

The Interaction Mechanism between Border City Growth and Port Trade

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Abstract: Under the policy background of "the Belt and Road" Initiative, Chinese border cities and port trade will be faced with more challenges and opportunities. This paper aims at identifying the interactive mechanism between border city growth and port trade through studying their relations. On its basis, targeted and practical suggestions on the future development of border cities and port trade are provided combining the policy background. The study shows that the growth of border cities and the trade of ports have mutual promotion effect, so the development route of "mutual promotion of city and trade" should be adhered to, and some border cities should be further integrated into "the Belt and Road" Initiative.

1. Introduction

China has a vast territory and a long border, giving birth too many border cities. Due to China's long-term unbalanced development strategy, the southeast coastal cities develop rapidly, while the border cities are mostly limited by natural conditions, capital, technology and other factors, and their growth rate is far lower than that of the southeast coastal cities. In 2015, Chinese government put forward the "the Belt and Road" strategy to establish a strategic channel for economic cooperation and development between China and other countries along the route. Border port trade is not only the "foundation" of border cities, but also the lifeblood of connecting "the Belt and Road" strategic economic corridor. In the face of the new situation and new requirements after the "the Belt and Road" strategy is put forward, only through the co-development and mutual promotion of the growth of border cities and the development of port trade can we seize the development opportunity, integrate the border cities into the "the Belt and Road" strategy, and let the border cities embark on the fast track of benign development.

Most studies on urban growth at home and abroad focus on the characteristics and trends of urban growth itself. For example, Eaton (1997) selected the growth data of Japan and France to study the change course of urban growth, and the analysis results showed that the urban growth process has significant characteristics of parallel growth [1]. Sharma (2003) studied the urban growth in India and found that the urban growth on the whole shows a scattered trend, but in the short term shows a parallel growth trend [2]. In addition, some researches focus on the dynamic mechanism of urban growth. For example, Zhang Sitong (2010) used panel data and spatial econometrics to point out that GDP, fixed assets and foreign direct investment are all key conditions for urban growth in China, and have the characteristics of spatial spilt [3]. Research on port trade mainly focuses on the relationship between trade development and economic growth in border areas. For example, Du Jinsen and Gu Xiaosong (2000) found that the development of border trade not only improved the living standards of border residents, but also promoted the economic and trade relations between the two countries through a comparative study of the border trade between China and Vietnam [4]. Through the analysis of data from Yunnan province, He Lidao and Yang Yaqin (2007) found that foreign trade has a positive impact on economic growth [5]. In addition, some studies have noted the relationship between port trade and urban land use in border areas. For example, Liang Baokun (2016) analyzed the border port trade development and urban land use in Dongxing city from 1996

to 2013, and found that the land use change in the city has no significant impact on the development of border trade, but on the contrary, the border trade development plays a strong role in promoting the structural change of land use [6].

Through the research on the urban growth and port trade comb, the current research about urban growth more focus on the characteristics of the urban growth itself, situational and dynamic mechanism, on the interaction between urban growth and port trade research is relatively rare, and its research object is a foreign part more cities and domestic developed regions, the study of the Midwest cities in less developed areas is relatively lacking. However, the research on port trade pays relatively little attention to its interaction with urban growth.

This paper discusses the Chinese border city and port trade development course and the present situation, summarizes the spatial distribution characteristics of the border city and port trade development at different stages, and then to the border city of growth and to study the interaction mechanism of port trade, explore the interaction of the two control factors, summarizes the mechanism of the influence between the two. On the basis of the above research, the paper puts forward policy suggestions on the coordinated promotion of urban growth and port trade in border areas under the background of "the Belt and Road" strategy.

