

Regional development study how to develop a small city affected by siphoning: A case of a Chinese city

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Abstract: Small cities located on the periphery of large cities have long faced challenges such as difficulties in economic development and population loss, especially in China. The concentration of a few super-large cities in China has hindered the growth of per capita income in most small cities and led to a widening income gap between cities. In addition, studies have shown that central cities can have a polarizing impact on surrounding areas thereby hindering economic growth. To address these issues, this paper examines Baoding, a small city close to the capital, Beijing. Through literature and policy research, we analyse how Baoding can take advantage of the Beijing-Tianjin-Hebei integration policy and pursue its urban development in the presence of neighbouring large cities. By providing theoretical suggestions the research contributes to Baoding’s urban development through five potential industries: healthcare, automotive, electronics, digital, and tourism. Furthermore, we emphasize the practical contributions such as: the importance of higher education as a key driver of sustainable development for the city. Based on our analysis, we suggest that Baoding’s strategic development direction should be aligned with Beijing’s needs while recognizing that such alignment is merely a means to an end. The goal of urban development should always be to improve the living standards and well-being of citizens.

Keywords: China, regional economy; regional coordinated development; urban siphon effect; Beijing-Tianjin-Hebei integration; urban development

1. Introduction

Baoding, closely associated with Beijing, takes its name from the phrase “defend the capital, stabilize the world”, and has always been a strategic location in the Beijing-Tianjin-Hebei region known as the “southern gate” to the capital. Since the proposal of the coordinated development strategy for the Beijing-Tianjin-Hebei region was put forward, the development of Baoding has been receiving significant attention. With the strategy now moving towards its mid-term goals and the increasing efforts to alleviate Beijing’s population pressure, the key industries and tasks for the development of the Xiong’an New Area have been identified. Facing these dual strategic opportunities, how will Baoding develop in the future?

In 2020, Baoding’s GDP reached 48.74 billion USD – compared with 94,699 million USD of Budapest and 625.1 billion USD of London – ranking fifth in the province. The annual growth rate of GDP in China is 2.2%, but in Baoding it was 6.3%, and the per capita disposable income of urban and rural residents reached 4,941.72 USD and 2,470.86 USD, respectively. Due to the covid-19 impact, most countries’ annual growth rate of GDP is declining. For example, Austria’s figure is -6.5% and Canada’s is -5.5%. The annual average growth rate of industrial value-added of large-scale industries was 4.5% in Baoding while 21.4% in Glasgow, which means Baoding has space for industrial development. And the annual average growth rate of fixed asset investment was 4.6% in Baoding, which is also lower in most countries around the world: for example, 14.96% in Japan and 16.1% in Hungary.

In terms of coordinated development with Beijing and Tianjin, there are 469 cooperation projects with a total investment of 14.43 billion USD. The transportation network connecting Beijing, Tianjin, Baoding, Xiong’an and Shijiazhuang is becoming increasingly dense, and

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Baoding is becoming a regional comprehensive transportation hub. During the 14th Five-Year Plan period, Baoding has set an overall target of an annual average GDP growth rate of over 8% and an annual average per capita disposable income growth rate of over 8% for urban and rural residents. However, as a small city surrounded by several large cities, Baoding is inevitably affected by the siphoning effect, which leads to the problem of restricted resources outflowing from Baoding's industries. The concept of integrated development in the Beijing-Tianjin-Hebei region has effectively alleviated this problem (Shi & Wang, 2019). However, it is necessary to determine the positioning of Baoding's urban functions and development direction.

Based on the literature review, we found that there are several types of research focusing on small-city development under government policy, especially in the case of China. That is why we have come up with this question:

RQ: How to develop Baoding under the conditions of its location and government policy?

To answer in question, the authors set up some requirements for data validity and inclusion criteria. After data collection, a systematic review was conducted to analyse and synthesize the information. The data is presented in a structured manner to facilitate easy comparison and analysis. The analysis focuses on identifying patterns, trends, and themes relevant to the development of Baoding and the Beijing-Tianjin-Hebei region.

As a result, we can conclude that in the short term the most reasonable positioning for Baoding is to serve the development needs of Beijing (such as helping to alleviate population pressure in Beijing), thereby ultimately achieving mutual benefit. Overall, the core strategy of reshaping the development of Baoding city is based on the development of the capital city Beijing with a focus on five major industries as main development direction: medical services, new energy vehicles, intelligent manufacturing of electric power, digital services, as well as tourism and culture industries.

