

# CHAPTER ONE

## Physical Distribution and Regional Economic Development

Yasuo Onishi

### I. Research Goals and Methodology

After the adoption of the policy of reform and opening up to the outside world, economic regions have gained considerable development in China thanks to massive decentralization of government power and the induction of foreign investment. It can be said that decentralization of government power and induction of foreign investment were the central policies for the early stage of reform and opening up to the outside world, and economic regions rose and developed precisely by relying on these policies. (See Section Two for the definition of economic regions.) However, in the latter half of the 1980s, unity of the home market and balanced development of the national economy were at stake because of a yawning gap between economic regions and also because of regional isolationism known as "Dukedom Economy". Since the beginning of the 1990s, the strategy for development along the sea coast, the Yangtze River and the national boundaries has been adopted in an attempt to rejuvenate inland regions by introducing the coastal regions' mechanism of economic development. And new versions of this strategy has been advocated. One of which attach importance to exploitation of the function of the Yangtze River as a shipping channel is called "T-type Strategy", and the combination of the Yangtze river and the Eurasian Continental Bridge is called " $\pi$ -type Strategy".

These strategies stem from a political necessity. The gap between coastal regions and inland regions resulting from the preferential policies accorded to coastal regions has caused discontent in inland regions, a problem that calls for a

political solution. These strategies also stem from the demand of the economic policy. Although the coastal regions have developed an export-oriented mechanism for economic growth centring on the consumer goods industry, they are yet to be of any influence on the inland regions and the capital goods industry. For this reason it is necessary to intensify the capital goods industry (the second stage of import substitutios), which calls for upgrading the industrial structure.

Shanghai (along with its Pudong Development Zone) has been designated as the head of the "T-type Strategy". Shanghai is a seaboard city but it was not among the first group of cities to be opened to the outside world. Moreover, because of the low efficiency of its many state-owned enterprises, Shanghai had its fill of low economic growth in the 1980s. The development of state-owned enterprises of Shanghai by introducing foreign investment to Pudong as a de facto special economic zone has met the demand of the economic policy, and the economic development of the Yangtze River valley under the guidance of Shanghai has met the political necessity.

One thing should be made clear here: these strategies were formulated without fully studying their effectiveness. An important prerequisite for the effectiveness of the strategies is whether the relationship between the economic regions can be full developed. Practice, however, has shown that after more than three decades of ossified central planning, the various economic regions have been seriously separated by administrative boundaries. The field of physical distribution is one typical example. The economic regions are separated vertically by the Ministry of Domestic Trade, the Ministry of Transportation, the Ministry of Railways, the Ministry of Foreign Economic Relations and Trade, and horizontally by local governments. No network for the physical distribution can transcend these administrative boundaries. Thus development of the economic regions is seriously hampered. And the strategy for economic development along the seacoast, the Yangtze River and the national boundaries has failed to play an adequate role. In other words, tie status quo of physical distribution is a barometer of the actual situation and problems of the economic regions.

The aforementioned problems constitute the starting point of this study, which takes a look at the trends in physical distribution and economic regions from the perspective of the current situation and existing problems. In this process the sub-macroeconomic grade (intermediary between national economy = macro economic grade and other individual economic entities such as enterprises = micro economic grade) will become more obvious. Our methodology is to take

the narrow sense of physical distribution, that is, the transportation department, as the major perspective for my analysis, and while looking into the situation of the entire country, case studies are also made of a number of selected economic regions. The reason for our choice of perspective is that although the commercial department has handled the better part of physical distribution in China (which means that the department for physical distribution is still underdeveloped), as a matter of fact commercial statistics at the level of economic zones are too incomplete to merit a quantitative analysis. The deficiency of statistics on transportation can be made up for by basing our quantitative analysis of case studies. Our analysis of transportation is centred on cargo shipment, but passenger shipment is also involved in some of the case studies.

About the structure of this chapter. Section Two gives a theoretical analysis of the relationship between economic development and physical distribution and between economic development and economic regions in developing countries in general and China in particular. Section Three explains the salient features of economic regions in China and their problems and recent trends. Section Four presents reasons for our choice of cases for study. Section Five probes into the topics that need to be studied in the future.

## **II . Economic Development , Physical Distribution and Economic Regions**

### **1. Economic Development , Physical Distribution and Economic Regions in Developing Countries**

No matter what strategy a developing country has adopted, improving the infrastructure for production is the most important topic for economic development. Only when the infrastructure for the physical distribution in the narrow sense of the term, i. e. , facilities for transportation, has been improved is it possible for new resources to be developed and the existing resources effectively distributed. Economic development can be promoted only by expanding the scope of the supply of raw materials and the market for products, and by developing industries that are directly or indirectly associated with transportation. Since the 1970s, NIEs has been striving to achieve their goals for rapid industrialization and economic growth by inducting foreign capital and adopting the strategy for export — oriented development. A perfect infrastructure for transportation has

become the precondition for attracting foreign capital, and that is why more and more importance has been attached to it. On the other hand, development in the infrastructure for transportation helps expand the scope of social division of labour and render substance to it. This social division of labour constitutes the very foundation for the formation of economic regions. Following are the definitions for economic regions, a term which will become the prerequisite for my ongoing analysis:

First, an economic region should be in the possession of an economic centre (city); second, a stable economic relationship has been formed around the economic centre; third, it should be engaged in the production of a certain product or a certain industry and business, and there should be a division of labour or cooperative relationship with economic sub—regions; fourth, it has relatively close economic ties with other economic regions at or above the same level<sup>(1)</sup>. In China, regional economies are classified in a hierarchical order. To be specifically, they fall into four categories: "economic belts", "comprehensive economic regions (big economic regions)", "basic economic regions (provincial—level economic regions)", and "grass—roots economic zones (inner—provincial economic zones)". The "economic regions" dealt with in this chapter refer to the first two categories.

The actual scale of an economic region is determined by the aforementioned conditions. Generally speaking, however, the better developed the professional division of labour and the transportation conditions are, the larger the economic region becomes. In an economic region that has measured up to these conditions, its economy should have reached the stage of "take—off" as mentioned in developmental economics. This is because in the traditional society prior to such "take—off", the levels of science and technology and the productive force are low, there is no clearly defined social division of labour, the exchange of commodities is underdeveloped, and a stable inter—regional professional division of labour is out of the question. During the period of economic take—off, modern industry rises in the wake of scientific and technological progress to become the leading economic department, the socialization and specialization of production has reached a fairly high level, the speedy development of railway and sea transportation has helped open up the home and foreign markets, and the scope of trade and the inter—regional professional division of labour expand steadily. The period of economic take—off is also one in which large cities emerge with massive development of the manufacturing industry and the concentration of industry

and population. These phenomena are also indications of the formation of an economic region<sup>(2)</sup>.

