
**ANALYSIS ON THE STRUCTURE AND PATTERN OF FOREIGN TRADE
IN POYANG LAKE ECOLOGICAL ECONOMIC ZONE**

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Abstract

The situation in China has undergone new changes, and the development of regional foreign trade is not balanced. It is necessary to study the pattern and structure of regional foreign trade. As China's eco-economic demonstration area and the development area of low-carbon economy, Poyang Lake Ecological Economic Zone has obvious situation of regional foreign trade unbalanced. It's necessary to take measures so that guide it. This study analyzes the pattern and structure of foreign trade in Poyang Lake Ecological Economic Zone, studies the characteristics of it, and puts forward corresponding countermeasures and suggestions.

Keywords: Pattern and Structure; Foreign Trade; Poyang Lake Ecological Economic Zone

Introduction

Foreign trade is one of the main sources of national economic income. "Developing an open economy at a higher-level" is a new requirement put forward by China (Cao, 2018). Due to the increasingly fierce foreign trade protectionism (Bain, 2018), our foreign trade faces unprecedentedly serious challenges (Fang, 2018; Hartmann and Wang, 2014; Patrician and Hinderer, 2012; Curran and Signage, 2011). China's foreign trade is unbalanced in development and regional differences are very large (Zhang, 2017). In order to correctly understand, objectively analyze, and scientifically judge the new changes and new features of China's foreign trade development and promote the balanced development of foreign trade, it is necessary to study the pattern and structure of regional foreign trade.

Currently, there are many literatures about the impact of foreign trade on interregional trade and regional specialization. Many researchers have provided many valuable insights from different perspectives and based on different methods (Song, Che and Liu, 2017).

For example, Wang (2014) estimated the trade development situation in the central provinces. Guo (2010) analyzed the relationship between foreign trade, economy, and the environment in the central region (Hu, 2011; Dai and Buying, 2011). He (2016) and Fan (2013) studied the spatial pattern of foreign trade. Zhen (2015) and Liu (2016) studied the pattern of foreign trade. However, research on the development of foreign trade in the sub-region within the province is still relatively lacking. This study takes the Poyang Lake Ecological Economic Zone as the research area and discusses the pattern and structure of foreign trade in the sub-region (Zhou, Luo, Shi and Wang, 2017).

The Poyang Lake Ecological Economic Zone takes Poyang lake as a core and is based on the Poyang Lake City Circle, it regards protecting the ecology and developing the economy as an important strategy. We dedicate to build the Poyang Lake Ecological Economic Zone into an eco-economy demonstration area and low-carbon economic development pioneer zone where people and nature live in harmony and in coordinated with economic and social development. The Poyang Lake Ecological Economic Zone has always been the most economically developed area in Jiangxi Province. It has abundant natural and tourism resources, beneficial ecological protection and a good industrial foundation. It also has obvious comparative advantages, and bears a good and rapid development that leads regional economic and social development. It's very typical that the important function of constructing the Poyang Lake Ecological Economic Zone can provide a good demonstration for comprehensive development of the great lake region.

Indicator method and data source

Research indicator

Foreign trade dependence

Foreign trade dependence in a region is the degree of dependence of a country's domestic region on the international market, and it is used to measure the role of foreign trade in the development of regional economy. Foreign trade dependence is the ratio of total imports and exports in a region to the GDP of the region. There is no strict dependency between the numerator and the denominator. It is only a coefficient, and some scholars call it the foreign trade coefficient (Fan, 2013).

$$ID = (X_i + X_w) / GDP$$

Where ID is the local foreign trade dependence; x_i is the total regional export; X_w is the total regional import; GDP is the regional GDP.

Foreign trade imbalance

There are two modes of foreign trade imbalances. The first is the traditional method, which is the absolute difference between a country's total export volume and total import volume in a certain period of time. Measuring in this way may be affected by the price index, etc., and there will be negative values, which is inconvenient for the logarithmic processing of variables in the econometric model. The other is the ratio of total imports to total exports over a certain period of time. This kind of use of the ratio of exports and imports to define the balance of trade, the essence of which is to examine the issue of trade balance from the direction of changes in import and export, so it is an indirect way of measuring trade balance. The greatest advantage of this approach is not only to avoid the inconvenience caused by the measurement unit and its price index, but also to facilitate the logarithmic processing (Zhen, 2015).

$$IU = X_w / X_i$$

Where IU is regional foreign trade imbalance, X_w is the total amount of regional import, and X_i is the total amount of regional export.

