An Overview of Analyses of the Siphoning Effect of New State-Level Districts

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Abstract. This paper examines the siphon effect in China's national-level new areas, focusing on the mechanisms by which policy support, geographic location, economic fundamentals, and innovation capacity influence the attraction of resources, talent, and capital. Adopting the methods of literature review and case study of Tianjin Binhai New Area, it is found that while attracting resources and promoting economic development, national-level new areas also exacerbate the problems of resource loss and development imbalance in the neighbouring areas. To address these problems, this paper puts forward policy recommendations to optimise resource allocation, promote regional synergistic development, enhance innovation capacity and optimise industrial layout, and looks ahead to the future development direction of national-level new areas, emphasising balanced and sustainable regional development through policy guidance and regional cooperation.

Keywords: New State-level Districts, Siphon Effect, Policy Support, Geographic Location, Economic Base, Innovation Capability.

1 Introduction

China's national new zones are an important part of the country's strategic layout, designed to promote rapid regional economic development and urbanisation through policy and resource support. These new zones are not only engines of regional economic development, but also important venues for national institutional innovation and policy experimentation. However, with the construction and development of new state-level zones, the recent development has shown a clear "decadence". Liu Jihua and Xun Chunbing's [1] research suggests that the planning of national new zones is too large, resulting in excessive concentration of resources in megacities and core cities, exacerbating problems such as unbalanced regional development and big city disease. Some research data show that whether the new area is set up in the provincial capital and above, or other cities, there is a "siphon effect" on the neighbouring cities in the province. [2] The siphon effect not only affects the development path and characteristics of the new district itself, but also has a profound impact on the spatial structure and economic pattern of the neighbouring areas and the city as a whole.

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The study of the siphon effect helps to reveal the differences and characteristics of different types of national new zones in attracting resources, talents and capital, and helps to understand the formation and evolution process of the internal spatial structure of new zones. At the same time, by recognising the impact of the siphon effect on urban and regional development, it is possible to formulate more effective urban planning policies and development strategies, promote the coordinated and sustainable development of the economy of new zones, enhance the economic competitiveness and attractiveness of new zones, and promote industrial upgrading and technological innovation.

2 Concept and Development of the Siphon Effect

The siphon effect refers to the phenomenon whereby an area's comparative advantage or attractiveness causes it to attract resources or population flows from surrounding areas, thereby enhancing its own development and influence. This phenomenon is not only an economic phenomenon, but also involves a complex interplay of social, cultural and political factors, with important implications for the formulation of urban and regional development strategies.

Regarding the formation of the concept of urban siphon effect, foreign scholars such as Joseph Schumpeter [3] and Paul Krugman [4] have not explicitly proposed the term "urban siphon effect", their studies provide a theoretical basis for understanding this phenomenon. In the course of research on the siphon effect, the positive spillover effect and the negative siphon effect have always been studied together. In Muldaur's theory of circular causation, these two effects correspond to the reflux effect and the diffusion effect, respectively [5]. In recent years, with the acceleration of China's urbanisation process, scholars have begun to pay more attention to and study this phenomenon, and gradually use the concept of "urban siphon effect" to describe the attraction and agglomeration of resources in large cities or national new areas. Cai Weimin, Gu Lijuan [6], Hong Weijie, Luo Biliang [7] and other scholars have also begun to study the phenomenon of urban siphon effect that is occurring under the current situation of China's development. Lei Yutao and other scholars in the metropolitan area and urban agglomeration centre of the city's economic radiation to the surrounding cities in the study of the siphon effect and the spillover effect of the influence of the mechanism [8].

3 Analysis of Elements Affecting the Urban Siphon Effect in National New Areas

3.1 Policy Factors

National and local governments attract enterprises and investors through favourable policies such as tax breaks and exemptions. At the same time, financial subsidies are also an important means of attracting high-tech and innovative enterprises to move in. Favourable land use policies, in the form of low price or free land supply, further attract

large enterprises and projects to settle in the area [9]. In addition, whether the master-plan of a new district is scientific and reasonable directly determines its development potential and attractiveness. And an efficient and transparent management system influences the introduction and retention of enterprises and talents.

3.2 Geographical Location

Good transport conditions, such as the improvement of motorways, railways and airports, reduce logistics costs and improve the operational efficiency of enterprises. Besides, the impact of high-speed rail on the brain drain of small cities is also reflected in the siphoning effect, i.e. talents from small cities are more likely to flow to the neighbouring big cities. The high-speed railway reduces the high cost of living in big cities, such as housing prices, which makes it easier for small-city talents to work in big cities and return to live locally, and reduces the difficulties and mental burden of life. [10] At the same time, new districts that are close to economically developed areas or important port cities are able to take advantage of their existing economic advantages and attract more resources and talents. While these geographical advantages give new districts a stronger regional radiation capability, the resulting siphoning effect of population and capital should not be ignored.

