, inequality, and the labor market [J]. *Journal of Economic Literature*, 2002, 40(1) : 7-72.
- [8] GITTLEMAN M, PIERCE B. Inter-Industry wage differentials, job content and unobserved ability [J]. *Industrial & Labor Relations Review*, 2011, 64(2) : 356-374.
- [9] LEE N R, POSE A. Innovation and spatial inequality in Europe and USA [J]. *Journal of Economic Geography*, 2012, 13(13) : 1-22.
- [10] GLAESER E L, RESSEGER M, TOBIO K. Inequality in cities [J]. *Journal of Regional Science*, 2010, 49(4) : 617-646.
- [11] Wan, G. H., Lu, M., Chen, Z. Globalization and Regional Income Inequality: Empirical Evidence from within China [J]. *Review of Income and Wealth*, 2007(1): 35-59.