Net Export Performance Ratio

The Net Export Performance Ratio (NEPR), also known as the trade competitiveness index, is mainly used to measure the proportion of the difference between exports and imports of a country or region to total trade volume (Liu, 2016). The calculation formula is as follows:

$$NEPR = \frac{X_i - X_w}{X_i + X_w}$$

Where NEPR is the net export performance ratio of regional foreign trade, X_w is the total amount of regional import, and X_i is the total regional export.

Export geographical concentration index

Geographic concentration index is used to measure the geographical concentration of foreign export trade in a country or region. , but also shows the specific spatial direction of foreign trade (Liu, 2016). The calculation formula is as follows:

$$GCI = \frac{\frac{X_i}{X_i + X_w}}{\sum(\frac{X_i}{X_i + X_w})}$$

Where GCI is the geographic concentration index of regional export, X_w is the total regional import, and X_i is the total regional export.

Per capita total foreign trade

The total per capita foreign trade is mainly used to measure the contribution of the total per capita trade of a country or region (Zhong and Chen, 2018). The calculation formula is as follows:

$$PGT = \frac{X_i + X_w}{P}$$

Where PGT is the total per capita foreign trade of the region, X_w is the total amount of regional import, X_i is the total amount of regional export, and P is the number of local labour.

Average total foreign trade

The average total foreign trade, which is mainly used to calculate the contribution of the unit land area of a country or region to total trade (Zhen, 2015). The calculation formula is as follows:

$$LGT = \frac{X_i + X_w}{L}$$

Where LGT is the regional average total foreign trade, X_w is the total regional import, X_i is the total regional export, and L is the regional land area.

Data source

Poyang Lake Ecological Economic Zone is a special economic zone cantered on Poyang Lake, which focuses on the protection of the ecology and development of the economy. Judging from administrative divisions, there are 38 counties (cities, districts). The data on the Poyang Lake Ecological Economic Zone for 2014-2016 were obtained from the statistical yearbooks of counties (cities, districts) from 2015 to 2017, government official portals, and statistical bulletins on national economic and social development for all counties (cities, districts). Due to the difficulty in obtaining data on foreign trade, some counties (cities, districts) did not publish the data on foreign trade in statistical terms, we cannot inquire through the government work report of the corresponding county (city, district), however, data on foreign Trade in minority regions are still inaccessible. And then the analogy is based on areas with similar economic conditions, or proportions are estimated based on the overall level of the local economy, so as to ensure the integrity of the analysis objects.

Poyang Lake Ecological Economic Zone Foreign Trade Pattern

Overall pattern of foreign trade

Figure 1 shows the amount of exports, imports, and imports and exports of the Poyang Lake Ecological Economic Zone from 2014 to 2016.

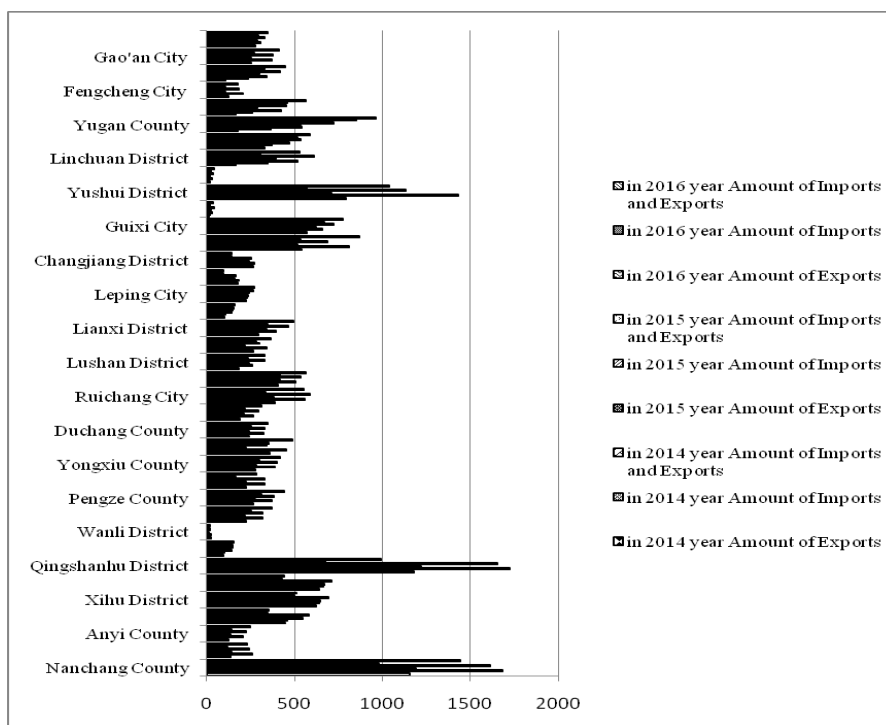


Figure 1: Total Exports, Imports and Imports and Exports of Poyang Lake Ecological Economic Zone during 2014-2016 year