## **2. Theoretical Probing: Relationship between Physical Distribution and Economic Regions**

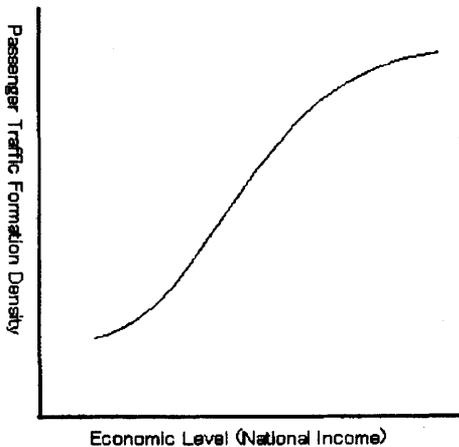
How, then, does physical distribution change with economic growth? This depends on changes in passenger and freight traffic formation density. Passenger traffic formation density cannot be counted as physical distribution, but it is an indication of the relationship between economic growth and the volume of transportation, and it is represented by persons/10,000 yuan. Freight traffic formation density is represented by tons/10,000 yuan.

First, passenger traffic formation density. As is shown in Figure 1—1, during the early stage of economic development and urbanization, the rate of population growth is high but per—capital income is low, the demand for travel is mostly related to work, and, as a result, passenger traffic formation density grows slowly. During the middle stage, population growth gradually slows down, the demand for sightseeing travels grows rapidly with the rise in per—capita income, and, as a result, passenger traffic formation density goes up quickly. During the late stage, quantitative increase of the demand for travel gradually gives way to qualitative increase, causing the increase in passenger traffic formation density to slow down.

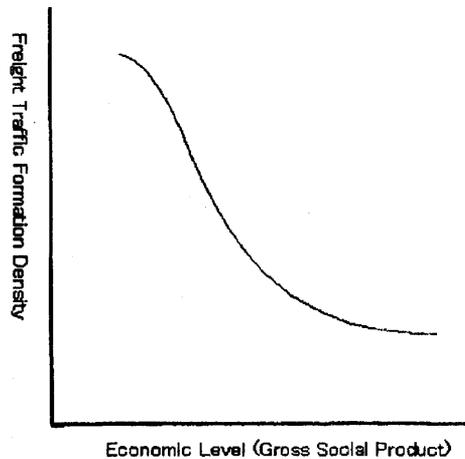
Second, freight traffic formation density. As is shown in Figure 1—2, freight traffic formation density goes down with development of the economy. The reasons are that the more developed the industrial structures become with economic growth, the smaller the volume of freight traffic for per—unit output value, that technical progress helps reduce consumption of energy and raw materials for per—unit output value, and that rational management of transportation has reduced uncalled—for freight traffic<sup>(3)</sup>.

As is mentioned above, the relationship between economic growth and the development of economic regions is one of mutual promotion. This is shown in the abscissa axis. Studies of the relationship between passenger traffic and turnover (person—kilometre) show that in China, for the increase of every 100 million yuan in national income, the passenger traffic and turnover rose by 825,800 persons and 54.76 million person—kilometres during the 1952—1978 period and by 622,600 persons and 51.53 million person—kilometres during the 1978—1988 period. In addition, for the increase of every 100 million yuan of total

**Figure 1—1 Change Curve of Passenger Traffic Formation Density (General Idea Figure)**



**Figure 1—2 Change Curve of Freight Traffic Formation Density (General Idea Figure)**

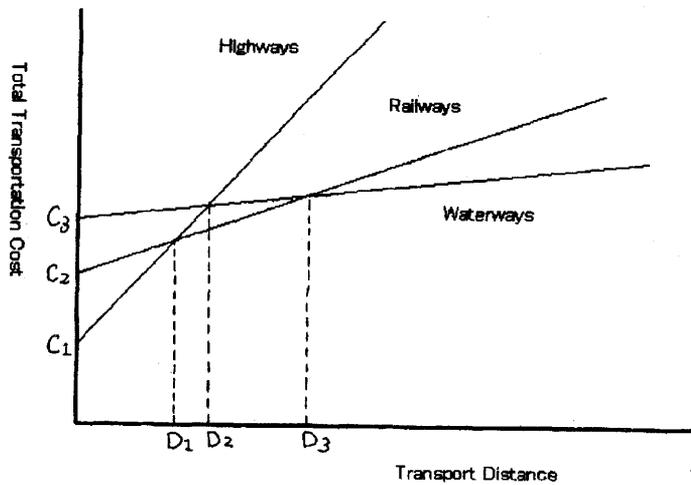


social output value, the freight traffic and turnover (tonnage—kilometre) rose by 335,200 tons and 89 million tonnage—kilometres during the 1952—1978 period and 234,800 tons and 43 million tonnage—kilometres<sup>(4)</sup>. These statistics basically tally with the results of the theoretical analysis as presented in the foregoing.

When considering the relationship between physical distribution and economic regions, one should not overlook the necessity of taking a look at the impact of the transportation cost on the situation of physical distribution in or between economic regions. The transportation cost is inversely proportional to the possible amount of freight, but it is in direct proportion to the transportation mileage. Take the commodities and transportation mileage as invariants, then the cost per—unit volume of freight is, in terms of different means of transportation, the lowest by waterway, higher by railway and still higher by highway. Thus the transportation cost varies with the means of transportation. However, the mode of transportation is not the only factor determining the shipping cost, which also entails the cost for loading and unloading (terminal cost), thus no sweeping conclusion should be reached as to what means of transportation is the cheapest. This is just as Figure 1—3 indicates.

The straight lines of Figure 1—3 indicate the transportation cost needed by different means of transportation. C1, C2 and C3 on the ordinate axis refer to terminal costs. The section ending at D1 refers to highway transportation, D1—D2 means railway transportation, and the section beginning from D3 refers to waterway transportation, whose combined costs are the lowest. Obviously the

**Figure 1—3 Comparison of Transportation Cost by Mode (General Idea Figure)**



means of transportation can be chosen according to transportation mileage. Actually, apart from these cost factors, the physical characters (volume, weight and intensity) of a commodity being transported, and the price for per—volume weight, have a tremendous impact on the choice of means of transportation, and determine the structure of transportation and physical distribution within and without an economic region<sup>(5)</sup>.

### **3. China's Economic Development and Changes in Physical Distribution and Economic Regions**

The following is a study of changes caused by economic development in physical distribution, economic regions and the relationship between them since the adoption of the policy of reform and opening to the outside world. I regard the beginning of reform and the opening—up effort as the starting point because production elements (labour force, capital, capital goods) did not begin flow freely across regional boundaries until reform began, and because it was with this flow that the economic regions belonging to the period of central planning began to re—form themselves once again.

First of all, let us take a look at changes that have taken place in the physical distribution. First, the physical distribution distributed according to national plan has reduced. This is because with economic restructuring the scope of capital goods controlled by the central government has shrunk dramatically. For instance, the proportion of coal output distributed according to plan shrank from 59 percent in 1979 to 40.7 percent in 1990; rolled steel, from 77.1 percent to

41.5 percent; and timber, from 85 percent to 21.8 percent. However, the shipment of capital goods was not reduced, and most of them were, as always, shipped by railway. (Capital goods always account for upwards of 70 percent of the total volume of railway shipment.) Thus changes can be discovered by substituting the shipment occupancy rate of goods distributed according to plan with the ratio of the volume of railway shipment of capital goods against the total volume of shipment, which dropped from 37.9 percent in 1978 to 11.3 percent in 1997. In fact the shipment occupancy rate of goods distributed according to plan should be even smaller.

