
The Emergence of the Pearl River Delta Economic Zone —Challenges on the Path to Megaregion Status and Sustainable Growth—

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Summary

1. In this article we will use statistical analyses to examine the characteristics of and challenges to economic development in the Pearl River Delta region.
2. Economic development has been accompanied by accelerating urbanization in China. The urban population ratio (urbanization ratio) has risen from 19.4% in 1980 to 47.0% in 2010, while the number of major cities with populations in excess of five million has increased from one (Shanghai) in 1980 to nine in 2010. Megaregions are being formed through the absorption of surrounding cities and rural communities into these major cities. The biggest of these are the Bohai Economic Rim centering on Beijing and Tianjin, the Yangtze River Delta Economic Zone, which centers on Shanghai and encompasses Zhejiang and Jiangsu Provinces, and the Pearl River Delta Economic Zone in Guangdong Province.
3. The Pearl River Delta Economic Zone has six prefecture-level cities with per capita GDP in excess of 50,000 yuan (approximately \$7,300). With a population of 36 million and a GDP of 2,852.9 billion yuan (approximately \$419.5 billion), its economy is comparable in size to that of Taiwan. At 78,947 yuan (approximately \$12,000), the region's per capita GDP is approaching the high-income level according to the World Bank definitions. Three cities with populations in excess of five million—Guangzhou, Shenzhen and Dongguan—have become hubs for the expansion of the high-growth area, and their industrial structures are shifting toward more high-added-value activities.
4. The Pearl River Delta Economic Zone accounts for 95% of exports from Guangdong Province, with around 70% coming from the Shenzhen, Dongguan and Guangzhou areas. Hong Kong is still the destination for 30-40% of exports to the region, but the shares of Japan, the U.S. and Europe have fallen, while those of ASEAN and other regions are tending to increase. The main export products have shifted from light industrial goods, such as apparel and toys, to high-tech items, such as mobile telephones, computer products, printers and LCD televisions.
5. With the expansion of the Yangtze River Delta Economic Zone, however, the presence of the Pearl River Delta Economic Zone in terms of both exports and foreign investment has declined since the second half of the 1990s. The region's share of total exports has fallen from 45% in the mid-1990s to 30% in 2010. This trend has been especially conspicuous in the area of computer-related products and components. Similarly, the region's share of foreign direct investment into China has dropped from 45% to below 30%.
6. In the past, large inflows of labor from other regions have allowed the Pearl River Delta Economic Zone to maintain its international competitiveness. In recent years, however, the region has been affected by upward pressure on wages resulting from a labor shortage. Furthermore, populations are falling in Guizhou and Sichuan Provinces, both of which supply labor to the Pearl River Delta Economic Zone, and we must assume that the procurement of labor will become increasingly difficult in the future. A shift away from an industrial structure that depends on cheap labor is therefore an urgent priority.

Introduction

In this article we will use statistical analyses to examine the characteristics of and challenges to economic development in the Pearl River Delta region.

China has achieved rapid growth under the reform and open-door policy adopted in the late 1970s. It is the only country in the world to maintain a double-digit average annual growth rate over the past 30 years.

However, economy development has not advanced evenly throughout China. The first areas to achieve growth under the reform and open-door policy were special economic zones established in coastal regions. The scope of growth subsequently expanded to include all of coastal China. By the early 21st century, expansion was also occurring in inland regions, but there is still significant income disparity between regions.

While working to reduce these regional income gaps, the Chinese government also plans to strengthen the competitiveness of the economic zones that have formed around major cities so that they can serve as prime movers for economic development. The government has particularly high hopes for the Bohai Economic Rim centering on Beijing and Tianjin, the Yangtze River Delta Economic Zone, which centers on Shanghai, and the Pearl River Delta Economic Zone in Guangdong Province.

This article will focus on the Pearl River Delta Economic Zone⁽¹⁾. The Pearl River Delta Economic Zone has achieved rapid economic growth through the development of Shenzhen, which has close links with Hong Kong. It has also attracted large inflows of labor from inland regions, allowing it to establish a position for itself as the world's factory.

In Part I of this article, we will focus on urbanization and the geographical characteristics of economic development in China. We will also look at the scale of the Pearl River Delta Economic Zone in comparison with other economic zones.

In Part II, we will identify the characteristics of economic development in the Pearl River Delta Economic Zone in recent years from the perspec-

tives of the expanding extent of industrialization, the shift to advanced industries in the central part of the region, and the expansion of the consumer market.