It can be seen that Nanchang County, Qingshanhu District, Qinghai District, Yugan County, Yujiang County, etc. exports, imports, and total imports and exports are relatively large, while exports, imports, and imports and exports in Wanly District, Yuehu District, and Dongxiang County are relatively small.

Foreign trade dependence

The foreign trade dependence of the Poyang Lake Ecological Economic Zone is shown in Figure 2. It can be seen from the above that Yugan County, Yujiang County, Gongqingcheng City, and Qinghai District are highly dependent in foreign trade. The Yuehu District, Dongxiang County, Xingjian District, Wanli District, and Fengcheng City are less dependent in foreign trade.

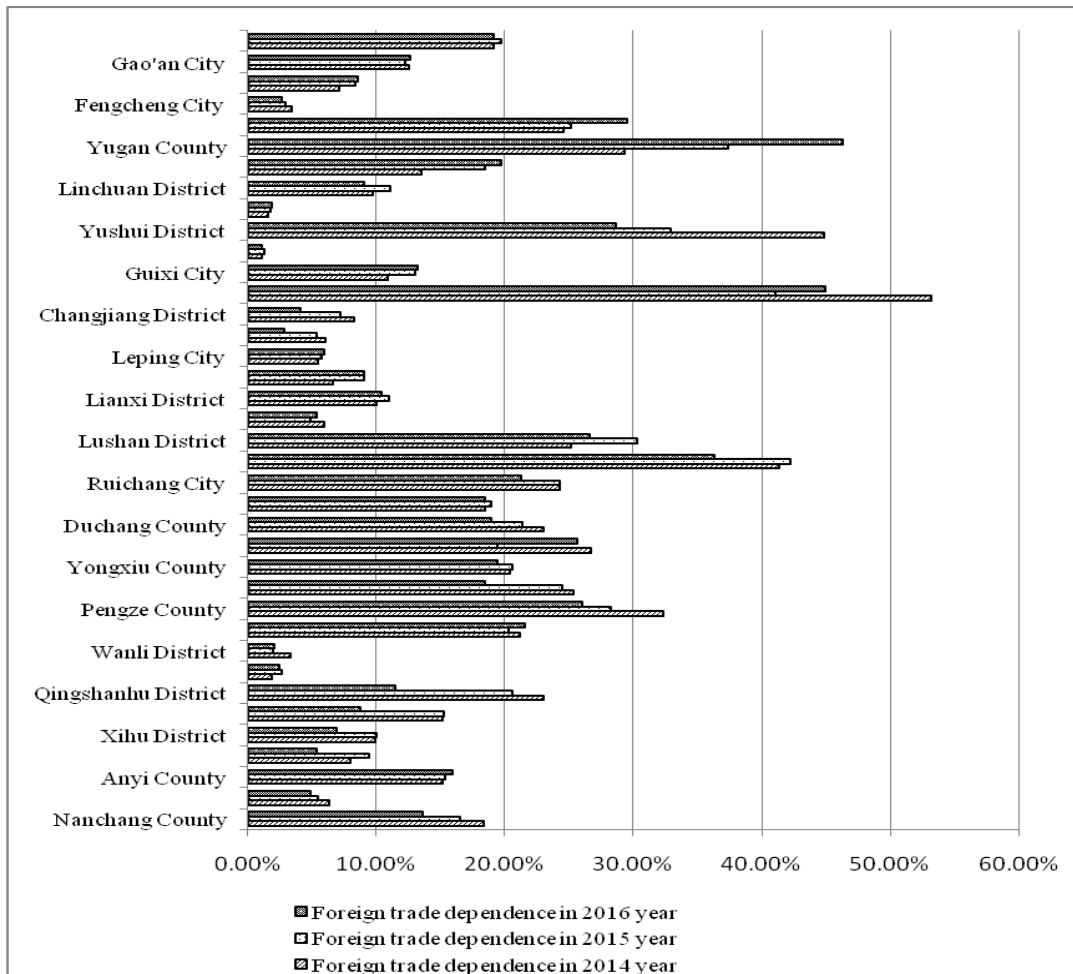


Fig2: Foreign Trade Dependence of Poyang Lake Ecological Economic Zone during 2014-2016

Foreign trade imbalance

The imbalance of foreign trade in the Poyang Lake Ecological Economic Zone is shown in Figure 3. It can be seen that the foreign trade imbalances in Yugan County, Waning County, Zhangshu City, Linchuan District, and Yuehu District are relatively large, while Xihu District, Donghu District, QingYunpu District, New District, Wanli District, and Fuzhou Liang County, Loping City, Zhushan District and Changing District have less foreign trade.