2. Literature review

2.1. Definition of the urban siphon effect

The urban siphon effect, also known as urban sprawl, is a phenomenon that refers to the continuous expansion of urban areas at the expense of rural lands. Baoding is inevitably affected by the siphoning effect, which leads to the problem of restricted resource outflow from its industries (Xiao et al., 2018). The causes of the urban siphon effect are multifaceted and vary across regions. Some of the key drivers of urbanization include population growth, economic development, and infrastructure expansion. According to Wang (2010), rapid urbanization in China is mainly driven by industrialization and globalization, which has resulted in the concentration of population and economic activities in urban areas. Similarly, in the United States, urbanization is driven by factors such as job opportunities, access to education and healthcare, and improved quality of life (Zhang et al., 2017). Institutional support mechanisms are substituted by social and business networking ties in developing countries such as China, Malaysia, and Mongolia (Ulziimaa et al., 2021). The consequences of the urban siphon effect are diverse and far-reaching and affect not only the environment but also the social and economic aspects of life. One of the most significant impacts of urbanization is the loss of arable land, which reduces the capacity for food production and increases food insecurity (Li et al., 2016). Urbanization also contributes to air pollution (Zhang & Wang, 2007), water pollution (Yang et al., 2004), and climate change (Xiao et al., 2005), which have negative impacts on human health and the ecosystem (Zheng et al., 2003). In addition, urbanization can exacerbate income inequality, as it often leads to the concentration of wealth and resources in urban areas thus leaving rural communities behind (Xu et al., 2020). Various strategies have been proposed to mitigate the negative impacts of the urban suction effect. One of the most effective approaches is to promote sustainable urban development, which includes measures such as compact city planning, green infrastructure, and smart growth (Wang et al., 2019). Another potential solution is to decentralize economic activities and promote the development of rural areas, which can reduce the pressure on urban areas and enhance overall regional development (Zhang et al., 2017). In addition, the use of innovative technologies such as precision agriculture and renewable energy can contribute to

sustainable development and reduce the negative impacts of urbanization (Zhang & Wang, 2019).

In summary, the urban siphon effect is a complex and multifaceted phenomenon that requires a comprehensive understanding of its causes, consequences, and potential solutions. This literature review has provided an overview of the current state of research on the urban suction effect, highlighting its negative impacts on the environment, society, and economy. While various strategies have been proposed to mitigate its negative impacts, more research and action are needed to achieve sustainable and equitable urban development.

2.2. Definition of Urban Development

As for the research content, the relevant aspects of urban development are mainly focused on four areas. First, the internal research of urbanization. Hertzler said that urbanization is primarily a byproduct of economic growth and technological change, which enables large-scale production and economy, and leads to a shift of population to cities. Second, urbanization is the study of the mechanisms of urbanization, especially from the perspective of urban population aggregation and the level of economic development. In general, cities are considered gathering places for the non-agricultural population. The concentration of people in cities is a natural consequence of economic growth and differentiated development, a response to the division of labor in space created by industrialization. From an economic perspective, the concentration of population and economy in cities is the result of agglomeration and economies of scale. It is the interdependence of the labor process facilitated by the development of horizontal connections among enterprises, and results in the selection of central locations and consequent production concentration (Wang & Zuo, 2017). According to Vance's (1970) perspective, a positive correlation exists between the percentage of tertiary industry in the workforce and the degree of urbanization (Balchin et al., 2019). Renaud's (1981) study involved the analysis of 111 countries revealing that an increase in GNP from \$250 to \$1500 is typically associated with a rise in urbanization to approximately 50% (Thrift & Forbes, 2006). Additionally, the study found that when GNP reaches \$5000, urbanization tends to increase to around 75%. According to Henderson's (2000) findings, there exists a correlation coefficient of 0.85 between the rate of urbanization in various countries and their respective per capita GDP (logarithmic). Thirdly, urbanization is the investigation of the phases of the progression of urbanization. The three-stage urbanization theory, which includes urbanization, suburbanization, counter-urbanization and the decentralization stage of the inner area, is widely considered the most representative model. The stages of urbanization explicate the cyclical process of urban development. These stages include the following: the central city area experiences the most rapid population growth during the initial phase of urbanization, followed by more accelerated population growth in the suburbs. Subsequently, there is a decline in population in both the central city area and the surrounding regions, with the central city area experiencing a more rapid decline than the surrounding areas during the counter-urbanization phase. Finally, during the re-urbanization phase, the central city area experiences population growth that surpasses the surrounding areas. The assessment of urbanization through evaluation research primarily relies on the pivotal function of capital accumulation and circulation in appraising urbanization occurrences.

At the same time, firstly, developed countries have experienced a dispersal-concentration trend of the urban population. Since the 1960s, developed countries have witnessed the phenomenon of counter-urbanization, with many people and industrial enterprises shifting to small and medium-sized towns, resulting in a decrease in the population of large cities. Additionally, there is a great emphasis on urban planning with strict and comprehensive procedures in planning. In addition, there is a strong emphasis on urban planning, with strict and comprehensive procedures in planning, demonstration, approval, implementation, and supervision. For example, Venice, with a population of only 100,000, has always adhered to its plan. Thirdly, concerning urbanization, the preservation of historical context and the proper handling of new district construction and old district transformation are important. Urban development mainly focuses on the transformation of old areas. Fourthly, there is a strong emphasis on infrastructure construction and improvement. Fifthly, Germany's research and construction of small cities in the country have exemplary significance. Although Germany's urbanization started late, it progressed rapidly completing urbanization in just 60

years. A unique aspect is the coordinated development of various types of cities, with small towns distributed throughout the country. Most people live in small towns with a population of around 100,000. Good public transportation provides balanced guarantees for urban development. The “dispersed-concentrated” urban layout significantly reduces the pressure of population transfer and high concentration on the central city. The fundamental of urbanization lies in economic development. The concept of administrative division should be weakened, and regional coordination should be strengthened to promote the integrated development of urban and rural areas. The results section of the article gives details of two examples of how countries have developed small cities – the USA and the Netherlands.

