

A NEW PERSPECTIVE ON CHINA'S INDUSTRIAL DEVELOPMENT STRATEGY

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ABSTRACT: At present China is facing challenges from economic globalization, ecological economy and knowledge economy in its process of economic development. The following ideas may be heuristic in establishing China's regional development strategies: 1) In locating industries, the impact of industries on the eco-environment should be fully considered. 2) Industrial restructuring should be focused on the restructuring of products, not on the restructuring of the three traditional industries (primary, secondary and tertiary industries). 3) The establishment of key industries should be focused on large-scale corporations or famous brand products, not on a particular industrial sector. 4) The complementarity and cooperation between the east and the west of China should be on products and markets, not on natural resources. The advantages in natural resources for the west of China can not be over-estimated. The advantages in products and market potentials for the west of China may be explored.

KEY WORDS: economic globalization, industrial restructuring, key industries, advantages in natural resources

1 INTRODUCTION

Nowadays the development of world industries and economy is characteristic of a few conspicuous trends which may challenge traditional economic development models and theories. First of all, the economy of the world has been becoming in global space, of which the remarkable indication is the appearance of cooperation groups and numerous multi-national, cross-national and global firms. The cooperation and competition between enterprises, between states, between regions, between enterprises and firms or between corporations and states are becoming much more complex than before (Dickson, 1994). More and more products and commodities are flowing out of national borders. The global connection of finances, the worldwide impact of risks, the international network of information and technology and the allocation of raw materials and resources at a global level are

pushing us to put the development of national and regional economy into the global economic circle. In establishing strategies of regional development we should never ignore the development trends of the global economy.

Secondly, ecology and environment must be protected from deteriorating in the process of economic activities, viz., ecological economy is widely promoted. The appearance of green products, green industries and green revolution not only means for more requirements and restraints to industrial development, but also brings us more domains and opportunities for industrial development.

Thirdly, the appearance of high-tech industries and knowledge economy has not only pushed the development of industries into a new stage, but also made a great change to the relationship between industries and resources. Being an important factor, the technology and knowledge has become a decisive

resource in industrial development. Since location of industries is free from the constraints of traditional natural resources, it is becoming more dependent on the quantities and qualities of knowledge, technology and talented personnel.

Considering the above changes and the present situation in China, the author thinks that policy-makers should take in some new ideas in establishing regional development strategies in China.

2 ESTABLISHMENT OF ECOLOGICAL PRINCIPLES IN LOCATING INDUSTRIES

In some senses, the ecological and environmental factor has been one of the decisive or leading factors in locating industries while natural resources have declined in weighting in deciding industrial distribution. It was an important principle to arrange industries, particularly large-scale manufacture industries in the places near raw material bases. In modern times when traffic in carrying heavy goods has been greatly improved, it has been very common to arrange industries in the places far from raw material bases. Most of the large-scale thermal power plants, for instance, have been far from raw coal bases, which are usually situated in the northern part of China. In the past we usually located textile and woolen mills near production bases of cotton and wool. At present we often put them far from the production bases of cotton and wool. As a good example, Xinjiang (an autonomous region in China) has been an important center for cotton production, but it for itself is not a textile base. Having using imported wool as its main raw materials, Xiangyang Group in Jiangyin City, Jiangsu Province has now been important production base of high quality wool. Besides light industries, many big petrochemical plants and iron and steel plants are also importing raw materials from other places in China or from abroad for their production. The former case is the numerous oil refineries, chemical fertilizer factories and petrochemical plants while a representative of the latter case is Baoshan Iron and Steel Plant near Shanghai. All these factories show that the traditional

pattern for locating industries has changed.

The primary agent for development of modern industries is market. Market, in some senses, provides us the orientation and agent for industrial development. However, it is not a decisive factor in locating industries because convenient transportation can carry products of different areas to any part of China, even to any country in the world without resulting in the rising of cost in transportation, which may be a constraint for industrial development.

On the contrary, the distribution of industries is now strictly constrained by ecological factors and environmental conditions when ecological and environmental problems are becoming more and more serious. First, environmental condition is a constraint for location of industries. In arid and semi-arid areas in the northern part of China, for instance, water resource is a serious constraint for industrial development. Therefore it is not desired to locate large-scale water consuming enterprises, industries or water polluting industries such as iron and steel industry, petrochemical industry and paper production industry.