In Part III, our main focus will be changes in the external economic relationships of the Pearl River Delta Economic Zone. We will show how Japan, Europe and North America are being replaced by other regions, including ASEAN, as the region's main export markets, and how the region's main export mix is shifting from light industrial products to high-tech products.

In Part IV, we will identify some of the challenges to sustainable development in the Pearl River Delta Economic Zone, including a relative decline in the region's presence because of the expansion of the Yangtze River Delta Economic Zone, and the risk of increasingly serious labor shortages.

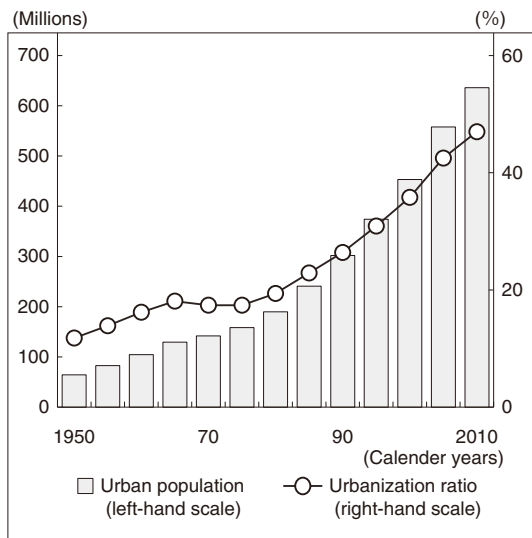
I. Megaregions—Driving Forces for the Chinese Economy

(1) Economic Development Accompanied by Accelerating Urbanization

Economic development in China has led to accelerating urbanization. According to the United Nations (*World Urbanization Prospects: The 2009 Revision*), China's urban population has increased, from 190 million in 1980 to 636 million in 2010 (Fig. 1). Over the same period, the urbanization ratio has climbed from 19.4% to 47.0%. By 2050, the urbanization ratio is expected to reach 73.2% and the urban population 1,038 million.

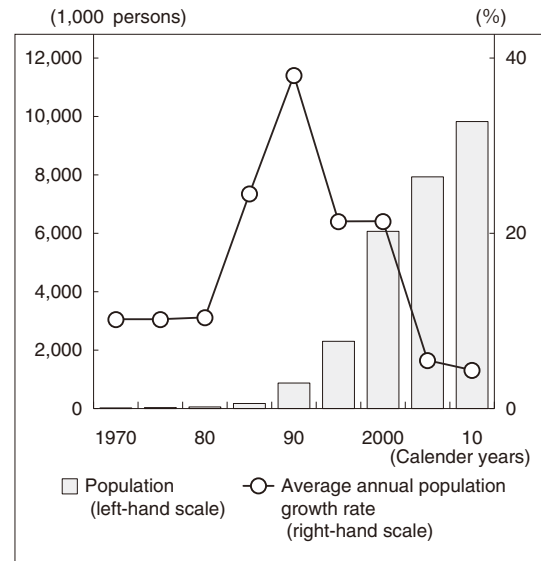
Urbanization in China has been characterized not only by the rapid expansion of the urban population, but also by the emergence of numerous major cities. In 1980, there were just four cities with populations in excess of three million (Shanghai, Beijing, Shenyang, Tianjin). By 2010 the number had increased to 22. This total includes nine cities with populations in excess of 5 million (Shanghai, Beijing, Chongqing, Dongguan, Guangzhou, Shenzhen, Shenyang, Tianjin, Wuhan), compared

Fig. 1 Urbanization in China



Source: United Nations, *World Urbanization Prospects: The 2009 Revision*

Fig. 2 Population Growth in Shenzhen



Source: United Nations, *World Urbanization Prospects: The 2009 Revision*

with just one (Shanghai) in 1980.

A key reason for the growth of urbanization is an influx of population from other regions. In the Pearl River Delta Economic Zone, the urban population of Shenzhen has grown from 60,000 in 1980 to 880,000 in 1990, 6.07 million in 2000, and 9.83 million in 2010 (Fig. 2). The population growth rate was particularly high between 1985 and 2000, and the average population growth rate between 1990 and 1995 was 38.0%. Shenzhen is basically a city formed through migration from other regions.