3.3 Economic Base

New districts with a strong economic base are more likely to attract external resources and promote their own rapid development. A good level of economic development enhances the investment environment of a new district, attracting more capital and enterprises. In addition, whether a new district has high value-added industrial clusters directly affects its ability to attract high-end talents and capital [11]. A diversified industrial structure can enhance the economic risk resistance and attractiveness of the new district and further consolidate its development advantages.

3.4 Innovation Capacity

The number and quality of scientific research organisations in the new zones have a direct impact on their innovation capacity. The level of R&D investment in new zones determines their ability and achievements in scientific and technological innovation, and the results achieved in the field of scientific and technological innovation are important factors in attracting high-tech enterprises and high-end talents. These make new zones more competitive in attracting resources and talents [12]. To elevate the innovation capabilities of new zones, it is imperative to develop a synergistic environment that fosters partnerships between research entities, industries, and governmental bodies. This can be accomplished by setting up collaborative research programs and innovation clusters that facilitate the mutual exchange of expertise and resources. It is also essential to cultivate an entrepreneurial ecosystem by providing startup accelerators, financial aid, and mentorship, which will help nurture a vibrant

community of innovators poised to pioneer technological advancements and establish new business sectors.

4 Tianjin Binhai New Area Siphon Effect Case Study

4.1 Policy Factors

The rapid development of Tianjin Binhai New Area has benefited from the support of a series of favourable policies. The national and local governments have attracted a large number of enterprises and investors to the new area through preferential policies such as tax reductions and exemptions. For example, high-tech enterprises enjoy certain tax reductions and exemptions, which promotes the gathering of these enterprises in the new area. In addition, Tianjin Binhai New Area has also attracted many innovative enterprises through financial subsidies, especially in the fields of aerospace, new energy and biomedicine, which have greatly reduced the pressure of initial investment. Land policy is also an important means of attracting large-scale enterprises and projects to the Binhai New Area. The government has provided favourable land-use policies and attracted a large number of investments by supplying land at low prices or free of charge. For example, the Dongjiang Bonded Port Area in the Binhai New Area has attracted a large number of logistics and trading enterprises through its land policy [13].

The establishment of the Tianjin FTZ, which is located entirely within the Tianjin Binhai New Area under the country's strategic policy, has also produced a significant urban siphoning effect. This effect is reflected in the attraction of companies to locate their headquarters in the FTZ, thus enhancing the region's economic dynamism. As a result of the industrial clusters and financial innovations within the FTZ, high-tech enterprises and high-end tertiary industries have clustered there, leading to a gradual increase in the proportion of tertiary industries in the FTZ. For example, Tianjin FTZ has attracted a large number of foreign trade enterprises to invest and settle in the area, which is a great attraction not only to local Tianjin, but also to foreign trade enterprises in Beijing and Hebei, which have turned to customs clearance in Tianjin, increasing the total amount of import and export of customs clearance business in Tianjin [14]. However, the siphon effect has an unfavourable impact on the neighbouring regions, which may lead to difficulties in industrial restructuring.

4.2 Geographical Location

Tianjin Binhai New Area has a significant advantage in terms of its geographical location, with accessibility being an important factor in its siphoning effect. The new area has a well-developed transport network, including motorways, railways and airports. For example, the Beijing-Tianjin-Tanggu Expressway, the Beijing-Tianjin Intercity Railway and the Tianjin Binhai International Airport have greatly improved the external connectivity of the new area, reduced logistics costs and attracted more enterprises and investors to the area. The opening of the Beijing-Tianjin Intercity Train has greatly shortened the time it takes to travel from Beijing to Tianjin, strengthening the links between the two major cities and making it easier for more people to travel to

the Binhai New Area. This rapid transport network facilitates the flow of talent, capital and technology, which helps to attract inward investment, for example, financial institutions such as BOC Leasing and US Citibank have chosen to locate in the new area.

Binhai New Area is close to two economically developed regions, Beijing and Tianjin, with obvious location advantages. As an important part of the Bohai Rim Economic Circle, the Binhai New Area has attracted a large number of resources and talents by taking advantage of its geographical proximity to Beijing and Tianjin [15]. The new area has a strong regional radiation capacity, and through its own development has driven the economic growth of the surrounding region while also negatively affecting smaller neighbouring cities.

4.3 Economic Base

On 26 May 2006, the State Council issued an opinion on the promotion of the development and opening up of the Binhai New Area of Tianjin, proposing that the functional positioning of the Binhai New Area of Tianjin should be "relying on the Beijing-Tianjin-Hebei region, serving the Bohai Rim, radiating the three northern regions" and "facing Northeast Asia". Tianjin Binhai New Area's strong economic foundation, is caused by its more and more obvious city siphon effect is an important factor. In fact, the economic foundation of Tianjin Binhai New Area has been formed in the early stage, relying on the "advantage of fishing and salt" and the advantages of the port, such as Tianjin Port as the largest comprehensive trading port in the north, as well as the marine chemical industry and sea salt production bases in Tanggu and Hangu. By the early 1990s, although Tianjin's economic development was slower than the national average, the Binhai New Area gradually became the focus of the city's economic development with favourable policies and various advantageous resources, gathering a large number of enterprises and investments, including the Tanggu Marine Hi-Tech Development Area, which laid a solid social and economic foundation for the subsequent rapid development [16]. The good economic foundation of the new area makes its economic development level high and has a good investment environment, which attracts a large amount of capital and enterprises. For example, the financial reform pilot zone and free trade pilot zone in Binhai New Area have attracted a large number of financial institutions and multinational corporations, injecting a strong impetus for the development of the new area.