Second, activation of rural economy has increased the demand for physical distribution in economic regions. A major indication of this is the rapid growth of shipment on highways as a means of short-distance hauling. Table 1-1 indicates that of all the means of transportation, the occupancy rate of highway transportation is rising steeply, but its average shipping mileage has not increased, as is shown in Figure 1-4. This has very much to do with not only the robust growth of the light and consumer goods industries during the period of reform and opening up to the outside world, but also the demand of foreign-invested enterprises for the physical distribution — such a demand accords with the characteristics of highway transportation that makes small-batch shipment and home delivery possible.

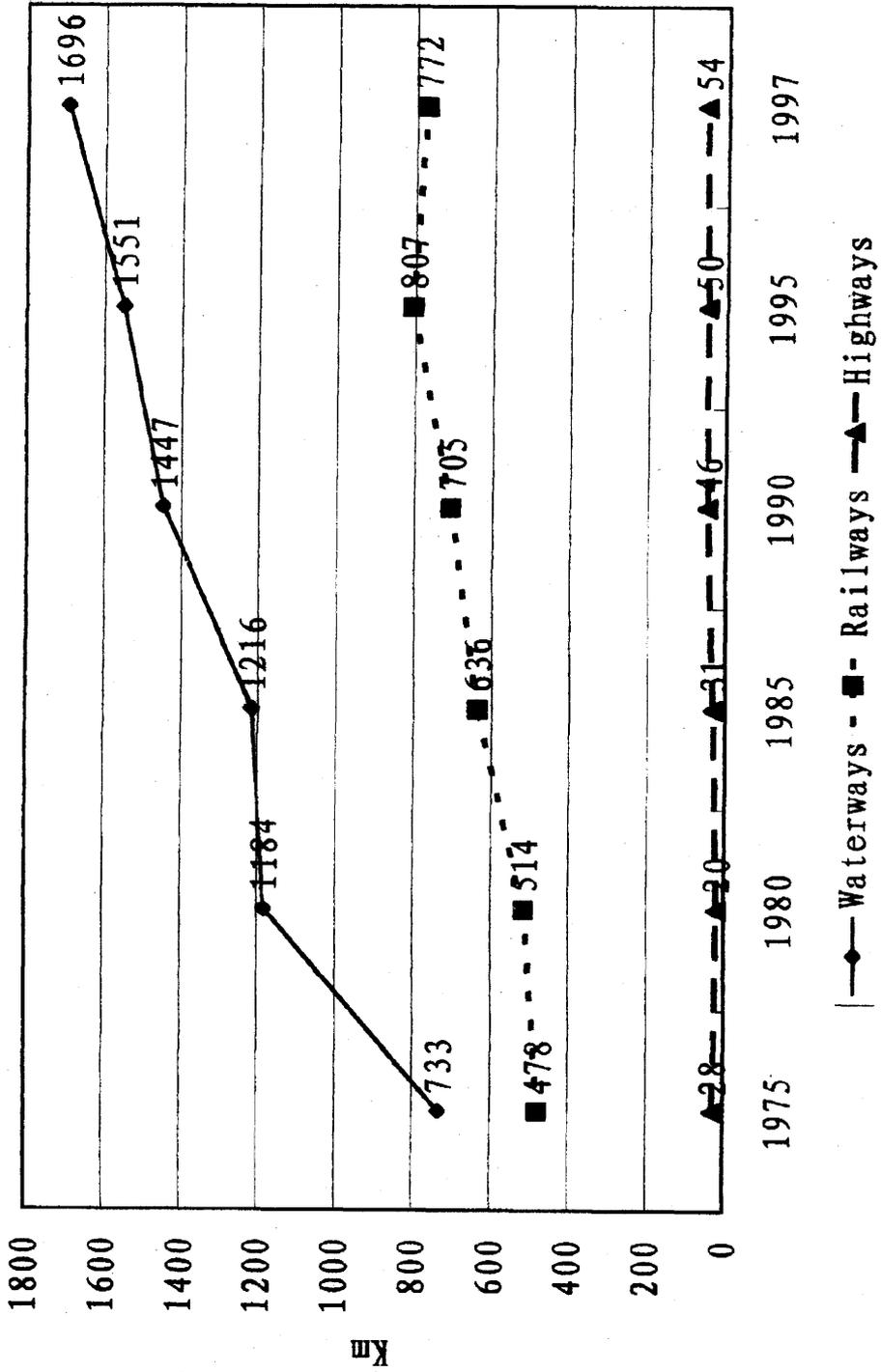
**Table 1-1**                      **Distribution Ratio of Freight Traffic by Mode (%)**

Year \ Mode	Freight Traffic					Freight Ton-Kilometres				
	Railways	Highways	Waterways	Pipelines	Civil Aviation	Railways	Highways	Waterways	Pipelines	Civil Aviation
1978	44.23	34.22	17.39	4.16	0.003	54.38	2.79	38.45	4.37	0.01
1980	20.36	69.90	7.81	1.93	0.001	47.54	6.35	41.79	4.08	0.01
1985	17.53	72.15	8.49	1.83	0.003	44.25	10.36	42.09	3.28	0.02
1990	15.52	74.60	8.25	1.62	0.004	40.53	12.81	44.23	2.39	0.03
1995	13.43	76.16	9.17	1.24	0.008	36.02	13.14	49.12	1.65	0.06
1997	13.30	76.54	8.89	1.25	0.010	34.27	13.80	50.34	1.52	0.08

Source: "China Statistical Yearbook 1998".

Third, inter-regional physical distribution is on the rise. The changes in the volume of railway freight traffic out of a province or region are shown in Table 1-2.

Figure 1—4 Average Transport Distance of Freight (1975—1997)



**Table1—2 Distribution Ratio of Inter—region Freight Traffic by Railways (%)**

Year\ Region	Inter— province	Inter— region						
			Northeast China	North China	East China	South Central China	Southwest China	Northwest China
1985	50.2	24.2	19.3	32.8	14.8	24.1	26.6	26.8
1990	55.3	28.0	16.8	36.6	22.7	28.5	31.9	34.4
1995	62.2	30.8	21.3	36.0	24.1	34.1	34.1	40.8
1997	62.9	32.1	21.1	36.6	26.1	38.3	35.5	40.0

Source: "Statistical Materials of Railways".

An analysis of the amount of freight traffic between provinces shows that the amount of inbound and outbound freight traffic in Shandong, Guangdong and Sichuan are larger than the average growth rate of the nation (Table 1—3) <sup>(6)</sup>. The sphere of influence of areas in Guangdong with high increases of inbound and outbound freight traffic extends as far as the entire country. What is particularly noticeable is that there is considerable growth in the amount of freight traffic that has nothing to do with the shipping mileage. The fact behind this is that raw materials are shipped from all over China to Guangdong, which was the first area in China to be opened up to the outside world, and that commodities produced in Guangdong are shipped to various parts of the country.

**Table 1—3 Comparison of Increase Ratio of Freight Traffic by Railways: Ten Provinces and Cities (1992/1985)**

Region\ Item	Import	Export	Region\ Item	Import	Export
Beijing	0.96	0.98	Henan	1.18	0.92
Tianjin	0.83	1.09	Hebei	1.1	1.12
Shanghai	1.01	1.01	Guangdong	1.31	1.51
Jiangsu	1.08	1.37	Sichuan	1.25	1.25
Shandong	1.3	1.47	Shaanxi	1.05	0.96
National Average	1.19	1.19			

Source: Hiroyuki Kato, "Economic development and transition to the market economy of China"

Meng Jia—jun, "Economic development and physical distribution of China".