These major cities are a driving force for economic growth. According to Gill and Kharas [2007], cities account for three-quarters of production and between one-half and two-thirds of exports in East Asia. When the World Bank conducted a detailed survey of Chinese cities, it found that 120 key cities accounted for three-quarters of China's total product, and that the level of production by companies in major cities was especially high (World Bank [2006]).

China's overall per capita GDP is only just above \$4,000. The figures for major cities, such as Beijing, Shanghai and Shenzhen, are over \$10,000, which ranks them alongside high-income countries according to the definitions used by the

World Bank⁽²⁾. This means that the cities must be taken into account when attempting to assess China's current state of economic development and forecast future trends.

We need to be aware that major cities are not distributed evenly throughout China, but are concentrated in certain regions. Fig. 3 and 4 show the geographical locations and populations of cities listed in the United Nations population statistics as having populations of 750,000 or greater. A comparison between 1980 and 2010 shows that there are many major cities in coastal regions, and that there is considerable overlapping of cities in close geographical proximity. For example, the Pearl River Delta Economic Zone, which is the subject of this article, contains three cities—Shenzhen, Dongguan and Guangzhou—with populations over five million.

When the geographical distribution of cities is taken into account, it becomes apparent that we cannot adequately assess the role of cities as prime movers for the Chinese economy, and that we need to expand our scope to include the economic zones that are forming around major cities, including neighboring cities and rural areas. In recent years, these economic zones have attracted increasing interest as "megaregions."

Fig. 3 Mega Cities in China (1980)

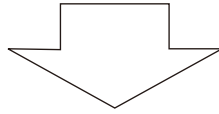
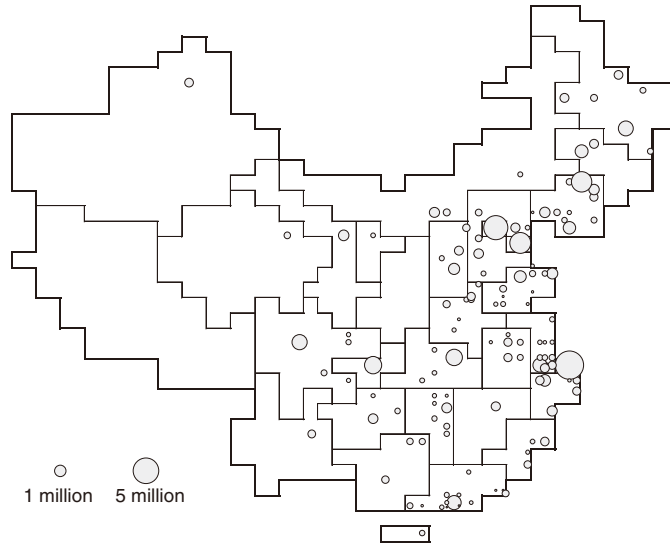
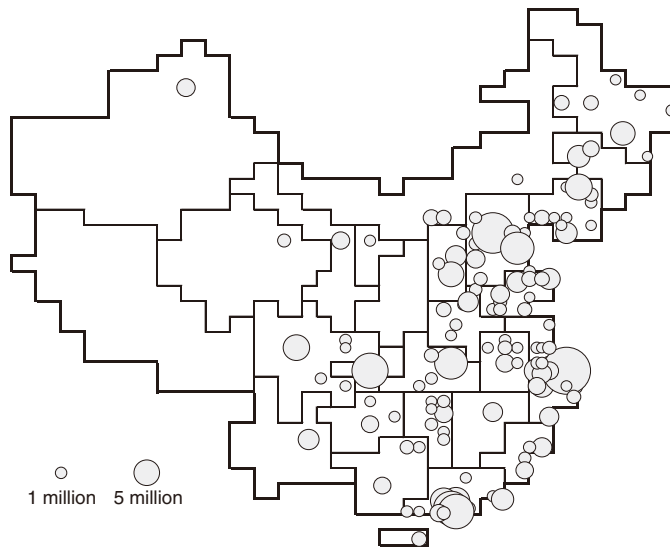


Fig. 4 Mega Cities in China (2010)



Source: Compiled by JRI, *World Urbanization Prospects: The 2009 Revision*

The term “megaregion” denotes a new geographical concept devised by Professor Richard Florida and his colleagues at the University of Toronto. They reasoned that contiguous lighted areas visible from satellites could be regarded as geographical units providing impetus for the world economy. They estimated the economic scale of each region according to the intensity of light emitted, and coined the term “megaregion” for regions where economic activity exceeds \$100 billion (Florida [2007], Florida [2009]). According to their analysis, there are 40 megaregions in the world, of which 12 are located in Asia. The three megaregions in China are Hong Kong-Shenzhen (44.9 million people), Shanghai (66.4 million people), and Greater Beijing (43.1 million people). Japan has four megaregions: Greater Tokyo (55.1 million people), Osaka-Nagoya (36 million people), northern Kyushu (18.5 million people), and Greater Sapporo (4.3 million people).

