

The Relationship among Foreign Trade Structure, Opening Degree and Economic Growth in the Western Region

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Abstract. Through the study of the interaction among the foreign trade structure, degree of openness and economic growth in the western region (except Tibet) of China, this paper finds that the export of labor-intensive products has a significant effect on promoting the opening degree of the western region, while the export of primary products has no obvious effect. But both labor-intensive products and primary products are important driving forces for economic growth. The development of capital-and technology-intensive industries is no significance, and their exports have little impact on opening degree and economic growth. Therefore, the western region should optimize the structure of foreign trade, vigorously promote the development of capital-and technology-intensive industries, continually promote the construction of foreign trade demonstration, and give priority to the development of local specialty industries

Keywords: Foreign Trade Structure, Degree of Openness, Economic Growth.

1 Introduction

Since 2007, the economic growth rate of the western region has surpassed the eastern region for 11 consecutive years and is in the period of medium-to-high speed development opportunities. In terms of total amount, the GDP of western region increased from 12.7 trillion to 17.1 trillion yuan from 2013 to 2017, accounting for 20% of the country's total, with an average annual growth rate of 8.8%. In terms of provincial development, the GDP growth rate of Guizhou, Tibet and Yunnan are the top three provinces across the countries in 2017, the first two of which are the only provinces in China to achieve double-digit GDP growth. The development and opening up of the western region has always been the focus of development, but the degree and level of opening to the outside world is relatively low, which is still the "short board" in the layout of China's regional opening up. In terms of foreign trade and investment, the western region accounted for only 6.8% of the total foreign trade, 10% of the usage of foreign capital and 7.7% of the total foreign investment in 2017. The export products are mainly transformed from resource-intensive to labor-intensive, and the export of

machinery and electrical equipment has grown rapidly, while its international competitiveness is not strong. The development of the western region in the future will focus on further opening up. The promotion of the Strategy of Developing the Western Regions, implementation of the "One Belt and One Road" initiative and establishment of the third batch of pilot free trade zones have brought significant opportunities and policy support for the economic development of the western region.

2 Literature Review

Foreign scholars mainly study the relationship between foreign trade structure and economic growth. Some scholars believe that foreign trade contributes to economic development through empirical study [1, 6, 10]. Some analyzed the relationship between financial development, trade openness and economic growth and the relationship between the three is given from different perspectives.

Domestic scholars mainly study from two aspects. One is to study the influence of export commodity structure and trade mode on economic growth. Some found that the optimization of export commodities structural can promote economic growth through empirical research [7, 16]. And some proposed that the optimization and adjustment of foreign export trade structure is helpful to achieve high-quality economic development of a country [2]. The second is to study the impact of the degree of openness on economic growth. Some concluded that there are obvious differences among regions through the study of the relationship between the degree of openness and economic growth in China's three major regions, the reason for which is different degrees of opening up [9, 13]. Some took all provinces of China as the research objects and believed that the degree of openness can promote economic growth [5, 15]. And some draw the conclusion that the opening up of the western region contributes to economic growth based on the Strategy of Developing the Western Regions [18].

To sum up, the academia has done more in-depth research on the above two aspects, but little research has been conducted the relationship among foreign trade suture, opening degree and economic growth at the same time, especially the relationship between foreign trade structure and openness. In recent years, with the implementation of Strategy of Developing the Western Regions, the economy in the western region has achieved rapid growth. The level of opening up and high-quality development of the economy in the western region have always been focused by all social sectors. In view of this, this paper aims to explore the relationship between foreign trade structure variation and opening degree through empirical analysis of the relationship among foreign trade structure, opening degree and economic growth in the western region, in order to achieve high-quality economic growth by high-level opening up.