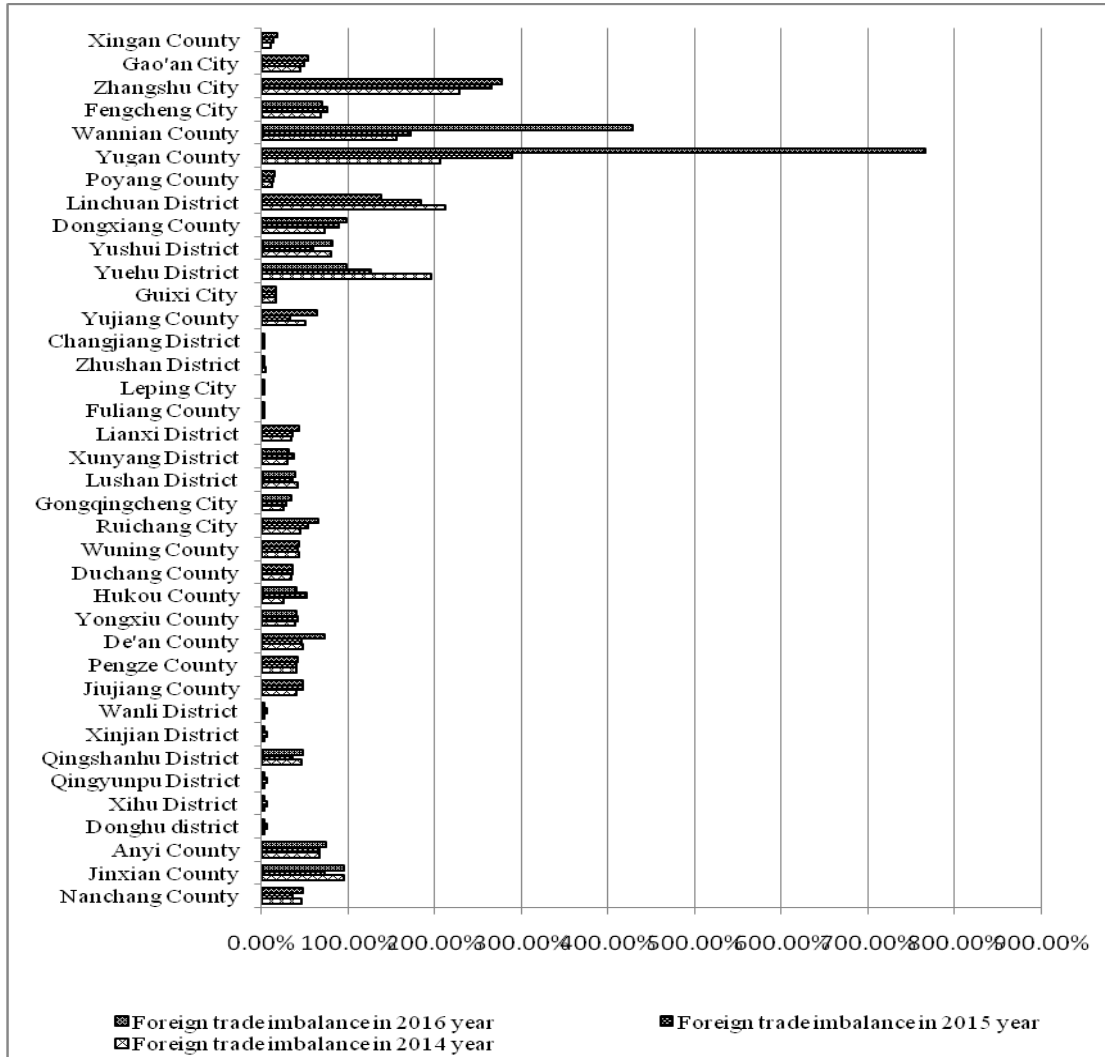


Fig3: Foreign Trade Imbalance of Poyang Lake Ecological Economic Zone during 2014-2016

Net Export Performance Ratio

Table 1 shows the net export performance ratio of the Poyang Lake Ecological Economic Zone.