2. The meaning of urban growth

Urban growth reflects the improvement of the quantity and quality of cities in many fields such as economy, population and urban land use, and is a direct result of urbanization. Domestic scholars generally believe that urban growth is associated with economic growth and population growth, urban construction land area is increased, the land use structure change, also make the area presents as a carrier of the functions of economic growth, the process of gradually become people the habitable environment, covers the area of the city increased and service ability to improve two aspects [7]. Some scholars analyze the driving factors of urban growth with the expansion of geographical scope as the starting point. However, urban land is limited and cannot be extended to a certain extent. Therefore, it is unscientific and unreasonable to measure urban growth only from the perspective of expanding geographical scope, which is one-sided.

The growth of border cities in this paper refers to the urban growth of border cities. The author believes that urban growth should be the comprehensive growth of urban economy, land and population, which is reflected in the expansion of urban construction land area, the continuous improvement of urban economy and the growth of population base. It can be further understood from spatial and non-spatial perspectives. From the perspective of space, urban growth is manifested as the intensification of land use, the optimization of land use layout, the increase of the height of buildings on the facade of the city and the widening of the span, etc. From the non-spatial perspective, urban growth mainly refers to the change of environmental, social and economic factors in the non-spatial sense, such as population expansion, economic development, industrial structure adjustment, and improvement of people's living conditions and environmental quality.

3. The geographical distribution of border cities and the development of port trade in China

3.1 Geographical distribution of border cities in China

China's border provinces include nine provinces and autonomous regions, including Guangxi, yunnan, Tibet, Gansu, Liaoning, Jilin, Heilongjiang, Inner Mongolia and Xinjiang [8]. According to the statistical data of 2015, 34 cities in the nine provinces are located at the border and belong to the border in administrative divisions (table 1).