Secondly, environmental quality in a certain area may constrain the location of industries. For instance, tourist places, scenic spots, natural reserves, water source areas, densely populated area, cultural areas and resorts should be far from the industries which may produce air, water and sound pollution.

Thirdly, industrial density and the speed of industrial development should satisfy the requirements of environmental quality. According to our research findings the water quality in the Changjiang (Yangtze) River is basically in good condition and large-scale water consuming enterprises and industries could, at the overall level, be located on the river. The water quality however varies greatly at different section of the river. Some sections such as the reservoir area of the Three Gorges, the part from Wuhan City, Hubei Province to Jiujiang City, Jiangxi Province and the part below Zhenjiang City, Jiangsu Province have been seriously polluted. It is no longer rational to locate water consuming and polluted enter-

prises there. All rivers within big cities in China have been polluted and it is not suitable to locate big water consuming enterprises within urban areas. The concerned large-scale and medium-scale enterprises should be located on the part of the river with sizeable water capacity for environmental purpose. According to our research findings, the variation in water quality in Sichuan Province is closely related to industrial density. Under the present condition of industrial structure and technology level, water quality is poor in the areas with industrial density bigger than 1.41 million yuan (RMB) per square kilometers and the water quality will deteriorate as industrial density increases. Therefore it is desirable to locate new industries in the areas with low industrial density.

The speed of industrial development is also strictly constrained by environmental capacity. When we studied the relationship of water quality with industrial development, we found that the discharge of polluted water was increasing at a faster speed and the pressure of water environment increased when the annual increment of industrial output value was over 20%. We also found that the impact on water quality is comparatively small when the development speed of industries is below 15% (Chen, 1996). Control of the scale and speed of industrial development would be very important in allocating industries.

All in all, at present the enhancement of industrial development level and the improvement in both product quality and technology level will demand higher and higher environmental quality. Simultaneously, the enhancement of people's environmental consciousness and of the requirement of life for environmental quality is mounting a strict constraint for environmental pollution. Accordingly industries should be located in the areas with a good ecological environment. Meanwhile the construction of ecological environment is forcing the location of industries to fulfill the requirements of environmental protection. The requirements from both sides indicate that the factor of ecological environment has been a vital or even a decisive factor in present location of industries. The understanding and implementation of it will be

more deep and more determined.

3 INDUSTRIAL RESTRUCTURING LAYING PARTICULAR EMPHASIS ON MICRO-STRUCTURE

The priority for industrial restructuring should be turned to products and varieties of products from adjustment of the three traditional sectors of industries. In the past priority for industrial restructuring was on the proportion of the three industrial sectors. Then we attached importance on the percentage of farming, forestry, livestock and sidelines in agriculture and the percentage of light and heavy industries in industry. In developed country this process has, by and large, been finished, i. e. the structure of the primary, secondary and tertiary industries is now in the shape of triangle upside down and the adjustment of the percentage of farming and processing industry in agriculture has also been finished. In many developed countries it has been very common that the tertiary industry makes up over 60% of the total industries and it is very hard to have a further considerable change for the adjustment of the percentage of the three industries. As a big developing country China has much potential for the restructuring of the three industries, which means that the percentage of the tertiary industry will increase and the proportion of the primary industry will decline. The structure of the three industries in China will also change towards the shape of reverse triangle. Nevertheless, the author thinks that under the present market economic conditions the focus of industrial restructuring should be put on the structure of products.

3.1 Some Universal Laws for the Evolution of the Structure of the Three Industries

In history each of the three industries had once been playing a leading role in the process of industrial development. In agricultural society or in the early period of industrial society, the primary industry had been the main industry in national economy. In in-

industrial society the secondary industry had become the key industry in replace of the primary industry. When entering the late period of industrialization and in the information society, the tertiary industry has been the main component of GDP (Gross Domestic Product). Many countries have finished the process. At present many developed countries have been at the stage that the tertiary industry is the leading industry while the primary industry accounts for the smallest part in all the three industries. In the sub-developed countries such as China, the secondary industry is the leading part in all the three industries while in the less developed countries the primary industry is still the main part of national economy. All these changes are universally significant and characteristic of all development processes.

3.2 Long Formation Process and Long Stable Period of the Final Structure of the Three Industries

The proportion of the three industries is therefore an indicator of the development level and a reflection of the social-economic stage for any states or regions. Different from industrial structure, the structure of products has many more regional characteristics. Regarding quantity, category and proportion of products, different countries and different regions have different structures and the evolution of the structure may be different with characteristics of multi-models and varieties.