Table1. Net Export Performance Ratio of Poyang Lake Ecological Economic Zone during 2014-2016

County(city district)		2014	2015	2016
Nanchang	Nanchang(county)	0.369048	0.478261	0.360223
	Jinxian	0.024142	0.157572	0.028707
	Anyi	0.198246	0.200454	0.148698
	Donghu	0.9432	0.87683	0.949056
	Xihu	0.943199	0.87683	0.949056
	Qingyunpu	0.9432	0.87683	0.949056
	Qingshanhu	0.369048	0.478261	0.360223
	Xinjian	0.943199	0.876831	0.948944
	Wanli	0.943231	0.876821	0.949105
Jiujiang	Jiujiang(county)	0.423709	0.358296	0.356044
	Pengze	0.434848	0.424676	0.41586
	Dean	0.356741	0.375489	0.158082
	Yongxiu	0.43815	0.420014	0.429388
	Hukou	0.596681	0.316148	0.436387
	Duchang	0.497638	0.47725	0.469253
	Wuning	0.396191	0.414271	0.392238
	Ruichang	0.379375	0.300564	0.209819
	Gongqingcheng	0.602966	0.558353	0.490181
	Lushan	0.413608	0.480429	0.439336
	Xunyang	0.544226	0.455824	0.524438
	Lianxi	0.487296	0.475338	0.402639

Jingdezhen	Fuliang	0.933673	0.93267	0.936936
	Leping	0.933677	0.932668	0.936937
	Zhushan	0.914558	0.932669	0.936937
	Changjiang	0.933674	0.932668	0.936937
Yingtian	Yujiang	0.333333	0.509455	0.220594
	Guixi	0.723164	0.721175	0.721173
	Yuehu	-0.32423	-0.11647	0.014501
Xinyu	Yushui	0.109927	0.252595	0.101453
Fuzhou	Dongxiang	0.16129	0.058201	0.013055
	Linchuan	-0.35721	-0.29358	-0.15729
Shangrao	Poyang	0.778976	0.762595	0.74827
	Yugan	-0.34722	-0.48492	-0.76875
	Wannian	-0.21786	-0.26471	-0.62068
Yichun	Fengcheng	0.189801	0.140344	0.18422
	Zhangshu	-0.38875	-0.45266	-0.46875
	Gaoan	0.378812	0.342695	0.302554
Jian	Xingan	0.816555	0.769789	0.697657

It can be seen that the net export performance ratios of Dinghy District, Xihu District, Qing Yunpu District, Xingjian District, Wanli District, Fuliang County, Leping City, Zhushan District, Changing District, Guixi City, Poyang County, and Xingan County are relatively high, while Yuehu District, Yinchuan District, Yugan County, Waning County and Zhengzhou City are relatively low.

Export geographical concentration index

Table2 shows the geographic concentration index of exports of Poyang Lake Ecological Economic Zone from 2014 to 2016.

Table2. Export geographical concentration index of Poyang Lake Ecological Economic Zone during 2014-2016

County(city district)		2014	2015	2016
Nanchang	Nanchang(county)	2.50%	2.72%	2.56%
	Jinxian	1.87%	2.13%	1.94%
	Anyi	2.19%	2.21%	2.16%
	Donghu	3.54%	3.45%	3.67%
	Xihu	3.54%	3.45%	3.67%
	Qingyunpu	3.54%	3.45%	3.67%
	Qingshanhu	2.50%	2.72%	2.56%
	Xinjian	3.54%	3.45%	3.67%
	Wanli	3.54%	3.45%	3.67%
Jiujiang	Jiujiang(county)	2.60%	2.50%	2.55%
	Pengze	2.62%	2.62%	2.67%
	Dean	2.47%	2.53%	2.18%
	Yongxiu	2.62%	2.61%	2.69%
	Hukou	2.91%	2.42%	2.70%
	Duchang	2.73%	2.71%	2.77%
	Wuning	2.55%	2.60%	2.62%
	Ruichang	2.52%	2.39%	2.28%
	Gongqingcheng	2.92%	2.86%	2.81%
	Lushan	2.58%	2.72%	2.71%
	Xunyang	2.82%	2.67%	2.87%
	Lianxi	2.71%	2.71%	2.64%