2.3. Definition of Industrial Development

Industrial development positioning is defined as the identification and selection of industries that have the potential to create economic growth and development in a region or city (Wang et al., 2019). The process involves assessing the region or city’s resources, strengths, and competitive advantages to determine which industries are most suitable for development. Key factors that influence industrial development positioning include the region’s or city’s natural resources, labor force, infrastructure, and technology (Zhang & Li, 2015). Proper industrial development positioning is crucial for achieving sustainable economic growth and development. Regions and cities that fail to identify and prioritize strategic industries risk wasting resources and missing opportunities for economic growth (Qiu, 2010). Therefore, it is essential to have a comprehensive understanding of the region or city’s resources, strengths, and competitive advantages to determine the most suitable strategic industries for development.

Industrial development is an important tool for the implementation of urban development strategies, and another indispensable tool is urban construction. According to Li et al. (2021), industrial development plays a crucial role in urbanization and is an important means to achieve economic growth and promote employment. However, the development of industries is not evenly distributed among different regions due to differences in resource endowment, policy support, and other factors. Therefore, the correct positioning of regional industries is the key to promoting industrial development and urbanization. In the research by Liang et al. (2020), the authors proposed a strategy to promote industrial development and urbanization, which is to build a spatial development system with a reasonable layout and clear division of functions. The spatial development system should be based on the characteristics of the region and should consider the regional differences in resources, industries, and environmental conditions. Moreover, Huang et al. (2020) pointed out that the development of the industrial park is an effective way to promote the integration of industry and city and an efficient means to achieve the coordinated development of urbanization and industrialization. The construction of industrial parks will not only provide a platform for industrial development but also promote the construction of urban infrastructure.

In conclusion, industrial development positioning is a critical component of economic growth and development strategies for regions and cities. This literature review highlights the definition of industrial development positioning, key factors that influence it, and methods of analysis. Proper industrial development positioning is crucial for achieving sustainable economic growth and development. Therefore, it is necessary to have a comprehensive understanding of the region or city’s resources, strengths, and competitive advantages to determine the most suitable strategic industries for development. Industrial development and urban construction are two sides of the same coin. The development of industrial parks is a key factor in promoting the integration of industry and city and in achieving the coordinated development of urbanization and industrialization. The positioning of regional industries based on the characteristics of the region is crucial to promote industrial development and urbanization.

3. Methodology

This paper is an exploratory study based on a literature review approach, focusing not only on positive international examples of small city development but also on the development process in the Chinese city of Baoding in the Beijing-Tianjin-Hebei region. It is hoped that the

lessons learned from the former can be applied in Baoding and other developing countries. The study aims to identify the key industries and tasks for the development of the city of Baoding. To achieve this objective, as the main data sources, this study not only collected literature on relevant urban development as well as small and medium-sized city development over the years, but also mainly collected relevant policies and measures on urban development in Baoding in China over the past five years (based on the 13th Five-Year Plan), the development trends and relocation status of key industries in Beijing over the past three years, and policy documents related to the integration of the Beijing-Tianjin-Hebei region.

The literature review methodology involved in this paper is collecting and analysing data from a variety of sources, including academic journals, government reports, and other relevant literature. The data collected were analysed to identify key trends, patterns, and themes relevant to the development of Baoding City and the Beijing-Tianjin-Hebei region.

The data collection process included a comprehensive search of relevant literature using various databases, such as Google Scholar, Web of Science, and the China National Knowledge Infrastructure (CNKI). Keywords such as 'Baoding', 'Beijing-Tianjin-Hebei region', 'urban development', 'siphon effect', and 'integrated development' were used to search for relevant literature. Inclusion and exclusion criteria were predetermined to ensure the quality and relevance of the data collected. The authors set up some requirements for data validity and inclusion criteria, which are as follows:

- The content of the literature must be related to the urban development of Baoding and the Beijing-Tianjin-Hebei region.
- The literature must discuss the significant industries identified for Baoding's development.
- The literature must discuss the siphoning effect and integrated growth in the area.
- The literature must be from academic journals, government reports, and other relevant sources.

The following exclusion criteria are applied:

- Literature is unrelated to urban development in Baoding and the Beijing-Tianjin-Hebei region.
- Literature that is not in English or Chinese.
- Literature that does not provide clear and relevant data or analysis.
- Literature is based on outdated or unreliable data sources.

Once the data are collected, a systematic review is conducted to analyse and synthesize the information. The data is then presented in a structured manner to facilitate easy comparison and analysis. The analysis focuses on identifying patterns, trends, and themes relevant to the development of Baoding and the Beijing-Tianjin-Hebei region.