The structure of products, particularly the structure of categories is characteristic of reacting quickly to the markets. The products produced in this year may be different from those produced last year, even the products produced this late year may not be the same as those produced this early year. The adjustment of industrial structure at the level of the products is more frequently needed and it is the lifeline of enterprises. With the appearance and development of "purchaser's market" (a market of surplus commodities), commodity competition in market becomes more tense. As the most active factor for industrial development, adjustment of product structure will di-

rectly face market and will become a bridge connecting markets and industries. It is due to adjustment of product structure that industrial restructuring at macro-level can be carried out at the micro-level of enterprises. In addition adjustment of industrial structure which was previously controlled by government or by policy-making departments can be undertaken by many different enterprises and producers. This is a historical leap for industrial restructuring.

Since adjustment of product structure is based on market and actively done by different enterprises, market change will be quickly reflected in the change of products. However, it is, at some extent, very hard for the structure of products to have a determined proportion. So the criteria for determining the structure of products is the market adaptability, market degree of satisfaction and the profit earned by the enterprises. It requires the decision-makers and managers to constantly keep an eye on the market change and pay attention to the needs and psychology of consumers.

An important aspect for adjustment of product structure is the production of new products and improvement of old products, particularly the production of products of new types, new measures, new brands and higher quality. Since the structure of products is a big complex system with different levels and the operation of it is in the hands of numerous enterprises, it has, in some sense, no order. So we should seek order and find laws with the chaos. The task of decision-making at the macro-level is to provide market information, to forecast consumption in the market and to guide the strategy of competition.

4 THE PRIORITY FOR ESTABLISHMENT OF KEY INDUSTRIES SHOULD BE ON THE CREATION OF INDUSTRIAL GROUPS AND FAMOUS BRAND PRODUCTS

There are no other purposes for establishing key industries but to highlight the industrial advantages in the region in order to promote the economic development of the region. Under present market economic

conditions, whether or not a key industry becomes an industrial advantage in the region will, however, depend on the market effect and efficiency of the industry. It seems inappropriate to determine the level of the key industries on the basis of traditional industrial sectors or professions. At present no matter whether in the machinery industry, chemical industry, construction material industry, food industry or light textile industry, those which have had a great contribution to the state in terms of output value, taxes or employment creation may be small and complete industries at a low level. This kind of key industry may not do much help in promoting regional economic development and in enhancing efficiency. The establishment of key industries is therefore based on industrial groups or products and the purpose of it is to form industrial groups or products with strong market competence and high efficiency.

Let's take Sichuan Province for instance. Sichuan is a big province in China and it is easier to establish a complete system of industries. As a matter of fact the disadvantages of industries being small and complete or big and complete is still obvious. As a key industry, machinery industry includes industries of general machines, equipment for special use, transportation machines, electric machines and instruments, electronic and telecommunication equipment, instruments and meters, machines for cultural use and other machines. The number of enterprises of independent accounting in machinery industry has reached 4370 in 1995 and 3657 in 1996. The total output is 42.403 billion yuan in 1995 and 47.606 billion yuan in 1996, and net increase value for machinery industry is respectively 11.489 billion yuan and 12.908 billion yuan. The average value for each enterprise is 9.7032 million yuan in 1995 and 13.0177 million yuan in 1996. The average increase value for each enterprise is 2.629 million yuan in 1995 and 3.5297 million yuan in 1996. If village enterprises are included, the total number of enterprises will be about 7000 and scale efficiency will be poorer. It is obvious that the key industries based on traditional industrial classification can not play the so-called key

role. Furthermore it lacks market merits. Famous brand products are very rare. Since the key industry is a small and complete system, or a medium-sized and complete system, or a big and complete system having no famous-brand products, the problem of low efficiency still exists.

In contrast, Changhong Group Corporation in Sichuan has an output value of 25.6 billion yuan in 1997 and revenue of products sales 16.08 billion yuan, total pre-tax profits 3.55 billion yuan. In Sichuan there are 16800 enterprises in food industry (excluding cigarette enterprises), but the enterprises that are supporting the food industry are only a few breweries such as "Wuliangye", "Quanxing", "Luzhou Laojiao", "Jiannanchun", "Tuopai", "Wenjun", "Langjiu" and "Blue Sword". In pharmaceutical industry, the Di Ao (Xinxuekang) Pharmaceutical Company has as 1500 employee and but the annual output value reached 760 million yuan in 1997 with an annual taxes of 260 million yuan. The efficiency of the factory is no worse than that of some key industries.