As indicated by the populations cited, the megaregions are not individual cities, but rather economic zones formed through the linkage of multiple major cities. The concept is broader than a metropolitan area, which consists of an urban area centering on a major city.

(2) China’s Three Megaregions

We next need to ascertain the scale of China’s three megaregions in statistical terms. In the following analysis we have assessed the scale of megaregions using statistics relating to prefecture-level cities, which constitute the administrative level below provinces and autonomous regions and directly administered cities. The actual data used were obtained from National Bureau of Statistics of China, *China Statistical Yearbook for Regional Economy 2010*. In Fig. 5, China is divided into 337 areas, each of which is colored according to its level of per capita GDP.

From this we can see that the Bohai Economic Rim, the Yangtze River Delta Economic Zone and the Pearl River Delta Economic Zone have all formed around prefecture-level cities with high per capita GDP levels (indicated by circles in Fig. 5). These are equivalent to the Greater Bei-

jing economic zone, Shanghai and Hong Kong-Shenzhen areas identified by Florida. These are also the areas in which the cities listed in Fig. 3 and 4 are clustered.

While there are indeed inland regions where per capita GDP levels are high, this is because of the large areas of individual prefecture-level cities. It does not indicate that these cities are forming economic zones with nearby prefecture-level cities, and the scale of cities included in these areas is small.

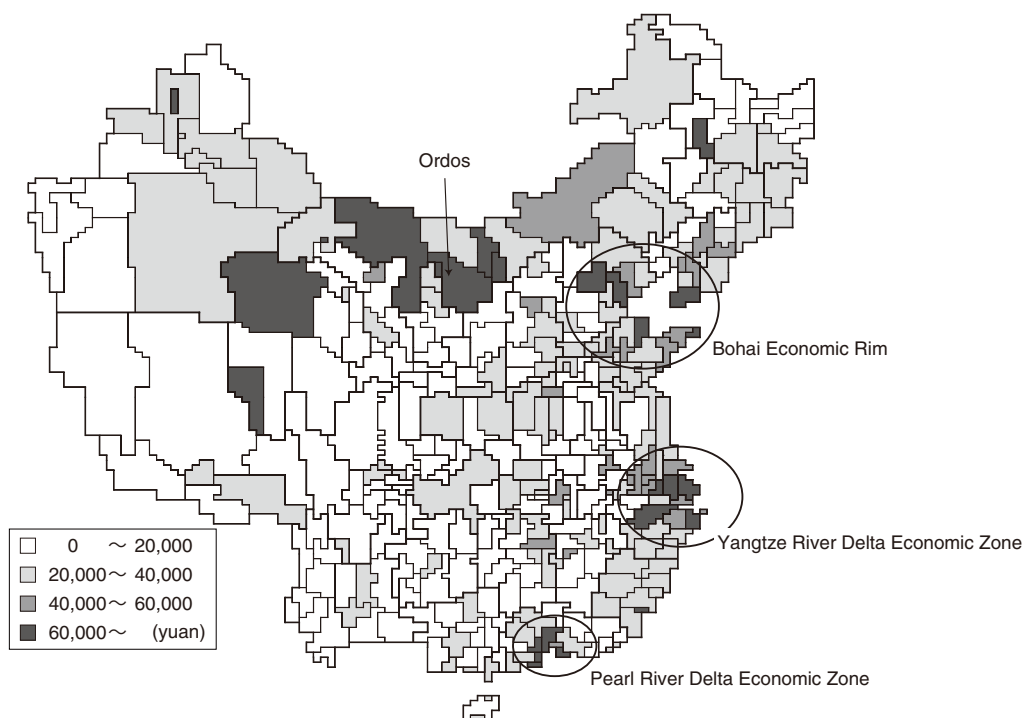
For example, per capita GDP in Ordos City in the Inner Mongolia Autonomous Region is high at 134,361 yuan. The city’s area is also large at 54,700 square kilometers (one-seventh of Japan’s area). However, the population is only 1.63 million. Most of the inland areas with high per capita GDP levels have rich mineral resources, such as crude oil, iron ore and rare earths, and their growth paths are different from those of coastal regions, where growth has been achieved primarily through industrialization.