3 Empirical Analysis

3.1 Data Selection and Variable Description

The data of this paper are selected from western provinces between 2006 and 2016. Given the lack of data in Tibet, this paper only covers 11 provinces (cities) in the west, and those data are from Statistical Yearbook, Statistics Bureau and Business Department of each province (city). The reason why the research time was selected from 2006 to 2016 is that since China's accession to WTO, the degree of economic globalization has further deepened, and China's dependence on foreign trade has increased rapidly. In 2002, it exceeded 50%, increased to 63% in 2005, and even reached the highest 67% in 2006. Since then, it has been deeply affected by China's economic transformation, structural adjustment of internal and external demand, and financial crisis. From 2007, the dependence on foreign trade has gradually declined. In addition, since 2006, China's transition period won in the WTO negotiations will basically end, that is, the highest level of market opening will be achieved, all non-tariff measures will be eliminated, and most product tariffs will fall to the promised end point for a long time. Based on the above two points, this paper believes that 2006 is a dividing line for western regions, so the data of this paper are selected from 2006.

The core variables in this paper are the structure of foreign trade, opening degree and economic growth. The structure of foreign trade is divided by the proportion of different trade classifications amount in the total amount. The trade classification of this paper, drawing on the articles of some scholars[4,14], is divided according to the Standard International Trade Classification (SITC) principle of the United Nations, and we further divide the SITC into three categories, which are primary products, labor-intensive products and capital and technology-intensive products respectively. The opening degree is measured by the degree of utilization of foreign capital, and the economic growth is measured by the gross domestic product. The specific variable information is shown in Table 1.

Table 1. Variable information.

Name of variable	Abbreviation of variable	Standard of measurement
Primary product share	prir1	primary exports / total exports
Labour intensive product share	laborr1	export of labour intensive products/ total exports
Capital technology intensive products share	capital1	capital technology intensive exports / total exports
Opening degree	fdir	foreign investment in China /GDP
Economic growth	lnGDP	gross domestic product
Tourism income	tourist	hundreds of millions yuan
Patent authorization	patent	term
	fdifirm	each

Number of foreign invested enterprises	fixedinvest	hundreds of millions yuan
Investment in fixed assets of the whole society	urban	Percentage
Urbanization level	industr	Percentage
Industrial structure	railway	Ten thousand kilometers
Railway mileage		

3.2 Analysis of the Impact of Foreign Trade Structure on Opening Degree

The change of foreign trade structure has different impacts on the opening up to the outside world. By analyzing the change of foreign trade structure in the western region, we can better grasp the development trend of foreign trade, and the influence of it on opening degree can also provide a clear idea for us to discuss the opening up of the region. Based on the influence of the export changes of primary products, labor-intensive products and capital technology-intensive products on the opening degree, this paper conducts modeling and determines the relationship between variables. Before the regression, Hausmann test of the panel model is conducted, and the random effect model is adopted in the study of the relationship between the proportion of primary product exports, the proportion of capital technology-intensive product exports and the opening degree, while using the fixed effect model to study the impact of labor-intensive products exports' proportion on the opening degree. On the basis of those, a regression is made. The model built in this paper is:

$$Fdir_{it} = \alpha + \beta X_{it} + \delta Z_{it} + \varepsilon, \quad (i=1,2,\dots,n; t=1,2,\dots,T) \quad (1)$$

Among them, X_{it} is the core independent variable, which is the proportion of primary product exports, the proportion of labor-intensive product exports, and the proportion of capital technology-intensive product exports; Z_{it} is a series of control variables; α is a constant coefficient; β is the independent variable coefficient; ε is a random disturbance term. After the Houseman test, the corresponding regression information is shown in table 2.