As regards the enterprises at the prefecture level, we should not pursue to establish a complete industrial system and to achieve the so-called industrial advantage. Taking Xiangxi Autonomous Prefecture in Hunan Province as an example, as far as we know, this prefecture has a GDP of 5.37865 billion yuan in 1996 and there are 645 industrial enterprises of independent accounting with a total industrial output value of 5.01559 billion yuan and a net increase value of 1.239 billion yuan. The industry of construction materials, metallurgical industry, machinery industry and food industry have been established as key industries and nearly all the key industries are small and complete systems. It is hard to see any industries in advantage that have an outstanding contribution to economic development in the prefecture. As a group corporation that produces the brand of liquor named "Jiugui" and also medical drugs, Xiangquan Group Corporation has now been a key industry with an annual output value of 300 million yuan, sale income of 600 million yuan and taxes of 300 million yuan in

1997. So the priority for industrial development can not be put on the advantage of an industry, but on the advantage of group corporations and products which boasts scale efficiency.

5 REVIEW THE NEW PATTERNS OF COMPLEMENTARITY OF NATURAL RESOURCES IN DIFFERENT REGIONS

As a fact there is a great disparity between the eastern, middle and western part of China. In order to promote development in balance in different parts of China, many people expect that the natural resources abundant in the western part of China could be exchanged for the capital, technology and talented persons in the eastern part of China. That is to say, the east lent help to the west in capital, technology and talented persons and the west will support the east in its natural resources. Theoretically there is no doubt for it. Having studied the present situation of resources in China, we find that there are not as many resources as expected in the west that can support the east. The key resources that is of vital significance for the national economic development are the water resource in the southwest of China, the coal re-

source in the northwest of China, the cotton (in Xinjiang) and wool, etc. The western part of China has no advantage in such key resources as metal minerals, non-metal minerals, grain and petroleum. On the contrary, the advantage in resources lies in the north of China. It is a very common phenomenon that petroleum, coal and grains are transported from the north to the south of China. This trend will last for the future. That the water and vegetable in the south of China are carried to the north of China will also be an important trend.

According to Table 1 and Table 2, the west of China does not account for a high proportion in terms of mineral reserves, industrial raw materials or agricultural products. Some of them are even lower in proportion than in the east of China, and much lower than in middle of China. As population is considered, per capital holding of the natural resources is limited. Those resources that can support or help the east of China, namely those that can be exported in great amount are few except the water resource.

In the coastal and eastern parts of China, particularly in the developed provinces or municipalities such as Shanghai, Jiangsu, Zhejiang, Fujian and Guangdong, mineral resources, timber resources and

Table 1 The regional distribution of the key natural resources and raw material in China in 1996(%)

Regions	Grains	Cotton	Edible oil	Sugar	Pork beef, mutton	Aquatic products	Steel	Iron	Raw coal	Petroleum	Chemical fibre	Reserved timber
The north	48.00	60.81	46.38	18.65	41.18	30.72	52.92		71.30	90.24		42.90
The south	52.00	39.19	53.62	81.35	58.82	69.28	47.08		28.60	9.76		57.10
The east	38.32	29.95	37.35	60.97	39.76	79.93	60.71	53.17	21.69	44.54	81.66	
The west	18.99	26.70	16.79	22.42	22.00	2.22	11.36	21.83	13.93	17.93		

Notes: 1) The north refers to the north of China including the following 15 provinces and autonomous regions: Heilongjiang, Jilin, Liaoning, Hebei, Shandong, Shanxi, Inner Mongolia, Beijing, Tianjin, Shaanxi, Gansu, Ningxia, Qinghai, Xinjiang. The south refers to the south of China including the following 16 provinces, cities and autonomous regions: Shanghai, Jiangsu, Anhui, Jiangxi, Zhejiang, Fujian, Hubei, Hunan, Sichuan, Chongqing, Guangdong, Guangxi, Hainan, Yunnan, Guizhou and Xizang. 2) In comparing the east of China and the west of China, China is divided into three parts: the east, the middle and the west of China. The east of China including the following 12 provinces, cities and autonomous regions: Liaoning, Beijing, Tianjin, Hebei, Shandong, Jiangsu, Zhejiang, Fujian, Guangdong, Hainan and Guangxi. The west of China includes the following 10 provinces and autonomous regions: Shanxi, Gansu, Ningxia, Qinghai, Xinjiang, Sichuan, Chongqing, Guizhou, Yunnan and Xizang.