Jingdezhen	Fuliang	3.53%	3.55%	3.65%
	Leping	3.53%	3.55%	3.65%
	Zhushan	3.49%	3.55%	3.65%
	Changjiang	3.53%	3.55%	3.65%
Yingtian	Yujiang	2.43%	2.77%	2.30%
	Guixi	3.14%	3.16%	3.24%
	Yuehu	1.23%	1.62%	1.91%
Xinyu	Yushui	2.02%	2.30%	2.07%
Fuzhou	Dongxiang	2.12%	1.94%	1.91%
	Linchuan	1.17%	1.30%	1.59%
Shangrao	Poyang	3.25%	3.24%	3.29%
	Yugan	1.19%	0.95%	0.44%
	Wannian	1.43%	1.35%	0.71%
Yichun	Fengcheng	2.17%	2.10%	2.23%
	Zhangshu	1.12%	1.01%	1.00%
	Gaoan	2.52%	2.47%	2.45%
Jian	Xingan	3.31%	3.25%	3.20%

It can be seen that Donghu District, Xihu District, Qingyunpu District, Xinjian District, Wanli District, Fuliang County, Leping City, Zhushan District, Changjiang District, Guixi City, Poyang County, and Xingan County have a large geographical index of export concentration. However, the geographic concentration index of exports in Yuehu District, Linchuan District, Yugan County, Wannian County and Yushu City is relatively small.

Per capita total foreign trade

Table3 shows the per capita foreign trade of Poyang Lake Ecological Economic Zone from 2014 to 2016.

Table3. Per Capita Total Foreign trade of Poyang Lake Ecological Economic Zone during 2014-2016

County(city district)		2014	2015	2016
Nanchang	Nanchang(county)	15786.12	15211.96	13708.49
	Jinxian	3810.035	3300.817	33933.36
	Anyi	10433.81	11488.11	12943.8
	Donghu	18987.45	21262.34	11507.54
	Xihu	11037.91	11818.66	8368.313
	Qingyunpu	12983.77	13333.71	7558.42
	Qingshanhu	28206.43	25817.49	14633.05
	Xinjian	1841.078	2621.341	2694.074
	Wanli	621.4994	342.2003	366.4787
Jiujiang	Jiujiang(county)	7725.913	7716.865	8817.59
	Pengze	6491.284	6661.256	7905.687
	Dean	17321.35	17714.41	15540.36
	Yongxiu	18237.47	18820.84	19486.87
	Hukou	17632.13	13116.39	18698.35
	Duchang	5092.952	4986.399	5295.951
	Wuning	7426.66	8605.851	9250.816
	Ruichang	12914.72	13419.81	13409.85
	Gongqingcheng	48989.88	50911.93	57191.93
	Lushan	7947.556	9592.321	9117.378
	Xunyang	10164.11	8372.951	10430.36
	Lianxi	14744.91	17342.13	18528

Jingdezhen	Fuliang	5977.612	8397.536	9235.882
	Leping	2616.803	2790.935	3141.343
	Zhushan	3083.695	3239.272	1789.337
	Changjiang	7238.351	5684.479	3219.91
Yingtian	Yujiang	34787.81	24997.06	28319.43
	Guixi	148993.1	147842.5	140923.7
	Yuehu	11102.25	13056.45	14159.95
Xinyu	Yushui	76057.78	57540.51	48946.73
Fuzhou	Dongxiang	439.4509	538.0108	611.0093
	Linchuan	8682.612	11892.18	14027.51
Shangrao	Poyang	101327.8	131404.8	136057.3
	Yugan	169319	206914	257136.5
	Wannian	245508.2	205905.1	244429.3
Yichun	Fengcheng	15490.41	13602.75	13225.05
	Zhangshu	3125.864	3403.603	3592.643
	Gaoan	37911.55	37410.4	38335.56
Jian	Xingan	9459.846	9509.259	9913.698

As can be seen from the Table, the per capita total foreign trade in Yugan County, Wanling County, Poyang County, Guixi City and Gongqingcheng City is relatively large. While the per capita total foreign trade in Dongxiang County, Xingjian District and Wanli District is relatively small.

Average total foreign trade

Figure 4 shows the average total foreign trade of the Poyang Lake Ecological Economic Zone from 2014 to 2016.