A rigorous data analysis process is implemented to ensure the reliability and validity of the data. The data are coded, categorized, and synthesized using qualitative data analysis software such as NVivo or Atlas.ti. During the coding process, key concepts and themes are identified from the data and grouped into categories based on their similarities and differences.

4. Analysis and results

4.1. Case studies

United States of America

Compared to China, modern cities in the Western countries have undergone a long process of development. They have experienced a stage where small cities generally grew during the initial period of economic development, a phase where large cities became mature in the period of economic prosperity, and then small cities again rapidly developed. Some countries have always chosen the development model of small cities. Throughout this long

process of development, many scientific theories of urban development have emerged and continue to play a guiding role in the scientific development of cities.

In a country like the United States, which is vast and highly urbanized, during the 200-year process of industrialization and urbanization, the urban development of the first 100 years before urbanization became mature and presented the following characteristics. Firstly, the growth rate of the population in large cities remained relatively fast. Secondly, the growth of the population in medium-sized cities was not particularly significant, and the population of medium-sized cities decreased during the 30 years before urbanization became mature, indicating that the development level of medium-sized cities began to deteriorate. Thirdly, the growth rate of the population in small cities remained relatively high, with an average annual growth rate of 0.31% of the total population; the growth rate reached 0.67% between 1970 and 1980. By 1980, when urban development had reached maturity, the population of small cities had exceeded half of the total population of the United States, indicating that small cities had become the mainstream of the urban form in the country.

What are the reasons and factors that have promoted the rapid development of small cities in the United States in the later stages of urbanization? In brief, several reasons and factors have propelled the development of small cities in the United States. Firstly, from the perspective of urban function and environment, the service function of large cities has decreased and even degraded, and the urban environment and order have deteriorated with increasing crime rates and declining school education quality. In contrast, the infrastructure and urban environment of small cities have improved, urban order is good, and social welfare has increased, attracting a large number of retirees to migrate and establish their second home in small cities as well as some wealthy families to buy houses in small cities. Secondly, from the perspective of employment and consumption, there is fierce competition for jobs in large cities, with great changes in job positions, high living expenses, high income-to-expenditure ratios, and high life pressures. In contrast, small cities have continuously increased job positions with relatively stable employment, lower living expenses, and far less pressure on employment and life than in large cities. Thirdly, from the perspective of industrial development conditions, as soon as the development of large cities becomes mature, prices of production factors such as land prices, rents and labour wages trend higher, and production costs are higher with compressed profit margins. In contrast, in small cities, prices of production factors are not high, the difficulty of obtaining production factors is low, and the profit margin for production is larger making it easier to attract industries and populations from large cities to small cities. Fourthly, from the perspective of urban communication conditions, computer applications are becoming more common with reduced dependence; and from the policy level, urban communication with the outside world is smoother, people's distance from the unique functions and special conditions of large cities is shortened, which highlight the superiority of small cities. Fifthly, the government encourages industry, entrepreneurship, and population transfer to small cities by, for example, providing interest-free or low-interest loans to young people to buy houses in small cities and guiding people to move to small cities in an orderly manner.

The Netherlands

Many countries around the world have emphasized the development of small and medium-sized cities from different perspectives, forming distinctive paths for urban development. Analyzing the experiences of these countries in the development of small cities has significant reference value for urban development in other countries and regions.

The Netherlands has placed a strong emphasis on the development of small cities. The country has high population density and urbanization level, with over 80% of the population living in cities since the last century. Most of the cities are located in the central and southern parts of the country, with populations ranging from 20,000 to 600,000 people. There are almost no cities with a population exceeding one million, although cities such as Rotterdam and The Hague are world-renowned with populations in the hundreds of thousands.

There are several reasons for the Netherlands' focus on developing small cities. First, natural conditions limit urban development since much of the country is marshland and cities are built on reclaimed land, which restricts the size of cities. Second, the location of cities and the influence of industry also have an impact: most Dutch cities are built in areas with convenient transportation but show slow modern industrial development. As a result, the

transportation and commercial industries have become the pillars of the Dutch economy, making small cities more suitable for development. Third, the dispersion of national functions plays a role with different centers for politics, administration, culture and education, heavy industry, and light industry. Amsterdam, for example, serves as the royal palace, parliament, and a commercial, financial and cultural center. The Hague serves as the location of the central government, while Rotterdam serves as the largest port and heavy industrial base. Many small cities also play a significant role in the country's functions, contributing to its strong vitality. However, it should be noted that this decentralized functional layout is a feature that has developed due to the country's history. Finally, regional development policies encourage the development of small cities. On the one hand, national policies limit the population and industry concentration in large cities, and, on the other hand, the country's land development plans dating to before the 1970s emphasized the construction of cities with populations of around 100,000 to 200,000 in underdeveloped northern, southern, and eastern areas. Additionally, the plans specified that agricultural land of over 4 kilometers in width should be maintained between cities as a protective, isolated, and ecological zone.