Table 2. Impact of foreign trade structure on the opening degree.

	fdir	fdir	fdir	fdir	fdir	fdir
prir1	-0.0029	0.0054				
laborr1			0.0505***	0.0346***		
capital1					-0.0250***	-0.0134**
tourist		0.0003		0.0003		0.0003
patent		0.0001**		0.00003*		0.0001***
fdifirm		3.56e-06		0.0001		0.0001
fixedin				0.0004		-0.0001
vest		-0.0001				

urban		-0.0627***		-0.1375***		-0.0428
industr		0.1052**		0.0542*		0.1008***
α	1.3047***	-1.7318	-0.4968*	2.4631	2.5629***	-1.6353
R ²	0.02	0.66	0.01	0.1	0.04	0.65

Note: *, **, *** represent that the variables are significant at the significance level of 10%, 5% and 1% respectively

The second, fourth, and sixth columns of table 3 are regression results without control variables, while the third, fifth, and seventh columns are regression results after adding control variables. It can be seen that the export of primary products has no significant impact on the opening degree of the western region. After adding the control variables, the coefficient is adjusted to a positive value, that is, the impact is positive but still not significant. There may be other factors that influence the opening-up are separated to adjust the results. The labor-intensive products in the western region have a significant positive impact on the degree of opening to the outside world. At the same time, the patent authorization and industrial structure also have a significant positive impact on it. However, the number of foreign-invested enterprises, fixed asset investment and tourism income also promote the opening-up to the outside world, but not significantly. The reason may be that western regions are less attractive to foreign investment. Therefore, the rate of investment in the western region is low, and the influence on the opening-up. In addition, fixed asset investment in the western region is still insufficient, so its impact on opening-up is also weak. The main focus of tourism is to attract domestic tourists, and international tourism business development is weak. Capital and technology-intensive products have a negative impact on opening-up. The possible reasons are that the financial industry in the western region is developing slowly, the level of technological innovation lags behind due to the low capital concentration, and exports of products with technical content have not been recognized abroad. It can also be seen from table 3 that patents and industrial structure play a positive and significant role in promoting the improvement of opening-up, while the urbanization process has an inhibiting effect on enhancing the openness to the outside world, which may be caused by the slow urbanization process in the western region.

3.3 The Evolution of Dynamic Relationship Between Opening up and Economic Growth

There are many factors that promote economic growth in a region. This paper examines the relationship between them from the perspective of opening up. Since the current economic growth will be affected by the historical level of previous economic growth, this paper uses differential GMM to construct a dynamic model of economic growth to measure the relationship.

$$\ln GDP_{it} = \alpha + \rho \ln GDP_{i,t-1} + \theta fdir_{it} + \gamma Z_{it} + \varepsilon_{it} \quad (2)$$

$\ln GDP_{i,t-1}$ is lagging variables of economic growth, $fdir$ is the core independent variable, and Z is a series of control variables. This paper considers tourism development, patent

authorization, number of foreign investment enterprises, fixed assets investment, industrial structure and railway mileage will have an impact on regional economic development, so these variables are added here to control. After the differential GMM regression results, the paper also carried out the sequence autocorrelation and over-identification test, and the models passed the test, so the rationality of the modeling can be judged

Table 3. Dynamic relationship between opening up and economic growth.

	lnGDP
lnGDP(L1)	0.8478***
fdir	0.1
tourist	0.0001
patent	5.35e-06*
fdifirm	2.51e-06
fixedinvest	-0.00001
industr	0.0179***
railway	0.00003
α	0.3934

Note: *, **, *** represents significant at the 10%, 5% and 1% level

As can be seen from table 4 lagging economic growth has a positive impact on the current economic growth and is significant at the 1% significance level. The degree of openness has a positive impact on economic growth, but it is not significant. In addition, the tourism industry, patent authorization, number of foreign investment enterprises, industrial structure and railway mileage have a positive impact on economic growth, and the impact of patent authorization and industrial structure is significant. The impact of fixed asset investment on economic growth is negative, but the impact is relatively weak

3.4 Analysis of the Relationship between Foreign Trade Structure, Opening up and Economic Growth

According to the above results, the proportion of primary product exports has a positive impact on the opening up of the western region, but not significant, and the export of labor-intensive products has a positive effect on improving the opening up of the western region. It also has a joint role in promoting regional economic growth.