It can be seen from that the areas of Dinghy District, Xinhua District, Qing Yunpu District, Xining District, Qingshanhu Lake District, Gongqing City, etc. The total foreign trade is large, while the average total foreign trade of other counties (cities, districts) is small. Since Donghu District, Xinhua District, Qingyunpu District, Xining District, Qingshanhu District, and Gongqing

City all belong to the district-based city, their own area is relatively small, and they have relatively good location conditions. Their total foreign trade volume is not small. Therefore, the average total foreign trade volume of the county is significantly higher, and the average total foreign trade volume of other counties (cities, districts) is not significantly different and needs further analysis.

Characteristics of Foreign Trade Structure in Poyang Lake Ecological Economic Zone

Uneven spatial distribution

From the perspective of foreign trade issues in the Poyang Lake Ecological Economic Zone, existing the phenomenon of unbalanced spatial distribution, Nanchang, Yushui and Guiyu blocks (Guixi and Yujiang) and Yupowan blocks (Yugan County, Poyang County, Wannian County) are large blocks of foreign trade. There are no obvious features in other regions.

Foreign trade dependence is not balanced

Similar to the total amount of foreign trade, the foreign trade dependence in Poyang Lake Ecological Economic Zone is unbalanced, but the difference is not as obvious as the spatial difference in total foreign trade. Relatively speaking, most of the counties (cities, districts) in Jiujiang have high dependence on foreign trade. Yushui District, Yujiang County, and Yupowan Land (Yugan, Poyang County, and Waning) have high dependence on foreign trade.

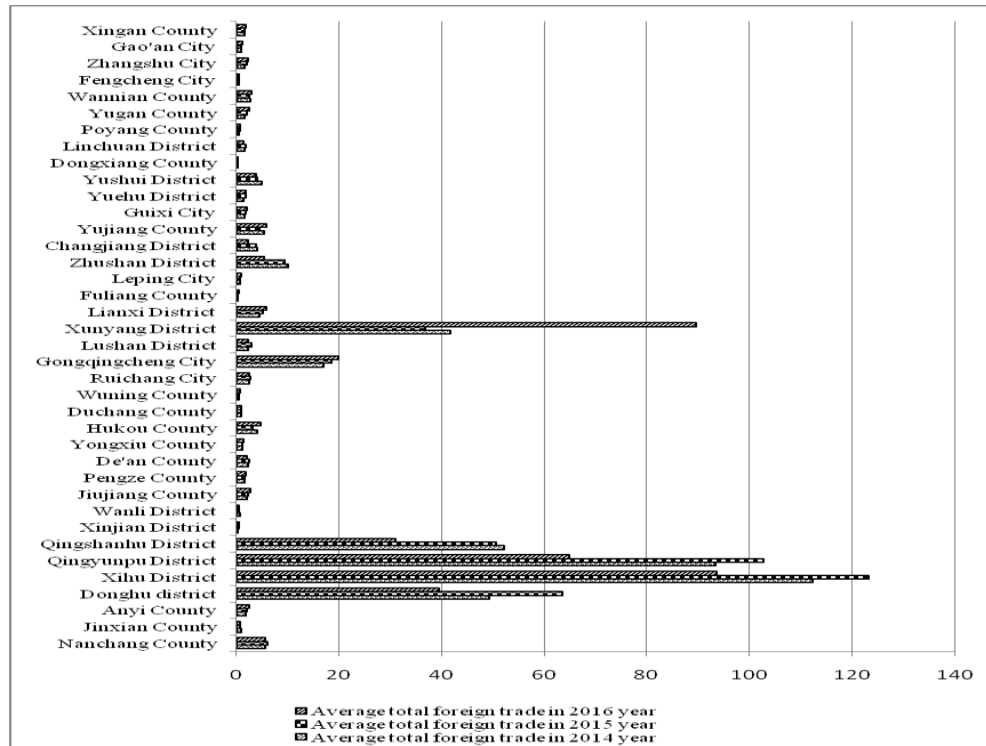


Fig4: The Average Total Foreign Trade of Poyang Lake Ecological Economic Zone during 2014-2016

Foreign trade imbalances in a few areas are high

In a few counties (cities, districts), such as Yugan County, Waning County, and Zhengzhou City, the degree of foreign trade imbalance is relatively high, and it is worth paying attention to these counties (cities, districts).

There is not much difference in geographic concentration index of exports

Poyang Lake Ecological Economic Zone has little difference in geographical index of export, indicating that each county (city, district) has relatively distinctive foreign trade products.

There is a difference in per capita total foreign trade

Yugan County, Waning County, Shying County, Guixi City, and Gongqing City have a large amount of foreign trade per capita and are quite different from other regions.