What influence has changes in physical distribution on the economic re-

gions? First, self-sufficient economic regions of the age of central planning based on the quantitative balance of energy sources and raw materials and centred on massive construction of the infrastructure for transportation, are gradually being transformed into more realistic economic regions that are based on the relative advantages of itself, have fostered a division of labour with other regions, and are centred on the physical distribution. Second, the professional division of labour is yet to be better developed between economic regions that have emerged this way. In the mid-1980s various regions were vying to invest in the same trades and industries, this caused a great similarity in regional industrial structures<sup>(7)</sup>. Third, the various economic regions have redoubled their effort to attract foreign capital. The proportion of foreign capital attracted is directly proportional to economic development. Regions with a high economic growth rate are often where a good job has been done in attracting foreign investment and where there is a fine transportation infrastructure that foreign investors hope for. Local governments that have learned about this fact are taking great pains in developing the infrastructure for transportation in order to attract foreign investment. Improvement in the transportation infrastructure will promote the unity of the markets in individual economic regions and improve the division of labour between these regions.

The above analysis indicates that China is the same as the other developing countries in terms of relationship between economic growth, physical distribution, and economic regions. However, there are also problems peculiar to China. For this reason it is necessary to take a look at the current situation and problems of the economic regions in China.

### **III. Economic Regions in China**

#### **1. Development Characteristics and Existing Problems**

The development of economic regions in China is marked by three salient features.

First, there is a yawning gap between regions because of 1) a vast territory and uneven distribution of resources and 2) underdeveloped transportation. Energy sources, for instance, are unevenly distributed, as 30 percent of the coal deposits are concentrated in Shanxi, Shaanxi and west Inner Mongolia, and the issue of how to ship coal to other regions has become a priority topic when considering the country's transportation policy. Transportation in China is handi-

capped by a low density of per—unit basic facilities for traffic and by the uneven distribution of such facilities. (See Table 1—4.)

**Table 1—4 Density of Traffic Infrastructure by Region (Km/100km<sup>2</sup>: 1994)**

Region\ Index		Railways	Road	High Grade Road
East Region	Liaoning	2.44	29.35	11.77
	Hebei	1.72	26.9	17.82
	Tianjin	4.44	36.65	32.07
	Beijing	6.07	68.65	48.1
	Shandong	1.34	32.76	22.69
	Jiangsu	0.73	25.46	12.48
	Shanghai	4.03	61	40.36
	Zhejiang	0.94	33.17	11.6
	Fujian	0.85	37.17	7.14
	Guangdong	0.38	42.3	10.74
	Guangxi	0.71	16.74	4.49
	Hainan	0.64	38.28	5.51
Central Region	Heilongjiang	1.07	10.51	1.4
	Jilin	1.86	15.82	3.99
	Innner Mongolia	0.46	4.02	0.66
	Shanxi	1.49	20.96	8.22
	Henan	1.28	28.57	16.73
	Anhui	1.26	22.21	8.76
	Hubei	0.91	26.01	8.04
	Hunan	1.08	27.76	5.86
Jiangxi	0.95	20.7	4.17	
West Region	Shaanxi	0.89	19	6.22
	Gansu	0.49	7.77	2.51
	Ningxia	0.69	12.54	4.15
	Sichuan	0.51	17.54	2.71
	Yunnan	0.42	17.12	3.43
	Guizhou	0.81	18.4	2.02
	Qinghai	0.15	2.37	0.54
	Xinjiang	0.08	1.79	1.06
	Tibet	0.00	1.75	0.07
National Average		0.57	11.79	3.72

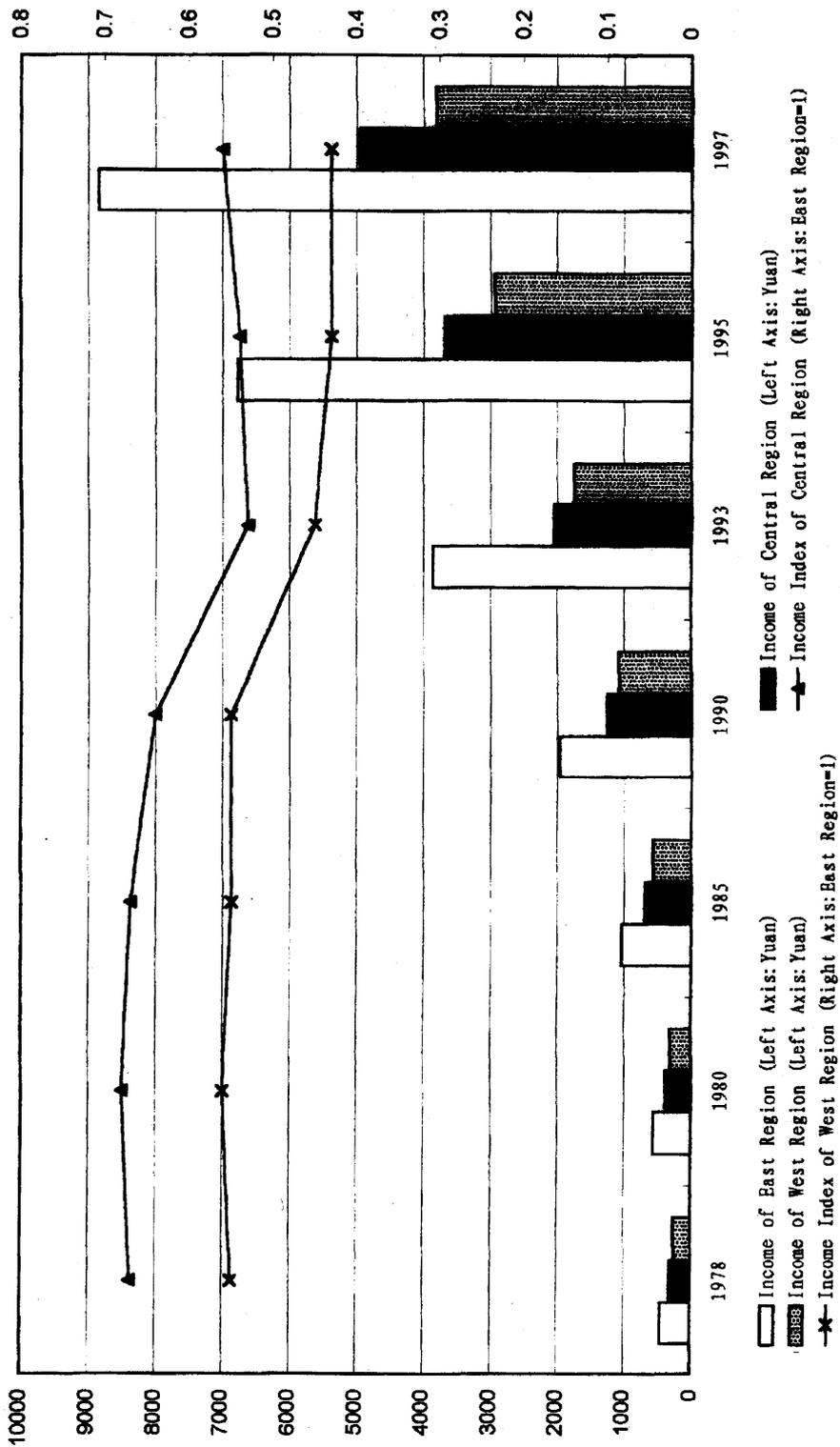
Source: Research Group of Development Research Center, The State Council, "Strategy of China for Coordinating Turn—of—the—century Regional Development".

