

2014

BioTechnology

An Indian Journal

FULL PAPER

BTAIJ, 10(12), 2014 [6435-6439]

Disparities and development of China national high-tech industrial development zone

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ABSTRACT

International competition is a competition of science and technology and economy that linkage with high technological industry. High and new technological industry strengthens national competitiveness. In this paper the author analyzes developing periods, spatial distribution, region disparities of national high-tech industrial development zone. Result shows that more than half high-tech zones locate in the east area of China, and develop faster than others; there are different development stages of high-tech zones; Regional economic growth, innovation and research input, human resource migration are main factors to lead the disparities.

KEYWORDS

National high-tech industrial zone; Spatial distribution; Disparities; Region; Human capital.



INTRODUCTION

China Hi-Tech Industrial Development Zones mainly rely on domestic technology and economic strength, fully absorb and learn from foreign advanced technology resources, capital and management, through preferential policies and reform measures. They are built up to achieve local optimization hardware and software environment to maximize the scientific and technological achievements into practical productive forces. National High-tech Industrial Development Zone called the "National High-tech Zone," which are approved by State Council. By the end of December 2012, National High-tech Industrial Development Zones are 105.

DEVELOPING STAGES OF THE CHINA'S NATIONAL HIGH-TECH ZONE

Birth period (1983-1988)

In 1983 the State Council held a "challenge to the world's new technological revolution and our countermeasures" discussion. In March 1985, the CPC Central Committee issued a decision on the science and technology system, and pointed out: "To select a number of national intelligence in densely populated areas, to adopt special policies, and gradually form a new technology development zone has different characteristics." June 1985, the Shenzhen Municipal Government approved to establish a Technology Industrial Park in Shenzhen co-found by the city and the Chinese Academy of Science, it is the first high-tech industrial development zone in China^[1]. In 1986 the state began to implement 863 project. In 1988 the State Council officially approved to establish the "Beijing New Technology Industry Development Experimental Zone," laid the foundation for further development of China's high-tech zones. Then the state has implemented to promote high-tech commercialization, industrialization and internationalization as the basic purpose of the Torch Plan, building high-tech zone is an important part of the project. So far, China's high-tech zones completed its gestation period, began to enter the operational period.

Forming period (1988-1991)

China's high-tech zones has been rapid development under the promotion of 863 project, the Torch Plan practiced in Shenzhen, Beijing. In 1991 the State Council officially set up 26 national high-tech zones 26 cities, and developed a set of preferential policies to support the development of high-tech zones^[2,3]. So far, China's high-tech zone had formed a certain scale.

Development period (1992-present)

In the spring of 1992, Deng Xiaoping's Southern Talk to promote the spirit, the rise of the boom in the construction of the country's high-tech zones. In 1992 and 1997 the State Council twice approved the establishment of 27 national high-tech zones. Until December 2012, China had 105 state-level high-tech zones in 31 provinces, autonomous regions and municipalities. Construction and development of national high-tech zones rationalizes the local industrial structure, they have made a significant contribution to the local economy rapid growth, high return on investment, innovation ability, they becomes economic growth pole^[4,5].

DEVELOPMENT DISPARITIES OF CHINA'S NATIONAL HIGH-TECH ZONES

Disparities of distribution in regions

China's national high-tech zones can be divided into three types: one is located in the municipalities, provincial capitals. These cities are technological, economic and cultural centers. Universities, research institutes of these regions are technological forces, there are a lot of research need to commercialization as soon as possible. This kind of cities are Beijing, Shanghai, Wuhan, Xi'an,

Shenyang, Nanjing and other places. The second is located in the industrial city. The city has a strong industrial strength, but fewer universities and research institutions, need to use high technology to transform existing traditional industries. Such cities as Daqing, Zhuzhou and Luoyang, Baoji, Mianyang, Xiangfan. The third is located in the coastal border, along the Yangtze River and other conditions are relatively good opening, where rapid economic development in recent years. These cities may attract through effective technology, capital and talent abroad^[6]. Such cities are Zhongshan, Weihai, Foshan, Suzhou, Wuxi, Changzhou, Dalian and other places. Distribution of China's three major high-tech zones as shown in TABLE 1.

TABLE 1 : Distribution of China's High-tech Zones

Region	East area of China	Middle area of China	West area of China	Total
number of high-tech zones	51	30	24	105

resources: website of national science and technology ministry

Disparities of development in regions

Our high-tech industrial distribution is very uneven. The development of high-tech industry there are regional differences. The eastern coastal areas is better than the middle, central than the west. 2011 Basic data of high-tech industries zones shown in TABLE 2. We can see from TABLE 2, there is a large gap between east and west. This phenomenon will not only result in a waste of resources, but also seriously hindered the pace of development of high-tech industries.