Most counties (cities, districts) do not have significant differences in average total foreign trade

Due to the less area, the average total foreign trade of Donghu District, Xinhua District, Qingyunpu District, Xining District, Qingshanhu District, Gongqingcheng City and other places is relatively large, and the average total foreign trade of other counties (cities/districts) is smaller. It reflects that the average total foreign trade of most counties (cities, districts) in Poyang Lake Ecological Economic Zone are not obvious.

Suggestions and countermeasures

Actively integrate into the “Belt and Road”

Actively integrate into the "Belt and Road", strengthen the leading role of the channel, highlight the interconnection with major domestic cities and major countries along the route, and accelerate the construction of a strategic channel that integrates smoothly and sea land air as a system. Relying on China-EU international freight trains and the Trans-Asian Railway transportation channel, we will steadily operate the Euro-Asian international cargo railroad trains, actively connect international trainees of “Chinese New Europe” and “Yu New Europe” and participate in the establishment of a full-range transport coordination mechanism. It opened up a fast passenger transport route to Xi’an, Urumqi, and Guangxi and Yunnan, and opened up access to the “Land Silk Road”.

Improve quality and advantage of export product

We will promote the transformation of foreign trade into higher prices for better quality and better results, actively cultivate new types of businesses and functions, and create new advantages in export competition with technology, brand, quality, and service as the core. We will increase the proportion of quality, grade, and innovation of export products, promote the

“full-industry-chain export” of product, technology, and service, expand the export of advantageous agricultural products, and actively increase the proportion of export in electromechanical products.

Optimize the Development Direction of Foreign Trade

Optimize the structure of imported goods, stabilize the import of resource products, and encourage the import of advanced technologies, key equipment and components. Play the unique advantages of industries such as copper, ceramics, aviation, pharmaceuticals, rare earths, and tungsten. Strengthen bilateral investment in the industry and market development and continuously improve the level of cooperation. Support non-ferrous metals leading enterprises to participate in international resource exploration and development and oil and gas cooperation, run Jingdezhen World Ceramics Expo platform, introduce key components and technologies such as aero engines, promote research and development cooperation and production and assembly of trainers, general aircrafts, helicopters, and actively promote transnational Pharmaceutical companies cooperate in the development of biotechnology drugs and international cooperation in traditional Chinese medicine.

Actively develop overseas bases

Focus on mineral resources, light industrial textiles, non-ferrous metals, photovoltaic new energy and other fields, it will focus on neighbouring Asian and African countries and expand international capacity cooperation with countries in Central and Eastern Europe, the South Pacific, Europe and the United States. Promote the transfer of industries with excess capacity such as steel, cement, and building materials, and encourage key industry enterprises to build production, processing, and assembly bases overseas. Support enterprises to participate in the exploration and development of overseas mineral resources, carry out processing of energy and resource products, establish energy production and supply bases, and strengthen overseas resources and energy security capabilities. Support leading agricultural enterprises to “going out”, build agricultural production and processing bases and modern agricultural demonstration parks overseas. Encourage foreign contracted engineering companies to hold the group to participate in the national major capacity international cooperation projects and railway, nuclear power and other major equipment "going out" construction projects so that starting the "Poyang Lake Ecological Economic Zone" brand.

Innovate ways of foreign trade development

We will innovate foreign trade development methods, establish and improve the “Internet+” model, and constantly deepen foreign trade industrial chains, industrial clusters, open demonstration parks, capital investment and other ways, give full play to characteristic industry, history, culture and advantages of ecological resources in the Poyang Lake Ecological Economic Zone. Actively promote economic and trade cooperation and cultural exchanges with countries along the “Belt and Road”, and strive to build the Poyang Lake Ecological Economic Zone into an inland important strategic fulcrum linking the “Belt and Road” and an inland two-way open demonstration area.

Broaden Foreign Trade Path

We will co-ordinate the sea-going railways and expressways on the southeast coast, and strengthen cooperation with coastal ports and ports in neighbouring provinces and cities to further smoothly the "Maritime Silk Road" corridor. It encrypts international and domestic flight routes, actively expands Southeast Asian routes, promotes intercontinental routes, and develops efficient and convenient air transportation networks that connect the key cities in "Belt and Road".

Improve Foreign Trade Promotion Mechanism

Establish and improve export promotion mechanisms of production and increase policy support for export tax rebates, inspection and quarantine, credit insurance, and cross-border settlement.

Pay Attention to Training Foreign Trade Talents

Strengthen the training of investment attracting personnel and build an international and professional investment promotion team.

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