Concerning the evaluation of the pros and cons of Small City Development Models, the following can be stated. Overall, the Dutch small city development model is an optimized approach that (1) encourages the construction of small to medium-sized cities, which leads to a relatively dispersed layout of urban economy and regional productivity, favoring balanced regional development, reducing regional disparities, and mitigating social and environmental conflicts caused by oversized cities; (2) has a harmonious urban layout, coordinated production layout, and favorable ecological environment that create close economic ties between cities, strong complementarity, and great potential for nurturing and developing industries, which can lead to rapid economic growth; (3) in regions with excellent locations, coordinated development of small city clusters can occur, aided by modern transportation, communication, and green isolation belts, which can form livable and intelligent urban systems; and (4) small city clusters with the necessary conditions can promote integrated development and eventually grow into large cities or metropolises.

However, the Dutch small-city development model also has some noteworthy features. Firstly, the dispersed urban layout can lead to high construction costs, an imbalance between basic investment and infrastructure carrying capacity, and insufficient use of infrastructure, which results in poor economic benefits. Thus, suitable urban planning and appropriate urban scales are needed to maintain a balance between investment and functionality. Secondly, an overly uniform urban development model can make it difficult for the country or region to form urban or economic centers, which will hinder the full play of the driving and spillover effects of large urban centers and lead to relatively steady regional economic development, which makes breakthrough development difficult.

4.2. Development Strategy for Baoding City

Industrial Development Analysis

The functional relocation of Beijing has opened up more opportunities for constructing a high-end economic structure. The new market entities of Beijing's high-end industries such as science and technology, commerce, culture, and information have continued to increase, accounting for 60% in 2020, up from 40% in 2013, due to the relocation strategy. (Beijing-Tianjin-Hebei Collaborative Development 7th Anniversary| Relocation creates broad space for "high-end" development). In 2020, the information transmission, software, and information technology services industry and financial industry of Beijing increased by 14.4% and 5.4%, respectively. Investment in high-tech manufacturing and high-tech services increased by 87.7% and 16.5%, respectively. By the end of the year, there were 336,000 valid invention patents in the city, an increase of 18.0% over the previous year (Beijing Municipal Bureau of Statistics, 2020 Statistical Bulletin of National Economic and Social Development in Beijing; all Beijing statistical data mentioned below are sourced from this report).

The Two Sessions of this year proposed that Beijing should build an international center for scientific and technological innovation, benchmark it against the highest global standards, and develop Beijing's scientific and technological innovation. Meanwhile, it was also pointed out that it is necessary to strengthen the status of enterprise innovation subjects, expand the

integration channel of production, education, research, and application, and improve the incentive mechanism for scientific and technological achievements. Currently, Beijing has 29,000 national high-tech enterprises and is the main force in scientific and technological innovation and application. However, it cannot fully absorb all the scientific and technological innovation capacity of Beijing, and new technologies will seek to be transformed and landed in other areas. As for Baoding, as it has a natural location advantage, Baoding has an inescapable responsibility to undertake the transformation of Beijing's scientific and technological achievements and provide a broader space for the development of Beijing's scientific and technological innovation. At the same time, it is also an important development opportunity to promote industrial transformation and upgrading through scientific and technological innovation.

In 2020, Beijing's industrial value-added above a designated scale reversed its downward trend from January to October, achieving a growth rate of 2.3% for the year, with the four pillar industries of automobiles, electronics, pharmaceuticals, and electricity all growing comprehensively. Among them, the added value of high-tech manufacturing and strategic emerging industries increased by 9.5% and 9.2%, respectively. Despite the unfavorable domestic and international environment, the growth of key industries reflects the resilience and potential of Beijing's industrial development. The high-tech industry and strategic emerging industries, which are in a strategic core position, showed even stronger growth, fully demonstrating the huge driving force of scientific and technological innovation on industrial development. At the same time, another set of data to be noted is the total output value of the construction industry, which increased by 7.6% overall from the previous year, with a completed value of 313.42 billion yuan in Beijing, down 7.7%, and a completed value of 977.17 billion yuan outside Beijing, up 13.6%. This indicates that while technology-based leading industries are booming, construction in the Beijing urban area is gradually shrinking, with more construction being completed outside the city. The limitation of urban space imposes requirements on enterprises to retain only the most essential and core parts in Beijing, namely the headquarters and innovation centers, while other parts of the industrial chain must develop outward. Although the logic of supporting industries in the mobile Internet era is no longer limited to a single city, in such a large-scale industrial chain, there will certainly be some distance-sensitive headquarters of enterprises that, for various reasons, seek to develop in the surrounding areas of Beijing. This is where Baoding's opportunity lies. The most important issue for Baoding's industrial development is how to accurately identify such enterprises and provide them with the most suitable industrial chain support.