Table. 1 the number of major border cities in various regions of China

Region	Number of border cities
Northeast	17
Northwest	9
Southwest	8

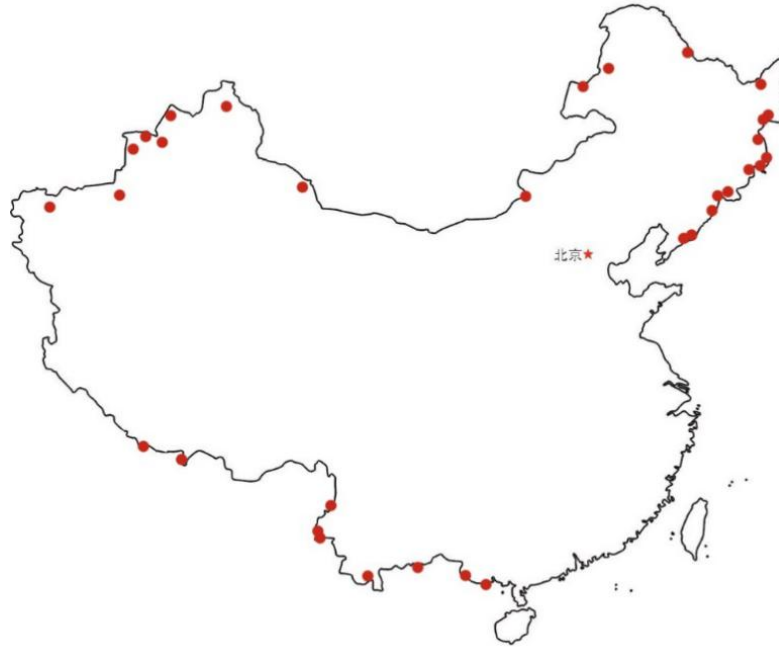


Figure. 1 Geographical distribution of major border cities in China

Due to the uniqueness of natural conditions, the cities in a particular region will face different geographical conditions and development factors in the process of growth, which will eventually lead to the uniqueness of the city in the geographical distribution. As can be seen from figure 1, Chinese border cities also have certain geographical distribution rules. First of all, border cities are distributed on the border of all border provinces and regions. According to border cities, they can be divided into northeast region, northwest region and southwest region. From the regional perspective, the spatial distribution of border cities is not balanced. The border cities in northeast and northwest regions are mostly concentrated in the mid-latitude area of 40° to 60° north latitude, while the border cities in southwest China are mainly distributed in the border areas of Yunnan and Guangxi provinces, showing the characteristics of east, west, sparse, agglomeration and distribution. In terms of administrative level, there are fewer prefecture-level cities and more counties and county-level cities. The grade and scale of cities decrease with the enhancement of agglomeration, and the functions of cities are similar. The mutual repulsive force thus generated becomes stronger, which is not conducive to the formation of the first border city and regional center, and has certain obstacles to the formation of agglomeration economy and scale economy effect.

3.2 The development course of China's port trade

From 1949 to 1981, the main characteristics of China's port trade were state monopoly and barter trade. During this period, the economic activities in border port areas were mainly for China to export agricultural and sideline products and raw materials in exchange for foreign exchange, technology, industrial products, etc. The trade forms were supply cooperation based on commodity supply agreement and small barter trade in border areas emerged naturally. After the change of regional situation, the border area port trade also gradually withered.

From 1982 to 2000, China's border ports gradually opened up, and port trade increased. After the reform and opening up, China's opening to the outside world has been continuously improved, and the economic and trade cooperation between China and neighboring countries has been gradually

normalized and normalized. The booming market demand makes port trade enter the leapfrog development stage. However, due to the problems of vague urban positioning and single industrial choice in border cities in China, China's port trade in this period was still dominated by border people's mutual trade and small trade, and the traffic location advantage of ports could not be converted into the economic development advantage of border cities.

Since 2001, China has formed a border port trading system in the new era. After China joined WTO, great changes have taken place in foreign trade policy. With the help of policy advantages, a large number of enterprises have settled in border cities and the categories of port trade commodities have been expanded accordingly. By 2015, the average proportion of border port trade to the total foreign trade of the whole province was 47.3%, and the impact of border port trade on the economic growth of border cities and counties was very significant, accounting for 60%-70% of the fiscal revenue and increase of border cities (counties).

4. Research on the interaction mechanism between border city growth and port trade

4.1 The promotion effect of port trade on the growth of border cities

4.1.1 Impact on economic growth




The direct effect of port trade on the economic growth of border cities is reflected in the increase of per capita income and fiscal revenue and the introduction of supporting industries. On the one hand, the development of port trade will increase the financial revenue of border cities and raise the wage level of related practitioners. on the other hand, with the port trade development, related to logistics, warehousing, finance and consulting related industry, with the help of the function of the port of transshipment, storage, processing and value-added, relying on the port trade related industry, port trade related occupancy of the tertiary industry will profoundly affect the border city of economic and social development, to create good investment environment, boosting integration of port economic system to mature.

The indirect effects of port trade on the economic development of border cities are manifested in promoting industrial agglomeration and optimizing industrial structure. The economic development of Chinese border cities has always emphasized "two markets, two resources", namely, domestic market and foreign market, domestic resources and foreign resources. In terms of market, the competitiveness of most products in border cities is not outstanding in the domestic hinterland, while the development of port trade provides opportunities for border cities to give full play to their talents, open up foreign markets and export commodities. In terms of resources, border cities import the shortage resources needed for domestic economic development from neighboring cities or regions through port trade, making up for the shortage of relevant production factors in local and other regions and promoting the economic development of local and other regions [9]. Generally speaking, port trade is bound to lead to the gradual equilibrium of the open market, intensifying competition, full competition between local enterprises and domestic and foreign enterprises, and elimination of backward industries. In order to ensure the continuous development of local economy, border cities are bound to make adjustments to relevant industries. On the one hand, the rational allocation of industrial resources is ensured and the industrial structure of the city is optimized. On the other hand, it can promote open competition, catalyze industrial agglomeration, encourage related industries to enter border cities to develop regional superior resources, and improve industrial competitiveness.