Second, the aftermath of the unreasonable policies of the age of central planning is still there. For one thing, the administrative boundaries of the central and local governments have severed the organic integration of regional economies. For another, massive investment in the hinterland and remote regions, and the compulsory transfer of the defense industry from coastal regions (so — called "construction of the third line" from the late 1960s through the 1970s), and the encouragement for various regions to build up self — sufficing industrial systems, caused the formation of secluded economic regions. Incomplete division of labour between economic regions caused by these policies has remained to this day.

Third, the imbalance of earlier periods has worsened because the open policy is tipped in favour of coastal regions. Figure 1 — 5 features changes in the per — capita GDP in central and west region by taking the per — capita GDP in east region as 1<sup>(8)</sup>. There are diverse methods for calculating the economic gap between regions, and this is why some believe that the gap is not so big. In this study I use a rather simple criterion: per — capita GDP. Figure 1 — 5 indicates that the income gap between east, central and west region was not so striking during the 1980s. It was widened during the early 1990s. The difference between east and central region has somewhat narrowed since 1995, but that between east and west region has remained the same. The increase of the gap in the early 1990s was believed to be a result of Deng Xiaoping's remarks during his south China tour, which caused a new upsurge in opening up to the outside world. At the time, foreign capital was pouring into China, but most of it found its way to the coastal region of China. The recent reduction of this gap has been mainly caused by changes in the government policy, that is, the preferential treatment accorded to coastal regions has been cut down and the policy in aid of the inland regions has come in effect.

These three characteristics show that the regional economies of present — day China are similar to the 19th — century United States in that 1) the employment rate in the manufacturing industry is low, 2) the economies of scale is weak, and 3) shipping costs are rather high. According to the principles of economic geography, during this period of development the economy tends to concentrate in a given region, thereby widening the gap between regions. This is because the demand of agriculture with its massive labour force has grown tremendously, so much so that the first thing for the manufacturing industry to do is to establish factories near the agricultural area so as to save transportation

Figure 1-5 Regional Income Gaps (1978-1997)



costs. When little change has taken place in shipping conditions, the concentration of the manufacturing industry gives rise to new demands that tend to further attract the manufacturing industry, thus causing regional concentration of the economy. This is nothing but a mere theoretical inference, but it tallies with the present state of China.

## 2. Transportation and Economic Regions

Now let us take a look at the present state of the economic regions from the perspective of transportation. Table 1—5 is a matrix formation of railway tonnage between various provinces in 1997. Sumio Kuribayashi's method of analysis is used here<sup>(9)</sup>. The statistics are taken with the index of the national volume of railway tonnage as 100. Figures smaller than 0.1 are indicated with blank.

The table features four groups of regions. Group One: Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia, Liaoning, Jilin, and Heilongjiang. Group Two: Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, and Shandong. Group Three: Henan, Hubei, Hunan, Guangdong, Guangxi, Sichuan, Guizhou, and Yunnan (these three groups are indicated by mesh pattern in the table). Group Four: other provinces that do not belong to the three groups and that do not have close ties with each other.

It should be pointed out that this grouping of regions is very different from what is referred to as Chinese economic regions. Of the seven major economic regions referred to in the Ninth Five—Year Plan, Group One is formed by adding the northeastern region to the region around the Bohai Sea, Group Two embraces the Yangtze River Delta and the urban economic zones along the Yangtze River plus four provinces; and Group Three encompasses five central province regions, the southwestern and southern China regions and provinces. The influence of coal transportation should also be taken into consideration. This grouping of economic regions is determined to a great extent by the bulk transportation of coal by railway. However, even though coal transportation is deleted from Table 1—5, the composition of these regional groups will remain the same.

It should also be noted that the economic region in question are by and large hypothetical — the formation of an economic ring in the true sense of the term takes a long time. For example, the economic ring along the Yangtze River that forms the axis of the T—type strategy is divided into Groups Two and Three. A precondition for the formation of an economic ring in this region is to increase the volume of shipment between different parts of the ring.

Table 1—5 Inter—province Tonnage over Railways(1997)

Sending\Arrival	Beijing	Tianjin	Hebei	Shanxi	Innner Mongolia	Liaoning	Jilin	Heilongjiang	Shanghai	Jiangsu	Zhejiang	Anhui	Fujian	Jiangxi	Shandong
Beijing	0.6	0.3	0.3												
Tianjin	0.1	0.2	0.2												
Hebei	1.0	0.8	2.9	0.2	0.2	0.3		0.1		0.2					0.3
Shanxi	1.1	2.0	5.5	1.5	0.2	1.0			0.1	1.1		0.2			1.8
Innner Mongolia															
Monglia		0.6	0.7	0.1	1.9	0.7	0.3	0.7							0.2
Liaoning	0.1	0.2	0.3	0.1	0.3	5.2	0.5	0.5		0.1					0.1
Jilin			0.2			0.9	1.6	0.3							0.1
Heilongjiang	0.1	0.1	0.3		0.1	1.8	1.3	4.1							0.2
Shanghai									0.3	1.0	0.2	0.2			0.1
Jiangsu									0.1		0.4				
Zhejiang									0.1	0.7	0.2	1.6	0.1		
Anhui										0.2		0.7			
Fujian										0.3		0.2	0.7		
Jiangxi										0.4	0.2	0.2			3.1
Shandong	0.2		0.3	0.2				0.1	0.2	0.4	0.2	0.2			
Henan										0.5	0.1	0.2		0.2	0.3
Hebei															0.1
Hunan															
Guangdong						0.1									
Guangxi	0.1									0.4					
Sichuan															
Guizhou															
Yunnan															
Hainan															
Shaanxi															
Gansu															
Qinghai															
Ningxia															
Xinjiang															
Total	3.7	4.6	11.3	2.8	3.1	10.7	4.3	6.4	1.6	5.2	2.6	2.9	1.6	1.8	6.8

Notes: Figure is an index of tonnage (total tonnage=100). Omic the figvre below 0.1 The total cloes not reach 100. Sichvan inclvdes chongging.

Sovrcce:Compiled by avthor from "Year Book of China Transportation & Commvnications 1998."