The establishment of new national-level zones was initially targeted at the first or core cities with leading levels of development, with the aim of promoting the development of coastal areas and their integration into the international economic landscape through the agglomeration advantages of these cities. However, over time this has led to a reduction in the role of growth poles, as the agglomeration advantages of these cities have become significant [1]. New national zones generally have a strong economic base, which can exacerbate regional imbalances.

4.4 Innovative Capacity

The favourable environment for science and technology innovation in Tianjin Binhai New Area is an important reflection of its siphoning effect. There are many scientific research institutions and universities in the new area, such as Tianjin University and Nankai University, which have set up research institutes and laboratories in the new area, thus enhancing the innovation capacity of the new area. The new area is also very active in R & D investment, the government and enterprises in science and technology R & D investment increased year by year, promoting the continuous emergence of scientific and technological innovation results. By opening up to the outside world, the Binhai New Area has attracted high-end technologies and talents from home and abroad, and has taken advantage of the agglomeration effect of large enterprises to form an innovative network environment, which has enhanced its innovation capacity . However, it has also increased the demand for high-end talents, which has a gathering effect on the surrounding labour and capital.

Under the above series of initiatives, Binhai New Area has achieved remarkable results in the field of science and technology innovation, attracting a large number of high-tech enterprises and high-end talents. For example, the Biomedical Industrial Park in Tianjin Binhai New Area has gathered many biomedical enterprises and developed a number of internationally competitive biomedical products. These innovations have not only improved the competitiveness of the new area, but also laid the foundation for the new area to attract more high-tech enterprises and high-end talents.

In summary, Tianjin Binhai New Area, through its policy support, geographic location advantages, strong economic foundation and strong innovation capacity, is developing rapidly while at the same time inevitably generating a siphoning effect. The challenge of unbalanced regional development brought about by the development process of new national-level areas requires continuous optimisation of policies and planning in future development to promote coordinated regional development and achieve sustainable growth.

5 Suggestions for Policy Optimisation

5.1 Balanced Resourcing

In order to mitigate the negative impact of the siphoning effect of Tianjin Binhai New Area on neighbouring regions, the Government should formulate a more balanced resource allocation policy. It should enhance the economic attractiveness of neighbouring areas by increasing fiscal transfers and infrastructure investment in these areas. Specific measures include improving the transport network, upgrading the quality of public services, and attracting the inflow of enterprises and talents.

5.2 Promoting Regional Synergy

There is a need to strengthen the synergistic development of the Tianjin Binhai New Area with neighbouring regions and to promote common development through re-

gional cooperation and resource sharing. A regional development fund can be set up to support development projects in neighbouring regions and promote interregional industrial chain cooperation and integration. A regional synergistic development mechanism should be established to promote the exchange and cooperation of information, technology and talents.

5.3 Enhancing Innovation Capacity in Neighbouring Regions

The Government should increase its investment in scientific research institutions and higher education in neighbouring regions to enhance their innovation capacity. Through the establishment of innovation and business incubators and science and technology parks, innovative enterprises should be encouraged to settle in neighbouring regions. At the same time, it should provide more funding and policy support for scientific research to attract and train high-end talents, so as to enhance the independent innovation capacity of neighbouring regions.

5.4 Optimising Industrial Layout

Optimise the industrial layout of Tianjin Binhai New Area and the surrounding areas through scientific industrial planning. The government should encourage the expansion of high value-added and high-technology industries to the peripheral areas to avoid excessive concentration of industries in the new area. Provide preferential policies and supporting support for industrial transfer to promote industrial upgrading and economic restructuring in the neighbouring areas.

6 Conclusion

This paper provides an in-depth analysis of the siphoning effect in China's national-level new areas, focusing on the mechanisms by which policy support, geographic location, economic fundamentals, and innovation capacity influence the attraction of resources, talent, and capital. The study finds that while national-level new areas have achieved significant success in attracting resources and promoting economic development, they have also exacerbated resource loss and development imbalances in neighboring regions. To address these issues, the paper proposes policy recommendations such as optimizing resource allocation, promoting regional synergistic development, enhancing innovation capacity, and optimizing industrial layout. Looking ahead, national-level new areas should continue to play a leading role by guiding policies and allocating resources to promote the joint development of surrounding regions, achieving balanced and sustainable growth. Additionally, constructing a regional innovation ecosystem centered on national-level new areas will enhance overall technological innovation capacity, drive regional integration, and promote green development, thereby significantly boosting the region's sustainable development capacity

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