Moreover, the per capita disposable income of Beijing residents in 2020, for the whole year, was 69,434 yuan, ranking second in the country after Shanghai's 72,232 yuan, and nominal growth was 2.5%, while real growth after deducting price factors was 0.8%. The per capita consumption expenditure of residents in the city for the whole year was 38,903 yuan, a decrease of 9.6% from the previous year. Due to the impact of the pandemic, in the second half of the year, per capita consumption expenditure slightly decreased, but per capita disposable income continued to grow, indicating that the consumption potential of Beijing residents is still increasing. Currently, there are more than 20 million permanent residents in Beijing, and the demand for consumption from a large number of high-income groups cannot be fully satisfied locally, resulting in significant consumption spillover effects. Therefore, finding the right angle to serve the Beijing consumer group is also an opportunity for Baoding. The tourism industry, as the traditional pillar industry of Baoding, and medical care and wellness, benefiting from the Beijing's industry transfer, have great potential for development. Based on the characteristics of location and resource endowment, tourism and medical services are also important industry directions for Baoding to accurately cooperate with Beijing. Tourism should be based on local endowments, sights, and attractions. For example, agro-tourism has been intensively growing in several countries, like South Korea and even Hungary, there are many regions or localities which have their famous products (Neszmélyi, 2016; Késmárki-Gally & Szűcs, 2007). To sum up, Beijing has technology innovation resources that need to be landed, headquarters of enterprises that require supporting industries, and spillover consumption demand that needs to be met. Baoding has vast space, advantageous location conditions, abundant resources, and an urgent need for industrial transformation and upgrading. Therefore, for Baoding, its proximity to Beijing is a strategic opportunity, which offers a new regional pattern aimed at the world-class city cluster in the Beijing-Tianjin-Hebei region.

Industry Positioning

Industry selection is a direct manifestation of a city's strategic direction, and industrial development largely determines the final form of urban development. Baoding has strategically determined to become a city of quality life in the Beijing-Tianjin-Hebei region, and it is understood that Beijing remains the most important strategic support point for Baoding's development. Thus, the underlying logic for Baoding's selection of the five dominant industries of "medicine, automobile, electricity, digital, and tourism" can be understood. First, from the perspective of the industries themselves, the five dominant industries are all emerging and promising industries with strong profitability and development potential. Independently, they are excellent choices for industries. However, there are countless high-quality emerging industries: so how can Baoding accurately identify these five dominant industries? This requires comprehensive judgment and analysis, combining Baoding's endowments, Beijing's actual needs, and the special nature of industries.

Medicine industry. Baoding's bio-pharmaceutical health industry has accumulated a certain industrial foundation. In 2018, Baoding had 95 industrial enterprises above the designated size in the bio-pharmaceutical health industry, with a total output value of 1.64-billion-yuan, accounting for 3.7% of the city's industrial enterprises above the designated size. A relatively complete pharmaceutical industry system has been formed, and the bio-pharmaceutical health industry in the city has eight provincial-level enterprise technology centers and four provincial-level engineering laboratories, with certain scientific and technological innovation capabilities. In particular, the traditional Chinese medicine health industry has prominent advantages, and Anguo has great advantages in promoting traditional Chinese medicine culture, trade of Chinese medicinal materials, cultivation, and processing. In recent years, taking advantage of the opportunity of Beijing's medical industry relocation, remarkable achievements have been made in undertaking the transfer of Beijing's medical resources. More than 60 medical and health institutions in Baoding have carried out more than 150 cooperation projects with more than 80 hospitals in Beijing, such as the Beijing Children's Hospital, and the public health and medical service level has significantly improved. The possibility of future cooperation between the life and health industry in Beijing and Baoding lies in the overflow of Beijing's medical consumption and the overflow of scientific and technological innovation capabilities. The medical level in Beijing is at a leading level in the country and even in the world. Many patients travel to Beijing for better treatment, but high-level hospitals are often overloaded, and it is usually difficult to get a bed. Beijing's medical institutions sometimes discourage patients with mild symptoms or those with low medical difficulty, resulting in an overflow of medical consumption. If Baoding can rely on cooperation with large hospitals in Beijing to establish secondary medical centers, patients who overflow from Beijing will naturally choose to seek treatment in Baoding. Traditional Chinese medicine is a traditional advantage industry in Baoding, but the industrial chain is relatively short and limited to the cultivation and trade of Chinese medicinal materials, with low added value and relatively weak innovative capabilities in variety development and drug processing. Therefore, making full use of Beijing's pharmaceutical innovation capabilities, strengthening cooperation with bio-pharmaceutical-related scientific research institutions, promoting the transformation, and upgrading of the traditional Chinese medicine health industry, and further improving scientific and technological, and industrialization levels are the direction for further development of the traditional Chinese medicine health industry in Baoding.