Continuing Table

Sending/ Arrival	Henan	Hubei	Hunan	Guang dong	Guangxi	Sichuan	Guizhou	Yunnan	Hainan	Shaanxi	Gansu	Qinghai	Ningxia	Xinjiang	Total
Beijing														1.8	
Tianjin														1.1	
Hebei	0.2	0.1		0.1										7.1	
Shanxi	0.6	0.5	0.2	0.1										16.4	
Inner Monglia														5.7	
Liaoning	0.1													7.9	
Jilin														3.9	
Heilongjiang														8.8	
Shanghai														0.8	
Jiangsu	0.1													2.5	
Zhejiang														1.1	
Anhui														3.1	
Fujian														1.5	
Jiangxi	0.2			0.1										1.6	
Shandong														6.0	
Henan	1.4	1.4	0.3	0.3	0.2	0.1								5.7	
Hebei	0.2	0.9	0.1	0.2		0.2								2.4	
Hunan	0.1	0.1	1.0	0.7	0.2									2.8	
Guangdong	0.1	0.2	0.4	0.7	0.2	0.2	0.1	0.2						3.3	
Guangxi				0.2	0.6	0.2								1.7	
Sichuan	0.3	0.3		0.1	0.1	2.8	0.1	0.2		0.1				4.4	
Guizhou				0.2	0.3	0.2	0.6							1.7	
Yunnan						0.1		0.8						1.6	
Hainan									0.2					0.2	
Shaanxi	0.2	0.2				0.1				0.9				2.1	
Gansu						0.1			0.1	0.9				1.8	
Qinghai												0.1		0.4	
Ningxia	0.2										0.3		0.3		1.0
Xinjiang											0.5			0.5	1.6
Total	4.0	4.1	2.8	3.6	2.1	5.0	1.2	1.7	0.2	1.9	2.2	0.4	0.5	0.9	100.0

A third point, one that is relevant to the second point, is that major problems exist in transportation between coastal regions and inland regions. Shanghai, for example, has relatively weak transportation ties with Hubei, Hunan, Sichuan and other inland provinces, but its transportation ties are rather strong with the coastal regions from Shandong to Zhejiang. This shows how to expand the east—west transportation network will become a major problem awaiting solution.

In all, Table 1—5 indicates that the basic facilities for transportation should be continuously strengthened, especially those between coastal and inland China, if regional gaps are to be narrowed, and if balanced development is to be effected.

### **3. Opening—Up to the Outside World, and Economic Regions**

When observing the economic regions after the adoption of the policy of reform and opening up to the outside world, the impact of the opening—up effort can never be overlooked. This is particularly so from the perspective of foreign trade and direct foreign direct investment in China. Take for instance the Pearl River Delta, the pacesetter in the early days. In the 1980s, many industrial centres were born on the basis of commissioned processing trade with Hong Kong, and the concentration of industry attracted further foreign investment. One thing led to another. A major characteristic of these industrial centres is that they are linked with Hong Kong and other regions by highways. The investment from at home and abroad along these highways generated the formation of an economic region in accordance with the "development theory of point and axis" (in this case, point is a industrial centre, axis is a highway)<sup>(10)</sup>.

With the furtherance of the opening—up effort, new economic zones came to stay during the 1990s. New industrial cities, such as Kunshan, Suzhou, Wuxi and Changzhou, rose one after another along the trunk highway from Shanghai to Nanjing, and their sphere of influence has vastly exceeded that of the Pearl River Delta. This is because in addition to the original division of labour and market shares of these cities, direct foreign investment has also aimed to the Chinese market. Thus both ends of production process — the preparation of raw materials and sales of product — have helped expand the domestic market<sup>(11)</sup>.

The economic region's another salient feature after the adoption of the policy of reform and opening up to the outside world is the emergence of "tiny eco-

conomic zones" apart from the above—mentioned economic rings. The number of national economic and technological development zones has reached 32, and that of new and high technology development zones has reached 53 (according to 1997 figures). The emergence of "tiny economic zones" took place as a result of an upsurge of the opening—up effort right after Deng's remarks during his south China tour were published. Aside from this "bubble factor", the various development zones were able to take this opportunity and seek development by making flexible use of highways and other basic transportation facilities, the infrastructure of nearby industrial cities, and local research and development facilities. That is to say, by improving the infrastructure for transportation, these zones are able to grow in size for the expansion of industrial development and foreign direct investment. Such tiny economic rings include the economic development zones from Shanghai to Nanjing mentioned above, and that from Beijing to Tianjin (Beijing economic and technological development zone, Langfang economic and technological development zone, and the Tianjin economic and technological development zone, which are all at the provincial and municipal level.)

It can be said that direct investment from foreign countries, whether oriented to the foreign market or the domestic market, has all helped cultivate a new type of economic zones centred around areas that are recipients of such foreign capital. Over the last few years the emphasis of foreign investment has been gradually shifted from an export orientation to the Chinese domestic market, so that raw materials can be purchased, and products sold, in China. It can be expected that these foreign investments can help strengthen the mutual dependence between the investment—recipient areas and other areas in China. The same is true with foreign investment in inland regions. In the past, the inland regions had two choices for opening up to the outside world. First, to implement the strategy of "building a nest to call birds in" by bringing limited financial resources on the construction of energy, transportation and telecommunications and other infrastructure, so as to improve the investment environment and attract foreign capital. Second, to implement the strategy of "borrowing a boat to go to the sea" by establishing "windows" in coastal regions to induce foreign capital and technology. After the adoption of the strategy for developing the coastal regions and the regions along the Yangtze River and the national boundaries, the emphasis has been gradually shifted to the first one. In this case, it is necessary to open the resources and market of the inland regions to foreign capital because the Chinese market is the motivation of foreign investors. For this reason the re-

lationship of mutual dependence between various regions in China will also be strengthened.

#### **4. Regional Development Strategy in the Ninth Five—Year Plan and the Long—Term Target for the Year 2010**

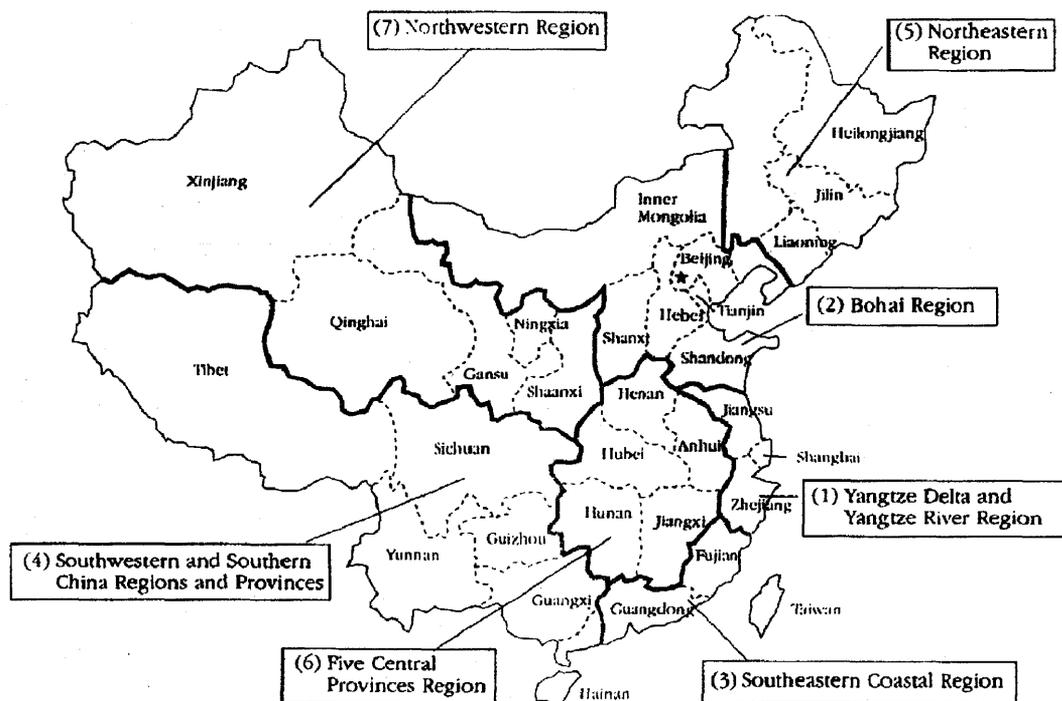
While probing into the above—mentioned issues, let us look at the regional development strategy prescribed in the Ninth Five—Year Plan and the Long—Term Target for the Year 2010. The emphasis of our study will be focused on 1) the distinction between the newly designated seven economic regions, and 2) the six measures for narrowing down the gaps between regions by promoting developing in the inland regions—central and west China.