Sources: TRDSPC, 1998.

Table 2 The distribution of mineral resources in the east, middle and west of China (%)

Minerals	The eastern and coastal regions	The middle part of China	The western part of China	Minerals	The eastern and coastal regions	The middle part of China	The western part of China
Coal	13.6	78.8	7.6	Sulphuric iron	29.1	70.4	0.5
Petroleum	79.6	10.7	9.7	Phosphorus	8.2	91.2	0.6
Natural gas	20.7	76.2	3.1	Sylvite		2.0	98.0
Iron	47.6	48.0	4.2	Halite		43.9	56.1
Manganese	11.6	86.1	2.3	Borate	65.6	1.4	33.0
Copper	13.4	61.8	24.8	Natural soda		99.2	0.8
Lead, zinc	25.3	44.8	29.9	Cement rock	36.2	53.7	10.1
Bauxite	8.1	91.9		Raw glass material	56.2	26.4	17.4
Tungsten	20.1	78.4	1.5	Pumice	100.0		
Tin	7.9	91.1	1.0	Bentonite	93.2	6.8	
Molybdenum	38.7	56.5	1.8	Talcum	60.8	39.1	0.1
Mercury	0.9	96.5	10.7	Barite	13.5	36.2	50.3
Antimony	1.4	87.9	1.3	Gypsum	25.0	38.2	36.8
Gold	72.5	24.2	1.3	Asbestos	3.2	51.5	45.3
Nickel	5.5	25.5	69.0	Diamond	97.4	2.6	

Notes: The eastern and coastal region includes Liaoning, Jilin, Heilongjiang, Hebei, Tianjin, Beijing, Shandong, Shanghai, Jiangsu, Zhejiang, Fujian, Guangdong and the four prefectures in the east of Inner Mongolia. The middle part of China includes Shanxi, Shaanxi, Hunan, Hubei, Jiangxi, Guizhou, Anhui, the middle and north part of Guangxi, the east and south of Sichuan, the middle and east part of Yunnan. The west part of China includes Gansu, Ningxia, Xizang, Qinghai, Xinjiang, the western part of Sichuan, the western part of Yunnan, the northwestern part of Guangxi and the western part of Inner Mongolia.

Sources: CCSNR, 1990.

energy are actually poor. These provinces, however, may not necessarily depend on the cooperation with the west of China. By use of convenient transportation, they can import natural resources (such as raw coal) from abroad or from the north part of China. For petroleum, they can develop oil fields in the sea. For electricity, they can develop nuclear energy. They also can import grains from abroad (such as Guangdong Province). What is more important, they can develop technology-intensive products and industries to less depend on other places for resources and raw materials.

It is not the author's idea to deny the role and significance of the complementarity and cooperation among the east, middle and west of China. Actually it is not unnecessary to have cooperation between different regions under market economic conditions. What the author would like to emphasize is that the "advantage in natural resources" in the west of China can not be overestimated in its development strategy and can

not over-depend on the complementarity with the east of China in order to develop the west of China. The development strategy in the west of China should be on the exploration of natural resources. The purpose of the exploration of natural resources is not for exporting, but for the development of market. The complementarity with the east of China is not on resources and raw materials, but on products and markets. When the east of China is restructuring its industries, the west of China should make full use of the markets of low-rank products in the rural areas while exploring the rural market in the west of China. It is just like the case of China that has exported lots of products to other countries. For some time China has produced many products that the developed countries do not care or have no time to care to produce (the U.S.A., for instance, do not care to produce textile products, light chemical products, domestic electric appliances, toys and hand crafts). By exporting these products China has occupied a certain

proportion of the international markets. The west of China should be based on the complementarity with other markets in China and develop products of the levels that are complementary with those of other places. Only in this way could the west of China be able to enhance the level and efficiency of industrial development. It is not promising only to focus on the advantage of natural resources.

Another important point is that we should pay attention to the relationship of development between the north and south of China and its change. As a matter of fact, it is more significant for the exchange of resources, raw materials and even agricultural products between the north and the south of China than between the east and the west of China. In

planning the location of transportation and industries in China, the disparity between the south and the north of China is worth our enough attention.

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