Automobile Industry. After more than 40 years of development, Baoding's automobile and auto parts industry has formed a relatively complete industrial system with the production of whole vehicles as the mainstay and the production of parts as support. Currently, the city has 12 whole-vehicle enterprises, and the average number of employees in the industry exceeds 100,000. The whole vehicle production capacity has reached 1.2 million units. There are 56 enterprises in the city's automobile and auto parts industry with a scale above the designated size, with a total output value of 116.06-billion-yuan, accounting for 37.8% of the city's industrial scale above the designated size. The automobile and auto parts industry is the pillar industry of Baoding city: there are 7 key new energy vehicle industry enterprises promoted by Baoding City, with a realized output value of 6.4 billion yuan (Action Plan for Advanced Manufacturing Industry). The direction of cooperation with Beijing is the R&D of key technologies for hydrogen fuel cell vehicles and intelligent connected vehicles. Although

Baoding's whole vehicle enterprises such as Great Wall Motors have a certain R&D capability, it is impossible to independently tackle the intelligent interconnected technology in the professional field, and cooperation with internet and artificial intelligence enterprises such as Baidu, Apollo, and iFlytek is needed. The key technologies and equipment for hydrogen fuel cell vehicles, power batteries, etc. also need to strengthen cooperation with Beijing's new energy research institutions for joint R&D or actively carry out technology transfer.

The Electricity Intelligent Manufacturing Industry. Baoding is making great efforts to build an upgraded version of "Baoding China Electric Valley". At present, it has formed six major industrial systems including photovoltaic, wind power, new energy storage, high-efficiency energy conservation, intelligent power transmission and distribution, and power automation, which is the only specific area in China with a completely new energy industry chain. As of the end of 2018, there were 47 new energy and power transmission and transformation enterprises above the designated size in the city, with a total output value of 2.47 billion yuan, accounting for 5.5% of the city's industrial output value above the designated size. The new energy industry is an important new development momentum in Baoding's planning. Although the proportion of output value is not high at present, the industrial chain is rapidly improving, and the level of technological innovation is relatively high. The new energy and smart grid industry in the city has two national enterprise technology centers, nine provincial-level technology centers, two national engineering laboratories, and two provincial engineering laboratories (Special Action Plan for the New Energy and Smart Grid Industry). The government work report of the two sessions emphasized the issue of carbon neutrality, proposing to formulate an action plan for peaking carbon emissions before 2030, promoting clean and efficient use of coal, and vigorously developing new energy sources. In the construction of Xiong'an New Area, it is also required to optimize the energy consumption structure, and all energy consumption should be clean energy. The development of new energy and smart grid industries determines whether the clean energy supply in the Beijing-Tianjin-Hebei region can be guaranteed. China Electric Valley in Baoding can cooperate with Beijing and Xiong'an New Area in both research and development and application. Although Baoding has a certain foundation in production and research and development, there is still a certain gap with relevant scientific research units in Beijing. Key technologies and equipment still need to be learned and introduced in the short term. In terms of application, Xiong'an New Area has become a large-scale experimental zone for new technologies in new energy and smart grid. New technologies and concepts in the field of new energy can find their place in Xiong'an New Area. Close cooperation with Xiong'an New Area can greatly reduce the threshold for technology from the laboratory to the market.

The Data Service Industry. In 2018, there were 69 electronic information enterprises above a designated size in the city, with a total output value of 1.55 billion yuan, accounting for 3.5% of the city's industrial scale. (Special Action Plan for the Development of the Next Generation of Information Technology Industry). Baoding City proposed the development direction of the data industry, which is to build a national big data service base, focusing on data collection, cleaning, labeling, and other businesses, with the overall positioning to provide front-end data services for Beijing. On the one hand, the front-end processing of data is an essential supporting service for the development of the data industry in Beijing, and the current market is far from mature: it adopts various forms such as crowdsourcing but lacks leading enterprises. Therefore, entering the market at this point presents an opportunity to participate in the formulation of industry rules. On the other hand, Baoding City has unique human resource advantages in the data service field. The characteristic of this industry is that the added value is relatively low compared to other links in the industrial chain and the industry is more labor-intensive, sensitive to wages, and thus cannot be developed locally in Beijing. Moreover, due to the nature of the data industry, the required labor force's quality is not low: a certain level of education and a certain degree of cognitive ability regarding the use of internet are required. Baoding's labor cost is relatively low, and it is also a city with many institutions of higher learning, with 17 higher education institutions and more than 50,000 college graduates settling in Baoding every year. The labor force hierarchy can also be guaranteed, and the combination of these factors constitutes the critical factors suitable for the development of the data service industry.

Tourism Industry. Baoding, located in the Hebei Province of China, has magnificent natural scenery and rich historical heritage. Through years of development, its abundant tourism resources have been transformed into famous scenic spots such as Yesanpo and

Baishi Mountain, forming a leisure tourism resort represented by Jingxi Baidu. During the 13th Five-Year Plan period, Baoding City successfully held the first Provincial Tourism Development Conference and three Municipal Tourism Development Conferences. Baishi Mountain and Qingxi Mausoleum were successfully created as 5A scenic spots, and breakthroughs were made in the creation of holistic tourism and the cluster development of the tourism industry. The public service level of the cultural and tourism industry in the whole city has significantly improved (Baoding Municipal Bureau of Culture, Radio, Television, and Tourism, 2019).