Statistics provide an indication of the scale of these three megaregions. For the purposes of this analysis, each economic zone will be deemed to consist of prefecture-level cities in which per capita GDP is above 50,000 yuan (approximately \$7,300). The prefecture-level cities included in each zone are shown in Table 1, together with populations, economic scale (GDP) and income level (per capita GDP) (Table 1).

The Bohai Economic Rim, which centers on Beijing and Tianjin, consists of 11 prefecture-level cities and has a population of 76 million. Its GDP amounts to 4,700 billion yuan, and per capita GDP is 62,375 yuan (approximately \$9,100). The Yangtze River Delta Economic Zone centering on Shanghai also consists of 11 prefecture-level cities. With a population of 72 million, it has a GDP of 4,900 billion yuan and per capita GDP of 68,557 yuan (approximately \$10,000). Both of these megaregions have larger populations than Thailand and are comparable to South Korea in terms of economic scale.

The Pearl River Delta Economic Zone centering on Shenzhen and Guangzhou consists of six prefecture-level cities with a population of 36 mil-

Fig. 5 Per Capita GDP (2009)



Source: Compiled by JRI, using National Bureau of Statistics of China, *China Statistical Yearbook for Regional Economy 2010*

Table 1 Prefecture-Level Cities with Per Capita GDP in Excess of 50,000 Yuan (2009)

Economic Zone	Prefecture-Level Cities	Population (millions)	GDP (billions of yuan)	Per capita GDP(yuan) (dollars in parentheses)
Bohai Economic Rim	Beijing, Tianjin, Dongying (Shan), Weihai (Shan), Qingdao (Shan), Zibo (Shan), Yantai (Shan), Jinan (Shan), Dalian (Liao), Shenyang (Liao), Panjin (Liao)	75.52	4,710.4	62,375 (9,100)
Yangtze River Delta Economic Zone	Shanghai, Suzhou (Jiang), Wuxi (Jiang), Nanjing (Jiang), Changzhou (Jiang), Zhenjiang (Jiang), Hangzhou (Zhe), Ningbo (Zhe), Shaoxing (Zhe), Zhoushang (Zhe), Maanshan(An)	71.76	4,919.5	68,557 (10,000)
Pearl River Delta Economic Zone	Shenzhen, Guangzhou, Zhuhai, Foshan, Zhongshan, Dongguan (all in Guangdong Province)	36.14	2,852.9	78,947 (11,559)
All China		13,347.4	34,050.7	3,735

Notes: Shan: Shandong Province, Liao: Liaoning Province, Jiang: Jiangsu Province, Zhe: Zhejiang Province, An: Anhui Province

Source: Compiled by JRI, using National Bureau of Statistics of China, *China Statistical Yearbook for Regional Economy 2010*

lion, and its GDP is 2,900 billion yuan. Although smaller than the Bohai Economic Rim and the Yangtze River Delta Economic Zone, its economic scale is similar to that of Taiwan. Furthermore, its per capita GDP is higher than that of both the Bohai Economic Rim and the Yangtze River Delta Economic Zone at 78,947 yuan (approximately \$12,000).

II. Expansion and Deepening of the Pearl River Delta Economic Zone

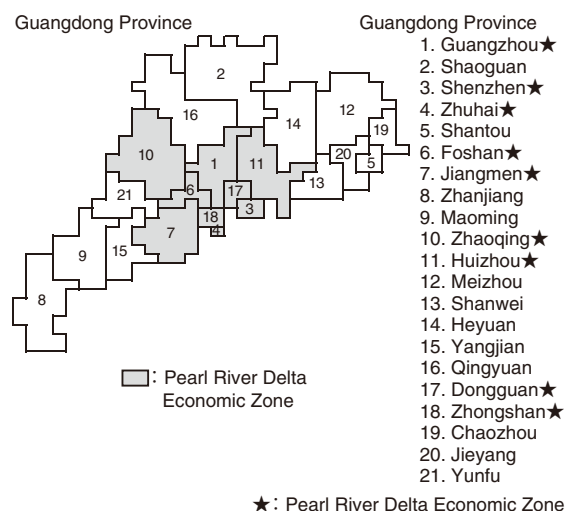
(1) Expansion of the Pearl River Delta Economic Zone

In Part II we will use statistics to analyze the characteristics of development in the Pearl River Delta Economic Zone in recent years. The Pearl River Delta Economic Zone has formed around the estuary of the Pearl River, which flows through the central area of Guangdong Province. The Chinese government has defined the Pearl River Delta Economic Zone as consisting of nine of the 21 prefecture-level cities in Guangdong Province (Guangzhou, Shenzhen, Zhuhai, Foshan, Jiangmen, Zhaoqing, Huizhou, Dongguan, Zhongshan). Their geographical positioning is as shown in Fig. 6.