4.1.2 Impact on urban land use growth

The growth of urban land use in border areas is driven by the population and industrial agglomeration brought by the development of port trade. The scale of urban land use extends from the center along the traffic line to the port and hinterland. Generally, the spatial expansion of border cities will change with the border and natural conditions, extending inland from the port facilities along the main traffic lines. Port trade is the backbone of the export-oriented economy of border cities, which can exert a great influence on the spatial expansion and zoning layout of border cities.

Table. 2 main urban land use growth patterns of border cities in China

The spatial structure	Concentric circles	leaps and bounds	tape
A typical city	Dongxing	Manzhouli	Ruili
Spatial growth model	It grows around the central circle	Polycentric growth in reverse extension	It grows in the axial direction
Distribution of land use types	The clustering distribution of functional areas	The land function in the core area is concentrated and clear, and the land utilization in the periphery of the city is different	All land use types spread evenly from the center to the endpoint
Built up area Schematic diagram			

As shown in table 2, the urban land use growth patterns of China's border cities can be divided into three categories. The first one, the spatial growth of border cities of concentric circle land use growth is limited by natural conditions; urban development is closely connected with ports, and some infrastructure is shared to form a group-type layout. The second one, border cities with leaping land use growth urban land use growth achieves "separation of cities and ports" through advance planning. The old urban areas continue to develop on the basis of the existing layout, while the new urban areas carry other urban function positioning and gradually deviate from the role of port service. The third one, most border cities with belt border land growth have several ports, and the port types are not limited to land ports, but also may be water and air ports. Urban land extends from urban areas and main ports to secondary ports, and all kinds of zones are distributed step by step.

4.1.3 Impact on population growth

The urban population growth of border cities mainly comes from the labor force flow. Due to the economic development and industrial structure change, urbanization is rapidly promoted, and the reason behind it is the mechanical growth of population brought by labor force inflow. Labor mobility can be divided into regional mobility and cross-border mobility.

The essence of regional flows is polarization effect. On the one hand, the development of China's border areas is often subject to natural conditions and traffic factors. Border cities have become the growth poles in the region thanks to the development of port trade. Port trade, on the other hand, the development of the convenient conditions to reduce the transportation cost of enterprise, to the border city of economic development has brought the convenience of both raw materials and market condition, the capital to concentrate in the border city, the heart also in two aspects of market and policy to attract into border city, under the leading of the labor force flowing in.

Cross-border mobility is also a major feature of labor mobility in border cities, which varies regionally due to different levels of economic development and labor markets between countries. For example, many border cities in northeast China export labor force, which is caused by the high labor price of Russia and Mongolia due to their insufficient population. The outflow population is mainly engaged in engineering construction and processing industries, while the minority inflow population is mainly engaged in tourism, culture, port trade and other industries. On the contrary, most border cities in southwest China are labor input. Countries on Indo-China Peninsula have backward economic development and large population. In addition to historical and ethnic reasons, there are a large number of overseas Chinese and cross-border ethnic groups. Driven and influenced by the national open policy along the border, the economy and society of southwest border cities have developed rapidly, people's living standards have been improved, and a large number of labor forces from Vietnam, Myanmar and other countries have flooded into China. According to statistics, in

2015, only the foreign population in Ruili city of Yunnan province passed through the border more than 30,000 times per day, and the Burmese nationals temporarily residing in Ruili city exceeded 40,000, accounting for more than 20% of the city's total population [10].

4.2 The supporting effect of border city growth on port trade

4.2.1 Support port facilities construction and promote port management reform

Port construction mainly refers to port infrastructure construction, covering port supporting facilities, logistics transit station, inspection and quarantine inspection center, customs inspection center and other construction. Port management mainly refers to border inspection, customs, inspection and quarantine and other supervision and enforcement, as well as port, airport, station and other transportation infrastructure operation and management.