Beijing tourists have always been one of the main consumer groups targeted by Baoding's cultural and tourism industry. The most representative tourism area, Jingxi Baidu, highlights the location advantage of "Jingxi" in its name. Due to its close geographical location and increasingly convenient transportation conditions in recent years, Baoding has become one of the main weekend short-distance travel destinations for people from Beijing. However, faced with the constantly upgrading tourism consumption demands of Beijing tourists, Baoding still needs to continue to work hard in holistic tourism, should continuously innovate its business models, and meet various new needs such as leisure, team building, and health preservation, to give the tourism industry in Baoding new vitality.

After the analysis, let us explore the answer to the question:

How to develop Baoding under the condition of location and government policy?

After the case study analysis and the policy analysis, we find that locating in Beijing is a strategic opportunity for Baoding, and a new regional pattern aimed at the world-class city cluster in the Beijing-Tianjin-Hebei region could be one of the developing chances that can serve for Baoding to develop directions for future plans. And the automobile industry, the electricity intelligent manufacturing industry, the data service industry, the tourism industry, and the medicine industry will be the most potential direction of development: they will realize the sharing of resources in the region and will help Baoding's rapid economic development in the future.

5. Suggestions

The urban development of Baoding relies heavily on the coordinated policies of the Beijing-Tianjin-Hebei region and leveraging its geographic advantages to seize urban development opportunities. However, this poses a challenge for Baoding, as underdeveloped areas are often affected by spill over effects from neighbouring large cities. In particular, the Taihang Mountain areas with inconvenient transportation can easily become a poverty belt around the capital. To address this issue, it is essential to be cautious in selecting industries that are easily transferable to undertake the industrial transfer from Beijing. The five major industries of "medical, automobile, electronic, digital, and tourism" can alleviate population pressure in Beijing and drive the development of surrounding rural areas in Baoding.

For instance, the Jingxi Baidu tourism brand, jointly created by Baoding's Laiyuan and Yixian, has greatly alleviated the pressure of holiday travel from Beijing to the east, injected vitality into rural tourism in Baoding, and encouraged rural residents in the three counties to use their idle houses and land to increase their income. Additionally, the digital service industry is not limited by location, and the suburbs of Baoding are ideal for its layout. Adequate availability of human, natural, and land resources serves as the foundation for the rapid development of the digital service industry.

The "green mountains and clear waters are as good as mountains of gold and silver" concept has demonstrated its practical value in Baoding in advance. The choice of industry is a direct manifestation of a city's strategy, and the development of industries largely determines the final form of urban development. Therefore, Baoding should choose industries based on the spillover resources of Beijing's urban development. The key is to build a sound five leading industry chain of the "medical, automobile, electric, digital, and tourism" industry, and actively attract missing parts of the industry chain, especially projects that can enhance technological innovation capabilities.

Compared internationally, Beijing has the largest population among cities worldwide, and the Beijing-Tianjin-Hebei region is the largest urban agglomeration globally. Baoding's location is rare in the world, and exploring the optimal path for its industrial development has

significant theoretical and practical implications. This can help us better understand the spill over effects of large cities and provide examples of the development of small towns around other large cities. It can also provide a practical basis for the concept of “green mountains and clear waters are as good as mountains of gold and silver”.

In summary, the reasons why Baoding chooses to develop these five major industries are obvious. From the perspective of actual results, these industries have rapidly developed through the allocation of funds and technology and have become the pillar industries of Baoding. The sense of gain and happiness of urban and rural residents in Baoding has significantly improved, and the city is rapidly moving forward on the path of realizing its glory and dreams. They need to continue firmly on this right path.

6. Conclusions

In conclusion, this paper presents an exploratory study on the urban development of Baoding in the Beijing-Tianjin-Hebei region, with a focus on identifying key industries and tasks necessary for the city’s development. The study employs a literature review approach to collect and analyse data from various sources, identifying trends, patterns, and themes relevant to Baoding’s development. The paper proposes a development strategy for Baoding that aims to undertake the transformation of Beijing’s scientific and technological achievements, promote industrial transformation and upgrading, and develop the tourism industry, medical care, and wellness. The strategy will lead to the development of a high-end economic structure in Baoding, making it a key player in scientific and technological innovation and industrial development in the region.

Furthermore, the paper analyses the development of small cities in the United States and the Netherlands, highlighting the reasons why small cities have become the mainstream urban form in both countries. The government encourages industry, entrepreneurship, and population transfer to small cities, which offers a good urban environment, lower living expenses, and relatively stable employment. These experiences provide valuable references for the development of small cities in other countries and regions.

Finally, the paper examines the significant progress made by Baoding in developing industries such as electricity intelligent manufacturing, data services, and tourism. These industries have significant potential for further development, particularly in the context of the government’s emphasis on carbon neutrality and clean energy. Baoding can collaborate with Beijing and Xiong’an New Area to reduce the threshold for technology from the laboratory to the market and give the tourism industry new vitality by continuously innovating business models and meeting the various new needs of tourists. Overall, this study contributes to the understanding of urban development in Baoding and the Beijing-Tianjin-Hebei region and provides insights that can be used to inform policy and practice in other developing countries.

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