According to *Guangdong Province Statistical Yearbook 2010*, the Pearl River Delta Economic Zone covers only 30.4% of the area of Guangdong Province but accounts for 50.0% of its resident population and 79.5% of its working population (Table 2). It contributes 80.0% and 83.8% respectively of secondary and tertiary sector production and over 95% of both exports and imports. The Pearl River Delta Economic Zone is clearly the center of economic activity in Guangdong Province.

A feature of economic development in the Pearl River Delta Economic Zone is the outward spread of growth regions centering on Shenzhen and Guangzhou. This phenomenon can be analyzed in terms of income levels (per capita GDP).

Fig. 6 Geographical Positioning of the Pearl River Delta Economic Zone



Source: Compiled by JRI

Table 2 Positioning of Pearl River Delta Economic Zone in Guangdong Province (2008)

	2008 (%)			
	Pearl River Delta Economic Zone	Eastern	Western	Northern
Land area	30.4	8.6	18.1	42.7
Year-end resident population	50.0	17.1	16.1	16.8
Urban population	63.3	15.2	10.0	11.5
Working population	57.7	13.5	14.4	14.3
GDP	79.5	6.5	7.3	6.7
Primary sector	36.7	12.4	29.5	21.3
Secondary sector	80.0	7.1	6.3	6.6
Tertiary sector	83.8	5.2	5.9	5.1
Fixed capital formation	70.1	7.7	5.5	12.9
Retail sales	73.3	9.7	9.6	7.3
Exports	95.8	2.3	0.8	1.1
Imports	96.6	1.3	0.7	1.4
Foreign direct investment implemented	88.3	3.3	2.0	6.4
Regional government revenues	67.9	3.2	3.0	4.1

Source: *Guangdong Province Statistical Yearbook 2010*

In Fig. 7, the zone is divided into categories based on per capita GDP (1) \$3,000 and lower, 2) \$3,001-6,000, 3) \$6,001-10,000, 4) \$10,001 and higher), each indicated by a different color. A comparison between 2003 and 2009 shows that prefecture-level cities with income levels over \$10,000 have emerged in the center of the zone, and that there has been an outward spread of prefecture-level cities with income levels over \$3,001. In 2009, four cities had per capita GDP in excess of \$10,000. The highest was Shenzhen at \$13,600, followed by Guangzhou (\$13,000), Foshan (\$11,800) and Zhuhai (\$10,200). Zhongshan and Dongguan were not far behind at \$9,100 and \$8,300 respectively. However, it is also significant that income levels in Huizhou (\$5,240), Jiangmen (\$4,710) and Zhaoqing (\$3,280), which are included in the Pearl River Delta Economic Zone as defined by the Chinese government, are all below the average for Guangdong Province (\$6,027). In fact, the figure for Zhaoqing is even lower than the national average for China (\$3,734).

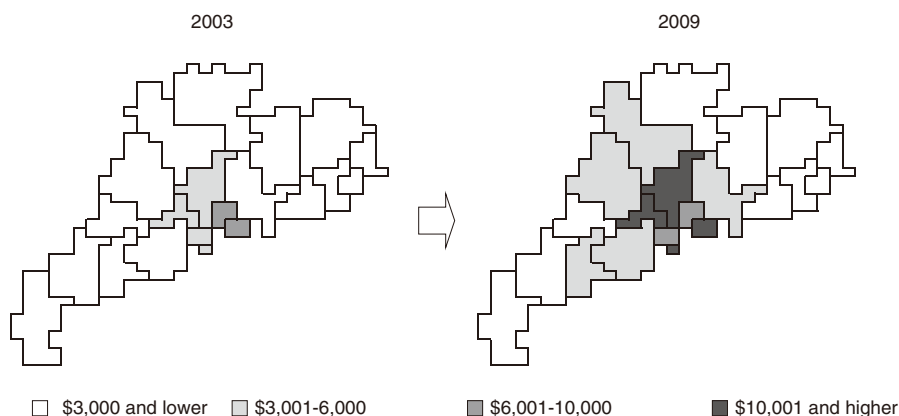
The outward spread of the Pearl River Delta Economic Zone appears to have been driven by the ripple effects of industrialization. This can be analyzed by tracing changes in the manufacturing sector added value. For the sake of convenience, Shenzhen and Zhuhai, which were designated special economic zones under the reform and open-door policy, and Guangzhou, which became an open economic zone, will be identified as “core

areas,” Dongguan, Foshan and Zhongshan as “outer core areas,” and Jiangmen, Zhaoqing and Huizhou as “peripheral areas.”