TABLE 2 : Comparison of High-tech industries in East, Middle and West Area of China

region	Number of corporations	Products value (100 billion RMB)	Additional value (100 billion RMB)	Profit (100 billion RMB)	Tax (100 billion RMB)	Employee
East area of China	16283	72218.8	8472.2	4017.8	5970.1	9003856
Middle area of China	3745	9990.7	3239.1	818.7	1172.1	1579795
West area of China	1654	6224.3	2013.6	408.4	671.6	885502
Total	21682	88433.9	13725.0	5244.9	7813.8	11469153

resource: China high-tech industry statistic year book

REASONS OF DISPARITIES OF THE CHINA'S NATIONAL HIGH-TECH ZONE

The high-tech industries R&D disparities in regions

In 2011, the high-tech industry patent ownership in eastern China was 71,481, accounting for 86.92 percent of the country, while the Midwest and patent ownership of only 10,759, accounting for 13.08%. In particular, the 2011 high-tech industries in Guangdong Province, has a capacity of 45,172 patents, Qinghai no one. Patent ownership reflects that China's regional technology gap is too large. Inter-regional disparities in the output of high-tech industry affects the differences in technology. In 2011, the largest high-tech industry output in three provinces of Guangdong, Jiangsu, Zhejiang, R&D activities and R&D spending is also in the three provinces as shown in TABLE 3.

TABLE 3 : R&D, Employment of High-tech Industries of some Provinces

Province name	Former 3 provinces		Province name	later 3 provinces	
	R&D work time (days)	R&D cost (million yuan)		R&D work time (days)	R&D cost (million yuan)

Guangdong	179117	4809.951	Gansu	870	23.901
Jiangsu	79683	2107.404	Inner Mongolia	274	7.415
Zhejiang	41738	869.939	Qinghai	36	0.361

The human capital disparities in regions

In 2011, high-tech enterprises employed 1,073.6 million. From the academic point of view, undergraduate, graduate, doctoral education staff were respectively 275.8 million, 46.0 million people, 5.4 million people. From the title to see, with the title of senior staff was 137.1 million, accounting for 12.8% of total employees. High-tech Zone personnel engaged in scientific and technological activities over 174.4 million people, 45 thousand larger than in 2010.

TABLE 4 : Employment Construction of High-tech Industries

Province name	Employees above college	Portion (%)	Province name	Employees above college	Portion (%)
Guangdong	348651	9.13	Gansu	8470	0.22
Jiangsu	466450	12.21	Inner Mongolia	20259	0.53
Zhejiang	233709	6.12	Qinghai	2637	0.07

As shown in TABLE 4, the high-tech enterprises, the eastern and western regions of China's college education are difference. In 2008, the high-tech enterprises in Jiangsu Province, the number of college staff was 466,450, accounting for 12.21 percent national high-tech industrial college education, while Qinghai Province was 2637, accounting for 0.07% of the national total. Variously, regions of the high-tech industry and college education accounted for a larger difference, on the one hand, due to the uneven geographical distribution of China's colleges and universities, a larger number of colleges and universities in eastern regions, and college graduates tend to choose developed eastern areas to work; on the other hand, the high-tech industry in East China region has a larger scale and in good condition to provide more job opportunities for college staff.

MEASURES TO PROMOTE HIGH-TECH INDUSTRIES DEVELOPMENT

Guide the high-tech industry shift from east to west gradient

Regional differences in China's high-tech industry is too big and did not play the leading role of the eastern region, on the contrary, it makes the region further widening the gap, therefore, the state should be timely step by step guide to high-tech industry transfer from eastern to Midwest, should strengthen infrastructure construction, such as the establishment of a new national high-tech industrial development zones in the Midwest region for undertaking the transfer of high-tech industries.

Strengthen the high-tech enterprise innovation

High-tech industry additional value rate is too low and too many export assembly manufacturing activities lies a fundamental technology, relied on foreign technology. On the one hand, the high-tech enterprises should continue to increase investment in research and development to promote the accumulation of high-tech human capital and innovation. On the other hand, enterprises should pay attention to self-innovation, in some areas of advantage high-tech industry should breakthrough to catch up with developed countries. High-tech enterprises shift from assembly manufacturing activities to the research and service activities through technological innovation.

Encourage innovation and personnel training

Further reform of the personnel system will attract domestic and foreign technology experts to research and development, and form an opening, flowing employment mechanism. Adjust immigration, residence and income system and other aspects, such as freedom of exchange policies to attract overseas high-tech talent. Coordination of relevant policies in the income system ensure that technology owners, business owners and senior business management obtain appropriate compensation or corresponding interests.

The government should increase its efforts to support high-tech enterprises

At present, high-tech industry is lack of core technology, government should promote high-tech enterprises to master the core technology and intellectual property from various channels. Specifically, the government should implement the various tax incentives continue to increase in the high-tech industry investment in R&D expenditures, and the government can promote the center through productivity transformation centers, and promote high-tech technology industrialization process. Government should focuses on efforts to increase government procurement core technology products, also encourage technology-intensive SMEs development.

CONCLUSIONS

Conclusions are the past half high-tech zones locate in the east area, and develop faster than others. Regional economic strength, innovation and research input, human resource migration are main factors to lead the disparities. China should gradually guide the high-tech industry shift from east to west to narrow the gap between the eastern and western areas. China should strengthen the R&D and innovation capability of high-tech enterprises by increasing R&D expenditures and R&D personnel investment and other measures.

ACKNOWLEDGEMENT

This work was financially supported by The Ministry of education of People's Republic of China Humanities and Social Sciences projects fund (11YJA790129), China Institute of Manufacturing Department Fund (SK20130090-9).

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