Based on the backward technology level, the underdeveloped financial industry and the weak capital accumulation in the western region, primary products and labor-intensive products have always been the support of the development of the western region. The labor cost in the western region is low, and the threshold of industrial settlement is lower than that in the middle and Eastern region. Therefore, a large number of raw material-intensive products and foundry factories have been placed in the west, which has solved a large number of employment problems on the one hand,

and accelerated the external relations and regional economic development in the west on the other hand.

The development of capital-intensive industries is relatively slow in the western region, which has many factors. The lack of high-skilled human capital in the western region, low return on capital, and weak infrastructure have constrained the settlement and development of capital-intensive industries. If the western region wants to rely on high value-added capital-intensive products for external development, it needs more capital and technology as well as talent accumulation, and chain-driven comprehensive development can better promote the region's economic development of high quality.

Foreign trade structure, opening up and economic growth are mutually complementary parts. The rational allocation of regional foreign trade structure plays a key role in the region's "going out". This requires the region to rely on regional characteristics and show regional competitive advantages. From the depth and breadth, we will further broaden our opening up to the outside world, strengthen cooperation with outside world, make use of the "B&R" initiative to build China's economic, cultural, foreign trade, tourism and other links to the west, and build a complete infrastructure to lay the foundation for the economic development of the western region to Central Asia and other places.

4 Further Discussion

4.1 The Trend of Foreign Trade Structure in Western China

This paper attempts to further explore the development of foreign trade structure in the western region in order to find out the trend of foreign trade structure changes in the western region, so as to provide more comprehensive predictions and suggestions for the opening up and economic development of the western region. In 1999, the central government began to implement the strategy of developing the western region. This is a relatively profound transformation for the western region, this means that the central level began to narrow the gap between the central and western regions and improve the speed and quality of economic development in the western region. Therefore, the analysis of the development of foreign trade structure in the western region is from 1999 to 2016.

It can be seen from relevant data that the development trend of the three major trade categories of 11 provinces (cities) in the western region from 1999 to 2016, the proportion of capital technology-intensive products, indicating that the attraction of technology and capital in these regions is stronger than others. The larger proportion of labor-intensive products in Qinghai and Xinjiang reflects the advantages of the product processing industry. In general, the proportion of resource-intensive industries in 11 regions is lower, while the labor-intensive industries and capital-intensive industries are more active. It can be concluded that the distribution proportion of trade development pattern in the western region is more reasonable. But in the long run, labor costs are constantly increasing, and the western region will eventually lose the advantage of cheap labor. Capital-intensive products have high added value and low

pollution. Therefore, all provinces and cities should develop capital-intensive products, improve the quality of the products, and gain more market recognition.

4.2 Summary of Demonstration Bases for Foreign Trade in the Western Region

In order to promote foreign trade and consolidate and enhance China's status as a major trading country, the state decided on the work plan of the professional demonstration base for the transformation and upgrading of foreign trade in 2011, aiming at promoting the establishment of a national demonstration base for foreign trade. This paper refers to some literatures and relevant data analysis [17], the number of national foreign trade demonstration bases in Inner Mongolia, Sichuan, Chongqing, and Guangxi is large, and the ten bases in Inner Mongolia far exceeds the number in other provinces and cities, reflecting the high expectations for development of foreign trade. Furthermore, the industries on the list of bases are mainly concentrated in the agricultural products, textiles and clothing, new materials, and pharmaceutical industries. In general, the key support for foreign trade relies on the development of agricultural products with special local characteristics, such as liquor in Guizhou, flowers in Yunnan, mustard in Chongqing, apples in Shaanxi and Gansu, beef in Inner Mongolia, and so on, which means that localities take advantage of comparative advantages when engaging in foreign trade. With the implementation of the “B&R” propose and access of all western provinces to foreign markets, enterprises should take this advantage and increase the added value of agricultural products to extend the industrial chain. The textile and apparel industry is mainly concentrated in the provinces of Inner Mongolia, Ningxia, Sichuan, Chongqing, and Shaanxi. Inner Mongolia, Ningxia have advantages in natural conditions for textiles and clothing, and Shaanxi and other places have a long history of textile production. The textile and apparel industry is also a light industry; investment is less than in heavy industries but at the same time it can generate a large number of jobs. Therefore, when various factors are considered, it is clear that there is support for.