At present, there is still a certain gap between the port infrastructure in the coastal and riverside areas. Most border city of economic and social development level is not high, local fiscal investment co., LTD., for the port construction and management of consciousness is low, specialization, intensification is not high, the support of technology and talent is weak, the port construction and management level can't keep up with the demands of the development of the port trade, seriously affecting the border city of port trade development.

From the development track of some coastal port cities, it is easy to find that the scale of land use, land type and industrial structure will change with the increase of port economy's contribution to the total national economy. City of port function, the level of port construction and port service type for higher, prompting port to optimize and upgrade, strengthen infrastructure construction, strengthen the port management, port international competitiveness, building scale economy, etc., it shows that the border city of expansion of port construction and management has an important role in promoting.

4.2.2 Drive port trade to increase quality increment

The growth of border cities can drive the quality and increment of port trade and promote the comprehensive development of port trade. In terms of increment, the growth of border cities has driven the improvement of traffic conditions and the construction of supporting facilities, narrowed the distance between border cities and foreign markets and domestic economic hinterland, improved the transport efficiency of ports, reduced logistics costs, enhanced the competitiveness of ports, and promoted the volume of traffic of border ports. Quality aspect, China's border trade in small border trade, commodities, the development of the processing of manufactured goods, the added value of the import and export commodities, the border city of industry transformation of economic growth will inevitably accompany, competitive industries because of factors such as traffic, markets and raw materials in the local, forming the border highland of talents, technology, capital, constantly improve the position of the border city in the industrial chain, to break the development bottleneck of the border trade low value-added goods.

4.3 The controlling factors in their interaction

4.3.1 Geographical location factor

Location is a kind of production factor of the city itself, which is different from the physical resources such as capital and human resources. Border cities naturally have the economic particularity of ports. Before the reform and opening up, the military defense function of border cities was more important than other functions, which greatly restricted the growth of border cities. After the reform and opening up, the military defense function of border cities has also been weakened, which has economic development, cultural exchanges, friendly exchanges and other functions. At the same time, border cities have more prominent geographical advantages than inland cities because they have customs clearance ports [11]. The primary location value of border city is located at the border, followed by the window of border area, namely port value. People are the main body of production and consumption behavior. Meeting the basic conditions of population

agglomeration is the safety and comfort of life. The location of border cities itself has an impact on the interaction between urban growth and port trade, forming a unique pattern of land use and distribution.

4.3.2 Economic and environmental factor

The development of trade between the two countries is limited by their respective economic development, and the development of port trade is no exception. Due to the shortage of factor endowment, border cities are highly dependent on the supply of resources in inland areas, and when the economy of the two regions or countries they connect is sluggish, the port trade will shrink sharply. The 2008 financial crisis not only affected the development of China's maritime import and export trade, but also dealt a severe blow to the development of China's port trade, especially the northern border port trade. Under the background of neighboring countries' economic impact, the flow of factors is restricted, which greatly restricts the further development of port trade and drives the growth of border cities.

4.3.3 Geopolitical factor

Geo-relationship refers to the political, military, economic, trade, resource, environment and other relations formed between countries on the basis of geographical space. China and neighboring countries are highly complementary in terms of the structure of resource elements and economic and technological structure. The development of border cities is closely related to the geopolitics of surrounding areas, and its foreign trade is greatly influenced by external environment and border trade policies. Take Ruili as an example. In the past three years, the ups and downs of China-Myanmar relations and Myanmar's strengthening of export control have led to a decline in the total amount of imports and exports, which has seriously affected the development of Ruili port trade. But in general, the total amount of foreign trade and import and export is positively correlated with the development of port trade, and with the stability of China's peripheral political situation and the strengthening of border trade policy, this correlation will continue to increase.