The contribution of the core areas to manufacturing sector added value in the Pearl River Delta Economic Zone has fallen from 54.4% in 2005 to 50.4% in 2009, while that of the outer core areas has risen from 34.8% to 37.4%. This indicates that the focus of the manufacturing sector is expanding from the core areas to the outer core (Fig. 8). While the contribution from peripheral areas is still low, it has increased from 10.8% to 12.2%.

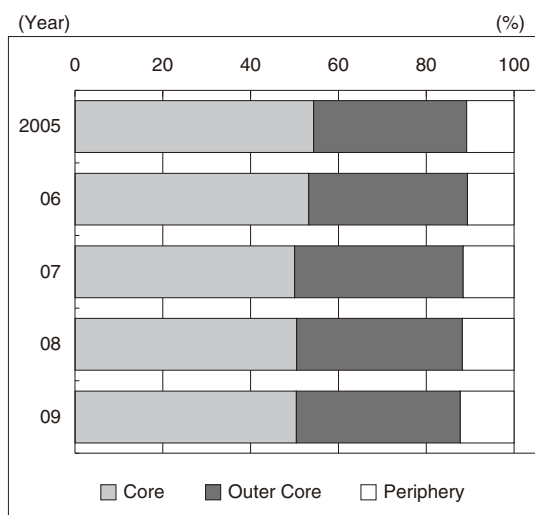
One of the indicators of economic development in developing countries is the industrialization ratio (the manufacturing sector’s contribution to GDP). The fact that the ratio for the core areas has fallen from 51.8% in 2003 to 48.0% in 2009 shows that these areas have reached the stage at which the focus of the industrial structure is starting to shift from manufacturing to services. The ratio of the outer core areas remains high, with an increase from 56.3% to 56.8%, indicating that industrialization is in full progress in these areas. The industrialization ratio for the peripheral areas has also risen above 50%. However, added value per manufacturing sector worker in the peripheral areas is still low at 172,312 yuan, compared with 478,779 yuan in the core areas and 415,718 yuan in the outer core. To catch up with the core and outer core areas, the peripheral areas will need to improve the productivity of their manufacturing

Fig. 7 Changes in Per Capita GDP



Source: Compiled by JRI, using National Bureau of Statistics of China, *China Statistical Yearbook for Regional Economy* (2004, 2010)

Fig. 8 Changes in Shares of Industrial Sector Added Value in the Pearl River Delta Economic Zone



Notes: Core: Shenzhen, Zhuhai, Guangzhou. Outer Core: Dongguan, Foshan, Zhongshan. Peripheral: Jiangmen, Zhaoqing, Huizhou
 Source: Compiled by JRI, using National Bureau of Statistics of China, *Yangtze River Delta & Pearl River Delta and Hong Kong & Macao SAR And Taiwan Statistical Yearbook* (2008, 2009)

industries.

As the focus of the manufacturing sector shifts from the core areas to the outer core, there has been a strong tendency for the core regions to specialize in high-added-value industries. For example, the main industries in Guangzhou and Shenzhen are motor vehicles and electronics, including computers and LCD televisions. In 2010, Guangzhou produced 1.35 million motor vehicles, which is similar to the output of Thailand, the main motor vehicle production center of Southeast Asia. Guangzhou appears to have formed a motor vehicle manufacturing cluster⁽³⁾. Electronic and electrical machinery industries are clustering in Shenzhen. In 2008, for example, it produced around 10 million computers and about 20 million LCD televisions.