In comparison with the previous situation, the seven economic regions have the following salient features:

First, the economic ties between these regions are emphasized so much that they have transcended administrative divisions. Second, due importance has been attached to the role of central cities and trunk transportation lines. Third, due importance has also been attached to the role of foreign trade and foreign investment. A typical example is the region that includes the Yangtze River Delta and areas along the river; it encompasses Shanghai, Jiangsu, Zhejiang and 14 cities along the Yangtze River to form an industrial belt with the river as the axis, and the provinces and cities as strongholds, thereby acquiring the salient features of the above—mentioned organic integration between the opening—up effort and the development of the inland regions (see Figure 1—6).

Second, the six measures are 1) to give priority to central and west China in arranging projects for the development of local resources and the construction of the infrastructure, while shifting resource—processing and labour—intensive industries to central and west China; 2) to straighten out the prices for resource—related products so as to beef up the ability of central and west China for self development; 3) to adopt a standard system for the central financial department to transfer its expenditure; 4) to speed up reform and opening up in central and west China so as to attract as much foreign capital as possible; 5) to strengthen the aid to poverty—stricken areas; and 6) to strengthen economic alliance and technical cooperation between coastal regions and central and west China. Obviously, the preferential policies formerly accorded to coastal regions are being gradually shifted to the inland regions for the purpose of reallocating the industrial resources.

**Figure 1-6 Regional Economic Development Strategy of  
the Ninth Five-Year Plan**



Region (Province/City/Autonomous Region)	Characteristic	Development Strategy/Future Image
(1) Yangtze Delta, Yangtze River Region (Shanghai, Jiangsu, Zhejiang, cities along the Yangtze river)	Well developed water transportation and agriculture, broad industrial base, high technological standards	Development of Pudong, comprehensive economic sphere made possible by construction of the Sanxia dam
(2) Bohai Region (Liaoning, Beijing, Tianjin, Hebei, Shandong, Shanxi, mid-western Inner Mongolia)	Well developed transportation and communications, concentration of large and medium-size cities, concentration of science and technology talent, resources including coal, iron ore and petroleum	Development of strategic industry, comprehensive economic sphere driven by the construction of an energy base and transportation route
(3) Southeastern Coastal Region (Guangdong, Fujian)	Borders Hong Kong, Macao and Taiwan, comprehensive large-scale open-door policy	Export-oriented economic region, including agriculture acquiring foreign currency, capital and technology-intensive foreign companies, and high value added industries
(4) Southwestern and Southern China Regions and Provinces (Sichuan, Guizhou, Yunnan, Guangxi, Hainan, Tibet, western Guangdong)	Borders, rivers and coastal areas, abundant resources for agricultural and marine products, minerals and tourism, location of munition industry	Formation of bases for energy and mineral production, tropical and sub-tropical agricultural products and tourism, making good use of the technical power of munition industry, centering on the construction of a route to foreign countries and the development of hydroelectric power and mineral resources
(5) Northeastern Region (Liaoning, Jilin, Heilongjiang, eastern Inner Mongolia)	Well developed agriculture, completed heavy industrial structure, abundant land and energy resources	Upgrading of former industrial base, development of the Tumen river region, development of agricultural resources, construction of heavy chemical industry and agriculture bases
(6) Five Central Provinces Region (Henan, Hubei, Hunan, Anhui, Jiangxi)	Well developed agriculture, completed industrial base, convenient transportation	Formation of agricultural, raw material and machinery industry bases and new economic zone by tying the region to main railway lines such as those running from Beijing to Kowloon and Guangzhou
(7) Northwestern Region (Shaanxi, Gansu, Ningxia, Qinghai, Xinjiang)	Passage to Central Asia, abundant agriculture and livestock, energy and mineral product resources, location of munition industry	Pursuing water supply, transportation and resource development and forming raw cotton, cattle raising, petroleum chemical industry and nonferrous metal bases by tying the region to a Eurasian landbridge

Source: Compiled by author from *Ninth Five-year Plan and Long-term Target for the Year 2010* and other materials

In the meantime, basing themselves on the national plan, the various provinces and municipalities have also formulated their own strategies for development. However, the "Strategy of China for Coordinating Turn — of — the — Century Regional Development" (by the Research Group of the State Council Development Research Centre) has pointed out the following problems in these strategies. First, the economic growth rates envisaged by the various provinces, municipalities and autonomous regions have exceeded the rate provided in the National Ninth Five — Year Plan, and they can hardly be fulfilled because they are based on investment budgets that have far outstripped the national budget. Second, because the strategic industries chosen by the various provinces, municipalities and autonomous region are repetitive and focused mainly on auto, machinery, electronics, metallurgical and chemical industries, so it is impossible for these regions to bring their own strengths into full play. Third, the various provinces, municipalities and autonomous regions are divergent in their understanding of the "strategy for sustainable development" of the Ninth Five — Year Plan. Fourth, the investment and financing policies have failed to attract enough attention.

Having made their forecasts of the economic growth of various regions by the year 2010, the Research Group comes to the conclusion that by 2010, the gap between coastal regions and inland regions will not be bridged. The group thus makes the following suggestions concerning the strategies for regional economic development: the central government should 1) step up its policy for making up for "market failure" resulting from such factors as the expansion of regional gaps; 2) increase the ability for regulating regional development by separating government functions from enterprise management and weakening the economic power of local governments, but in intensifying the central financial department it should also rationally reallocate production elements; 3) formulate local laws for regional development, such as the Development Law for Western Regions; 4) establish development zones in regions with poor development conditions so as to promote regional development; 5) adopt more preferential policies and measures for the underdeveloped western regions and the old industrial bases in the northeast; 6) shift the emphasis of investment to the infrastructure construction of regions lacking development conditions; 7) promote the development of trans — regional enterprise groups in order to dispel local governments' intervention in enterprises and develop the economies of scale; 8) establish a sound financial system aimed at regional development; 9) speed up the establish-

ment of the socialist market economy in the inland regions and old industrial bases; and 10) give full consideration to sustainable development when mapping out policies for regional development.

These suggestions are reasonable from the perspective of the government policy. They may be implemented in conjunction with the strategy of the Ninth Five—Year Plan for the development of central and western regions (the inland regions).

#### **IV. Choice of Regions for Case Studies**

Just as has been stated in the beginning of this chapter, this study is purported to analyze the situation of the economic regions by from physical distribution's point of view. To make up for the deficiency of statistics, we have adopted the method of studying the current and future situation of transportation of China as a whole, and chosen two regions for our case studies on this issue. The findings will be presented in other chapters. In this section, we will explain the characteristics of two chosen regions, which are divided according to the division of the six major regions in our analysis of transportation in China.