4.3.4 Management policy factor

The macro-policies of regional development, the administrative management of city government and the individual choice of behavior subject have influence on the interaction intensity of border city growth and port trade to some extent. Under the macro background of deepening reform and opening up in China's border areas, this influence is positive on the whole. In terms of administration, the special management system of frontier cities, which is first to try, removes the management obstacles for urban growth and port trade. In terms of strategic planning, reasonable industrial selection policies can attract more manufacturers to settle in border cities, transform transit trade into export processing, and enhance the driving effect of port trade on urban growth [12].

5. Policy suggestions to realize the coordinated promotion of border city growth and port trade.

5.1 Regional development: adhere to the development route of "mutual promotion of city and trade".

In view of the development problem of "heavy port and light city" widely existing in border cities and ports, it is necessary to find a breakthrough in the growth of border cities from the perspective of the whole industry and insist on the continuous integration of urban growth and port trade development. On the one hand, the port city characteristic industrial development zone should be vigorously developed, and enterprises of import resource development and processing, export processing and assembly should be actively undertaken to settle in the industrial park, so as to improve the connection between the industrial development of border cities and foreign markets and domestic economic hinterland, and deeply integrate into the port trade industry chain. On the other hand, in the case of limited resources in the region, the tertiary industry, which is dominated by trade

services, should be used as the entry point to develop supporting industries such as catering, accommodation and warehousing and logistics, so as to drive border cities into the fast track of development while improving the service capacity of ports. Specific policy recommendations can be divided into two aspects, economic development and urban construction.

In terms of economic development, border cities need to adhere to the concept of unbalanced development, concentrate resources and make key breakthroughs. At the present stage, border cities do not have the manpower, material and financial resources needed for balanced development, so they must make key breakthroughs in selected industries according to market demands and their own conditions. Border cities should develop their own endowments, support superior industries and promote the overall economic development of the region.

In terms of urban construction, border cities must improve their infrastructure management capabilities. Adhering to the construction idea of infrastructure first, border cities need to constantly strengthen the construction and management of regional transportation trunk lines, development parks and port facilities, undertake industrial transfer with good infrastructure environment, and ensure the distribution of people and logistics in ports with perfect supporting facilities. To achieve a breakthrough in the efficiency of infrastructure management, we should start from the construction of port service system and e-port to improve the customs clearance service capacity of ports and enhance the economic and trade competitiveness of cities.

5.2 Strategic planning: ensure that border cities are deeply integrated into "the Belt and Road" strategy.

We should make top-level design and overall planning. We will establish and improve systems of communication and cooperation between governments at all levels, and make clear plans and positions. General Secretary Xi stressed: "to promote 'the Belt and Road' construction, the relationship between the overall national goal and local specific goal should be properly handled. Through the top-level design of "the Belt and Road" node cities by the state, avoid repeated and unnecessary competition of local governments, explore the characteristics and roles suitable for the development of border cities, make overall planning and rational layout, and realize the benign development of border cities.

Resources should be allocated and guaranteed. We will continue to give preference to the policies for the difficult border areas and shift backward production capacity from the east to the central and western regions. In view of the problems of labor force and financial security in the development of border cities and ports, a long-term assistance mechanism should be established to facilitate the flow of resources to border cities. We will continue to deepen reform of the management system, and encourage border cities and port management agencies to explore boldly and take the lead in trials.

We need to enhance strategic mutual trust and deepen regional international cooperation. In response to the potential China Threat theory and trade protectionism among trading target countries, we will improve regional coordination and liaison mechanisms with foreign countries, strive to improve the sustainability of our own policies, enhance strategic mutual trust among countries, normalize communication and dialogue mechanisms, and defuse external policy risks faced by port trade.

We need to realize cooperative development and increase the scale of assistance for construction development and investment. In advancing our country border city and port infrastructure construction at the same time, through "the Silk Road Fund", the investment Banks and other institutions investing countries along the silk road economic belt six big economic corridor port infrastructure construction, provide a good platform for port trade development, expand the scope of port transport between the two countries, improve the efficiency of the port customs clearance and radiation ability.

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