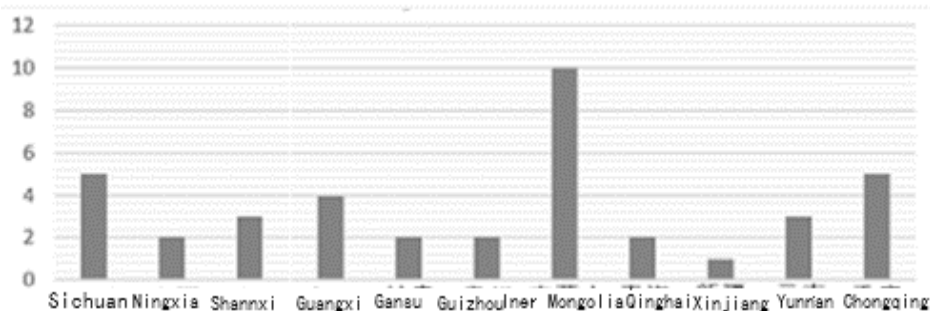


Fig. 1. Number of demonstration bases for foreign trade in the western region in 2018.

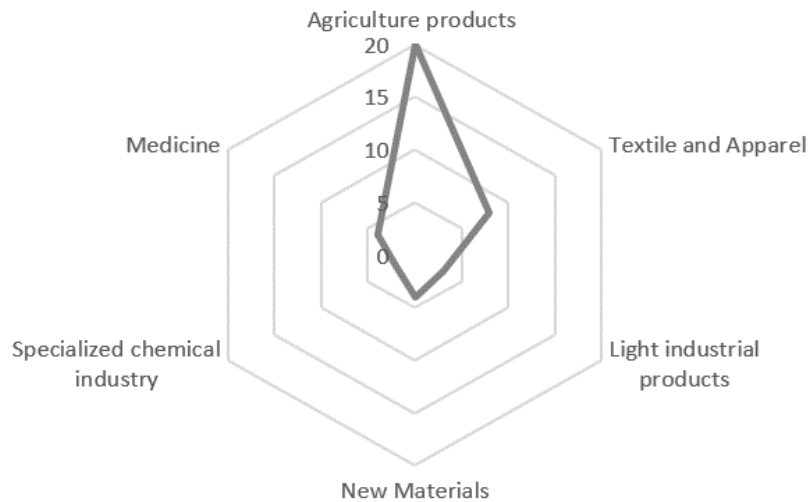


Fig. 2. The Field of demonstration bases for foreign trade in the western region in 2018.

5 Conclusions

The main conclusions of this paper are as follows: the export of labor-intensive products plays a positive role in promoting the opening up of the western region, while the export of primary products does not play a significant role in improving the opening up of the western region, but both are important driving forces for the economic growth of the western region. The capital-intensive industries in the western region are developing slowly, and their product exports have little impact on the degree of openness and economic growth, but it represents an important direction for industrial transformation in the western region. Therefore, in the future development strategy, we should further optimize the foreign trade structure, vigorously support the development of capital-intensive industries, extend the industrial chain and increase the added value of products. Western regions should continue to promote the development of transformation and upgrading of the demonstration base for foreign trade. According to the comparative advantage of the local industrial development, we should develop the characteristic foreign trade industry, for example, Shaanxi focuses on the development of the apple, textile and non-ferrous metal materials industries, while Ningxia focuses on the production of cashmere and wolfberry products.

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