##### **1. North China (Beijing, Tianjin, Hebei, Shanxi and Inner Mongolia)**

North China is one of the most developed regions in China. There the basic facilities for transportation are of a high density, and cooperation between various traffic sections is rather sophisticated. The highway and railway network with Beijing in the centre is highly developed. The region boasts abundant deposits of petroleum and coal resources, and ships them to other parts of the country in massive quantities, and for this it has become a thoroughfare for outbound shipments of energy sources. There are also a number of trade harbours, and so the region is also a thoroughfare for foreign trade. The heavy and chemical industries account for a large share of the local industrial structure, resulting in a high freight traffic density, which is vindicated by the following statistics that are somewhat outdated. In 1988 the region's freight traffic formation density was 512,000 tons per 10,000 yuan, or 1.55 times the nation's average level<sup>(12)</sup>. East China (Shanghai, Jiangsu, Zhejiang, Anhui, Shandong, Fujian and Jianxi) is the largest recipient of outbound shipments from north China, and northeast China (Liaoning, Jilin and Heilongjiang) is the largest supplier of inbound shipments of north China.

In our case study of north China, we take for example Hebei, a typical province of the region. In 1997 the density of transportation facilities in Hebei was 192.65 kilometres per 10,000 square kilometres for railways (or 3.21 times more than the nation's average level), 2,983.96 km per 10,000 square kilometres (or 2.34 times the nation's average level). Both figures were rather high. The region's coastal harbours, including Qinhuangdao Harbour (a famous energy-exporting harbour), Jingtang Harbour and Huanghua Harbour, are linked with Tianjin Harbour to form a shipping network.

While we place the emphasis of our analysis on coal shipping, which makes up a big portion in freight traffic, we also pay attention to the development of various commodity markets based on the expansion of the infrastructure for transportation.

## **2. East China (Shanghai, Jiangsu, Zhejiang, Anhui, Shandong, Fujian and Jiangxi)**

East China is as well developed as north China, and its infrastructure for transportation is also rather sophisticated. Apart from its well-developed railway and highway networks, the booming waterway transportation in the Yangtze River valley is a major hallmark of east China. The population is rather concentrated in this region, which is in the possession of one of the few comprehensive industrial belts in China. The mainland's largest trading harbour, Shanghai, is in east China, and that is why the region's absolute volume of shipment is running high. But because of the high level of the industrial structure, the freight traffic density is low. Its 1988 freight traffic density was 226,000 tons per 10,000 yuan, the lowest among all the six regions. Take the nation's average level as 1, then the figure for east China is 0.68<sup>(13)</sup>. Central-south China (including Hebei, Hunan, Hubei and Jiangxi) is the largest recipient of outbound shipments from east China, and north China has gradually replaced central-south China and northeast China as east China's largest supplier of inbound shipments.

In our case study of east China, we take Shanghai-Nanjing economic region for example. In terms of the 1997 density of transportation facilities per 10,000 square kilometres, Shanghai had 387.3 kilometres of railways (6.46 times the nation's average level) and 3,333.33 kilometres of inland waterways (29.14 times), and 6,287.3 kilometres of highways (4.92 times), which were all markedly higher than the figures for the other regions. Jiangsu Province's total

length of railways is 1.22 times the nation's average; its total length of highways is 2.07 times the national average, and its total length of inland waterways is 19.13 times the national average. All these are of a high density, and the high development of waterway transportation is especially impressive. Although the emphasis of our analysis is placed on the relationship between the infrastructure for transportation and economic development.

## V. Topics for Future Researches

Finally, here is a discussion of topics for future studies. Just as we have repeated said, this study is designed to make up for the inadequacy of the quantitative analysis with the qualitative analysis of particular cases. But only two regions have been involved in our case studies, and for this reason we have no way of attaining the goals we expected to attain.

Therefore, the first topic that has been left unsaid is a case study in different types of regions cited in this study. Specifically speaking, the vast inland regions should be considered, including — if we regard railways as a leverage — — the regions along the Dianyungang — Lanzhou and Beijing — Kowloon railways. However, we may run short of statistics if we begin analyzing the influence of railways on the economic development of these regions.

The second topic that has been left unsaid is a study of the role of foreign investment in physical distribution. Although foreign capital accounts for a tiny portion in physical distribution, the inflow of foreign investment is bound to grow with the further opening of this field of endeavour. In the meantime, with the induction of foreign capital, Chinese physical distribution system has widely adopted the concept of "combined transportation", "delivery" which foreign capital brought with them, and the role of foreign capital in technology and practical skills will grow steadily. What is particular noteworthy is the impressive growth of foreign investment in expressways, railways and other basic facilities for transportation over the last few years.

The third topic that has been left unsaid is an analysis of the commercial department. Although our analysis has been limited to the transportation department, just as is mentioned in Section One of this chapter, the commercial department handles a large portion of the physical distribution in China. For this reason, the structural reform engaged by the commercial department will assert a tremendous impact on the physical distribution. What is more, on the basis of

our analysis of the circulation of commodities in and between regions, we can understand the situation in economic regions from diverse perspectives.

It is a defiant task to put such major topics as physical distribution and economic regions together for a study, and therefore mistakes are unavoidable. The analyses as presented in this book have only scratched the surface. However, in the process of our study we have managed to clarify all the issues we wanted to clarify, so that in the future we will go beyond the topics that we have studied to continue our study with a broader vista. We look forward to hearing our readers' valuable opinions.

### Notes

- (1) According to the definition given in Guo Zhenhui's *Economic Regions and Division of Economic Regions*, China Prices Publishing House, 1998.
- (2) W. W. Rostow: *The Stages of Economic Growth: A Non-Communist Manifesto*, Cambridge University Press, 1960. London. The book divides the periods of economic development into 1) traditional society, 2) the period of preconditions for a take-off, 3) take-off, 4) mature society, 5) the period of high-degree massive consumption, and 6) the period of love for leisure. These changes take place during the period of take-off, and the portion of investment in production accounts for 10 percent of the national income.
- (3) Yang Hao and others: *Comprehensive Transportation and Regional Economy*, China Railway Publishing House, 1995.
- (4) Ibid.
- (5) Wu Chuangjun and others: *Modern Economic Geography*, Jiangsu Education Press, 1997.
- (6) Meng Jianjun: *China's Economic Development and Physical Distribution*, *Asian Studies*, Volume 36, issue No. 1, 1995.
- (7) Hiroyuki Kato: *Economic Development and Transition to the Market Economy of China*, Nagoya University Press, 1997.
- (8) The composition of various regions is as follows: East Region: Liaoning, Beijing, Tianjin, Hebei, Shandong, Shanghai, Jiangsu, Zhejiang, Fujian, Guangdong, Guangxi, and Hainan; Central Region: Heilongjiang, Jilin, Inner Mongolia, Shanxi, Henan, Anhui, Hubei, Hunan, and Jiangxi; West Region: Shaanxi, Xinjiang, Gansu, Qinghai, Ningxia, Sichuan, Yunnan, Guizhou, and Tibet.
- (9) Nobuo Maruyama: *Economic Development in the Yangtze River Valley*, Institute of Developing Economies, 1993.
- (10) Lu Dadao: *Regional Development and Its Spatial Structure*, Science Press, 1995.
- (11) See Note 9.
- (12) Zhang Wenchang and others: *Spatial Transportation Relations*, China Railway

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(13)Ibid.

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