There has also been a shift toward the service sector in the core areas. Between 2005 and 2009, the number of people employed in service industries rose from 2.65 million to 3.62 million in Guangzhou, and from 2.41 million to 3.18 million

in Shenzhen. Over the same period, added value per service sector worker rose from 112,400 yuan to 153,800 yuan in Guangzhou, and from 95,800 yuan to 137,172 yuan in Shenzhen. In 2009, added value per service sector worker stood at 142,900 yuan in core areas, 120,800 yuan in outer core areas, and 71,200 yuan in peripheral areas. Productivity in the core areas is close to the level in Shanghai (150,600 yuan).

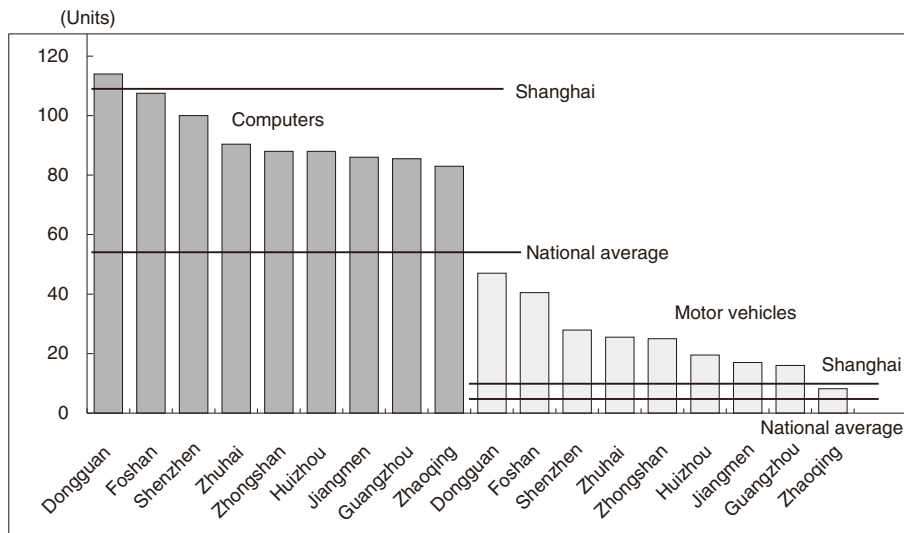
(2) Buoyant Consumption

Behind this expansion of the service industries are increased expenditure and changing consumption styles resulting from rising income levels. The per capita annual disposable income of urban dwellers in Guangdong Province has risen from 9,762 yuan in 2000 to 21,575 in 2009. Both figures are higher than the national averages of 6,296 yuan and 18,858 yuan respectively. Income levels are even higher in the Pearl River Delta region. The per capita annual disposable income of urban dwellers in 2009 was 33,045 yuan in Dongguan, 29,245 yuan in Shenzhen and 27,610 yuan in Guangzhou. The corresponding figure for Shanghai is 28,838 yuan.

Ownership of durable consumer goods is also high in these high-income prefecture-level cities. The numbers of computers and motor vehicles owned per 100 households are both substantially higher than the national averages (Fig. 9). Computer ownership is higher in Dongguan than in Shanghai, and ownership of motor vehicles is higher than Shanghai in all areas in the Pearl Delta Economic Zone, indicating that the region has made significant progress toward motorization.

Today there are many high-income people in the Pearl River Delta Economic Zone. According to a household survey of urban residents in Guangdong Province, the per capita annual disposable income of the top 10% is 62,320 yuan (approximately \$9,200), which is equivalent to 202,540 yuan (approximately \$30,000) per household. Guangdong Province has an urban population of 61 million, so 6.1 million people are included in the top 10% of income earners. Since clothing, food and housing are cheap in China, people are

Fig. 9 Ownership of Durable Consumer Goods in Urban Areas of the Pearl River Delta Economic Zone (Per 100 Households, 2008)



Source: Compiled by JRI, using National Bureau of Statistics of China, *Yangtze River Delta & Pearl River Delta and Hong Kong & Macao SAR and Taiwan Statistical Yearbook (2009)*, *China Statistical Yearbook (2009)*

able to spend more of their disposable incomes on durable consumer goods and other items. We can assume that most of these high-income people live in major cities in the Pearl River Delta Economic Zone.

In 2010, the Hong Kong government eased its regulations concerning the migration of people from Shenzhen with the aim of attracting wealthy tourists from the Pearl River Delta Economic Zone. Previously travel was limited to employees of specific companies with registered domiciles in Guangdong Province. Now Hong Kong will issue visas that allow people to reside legally for a year or more even if they are not registered residents of Guangdong Province. The Hong Kong government has stated explicitly that the reason for this change is to attract high-income tourists. As a result of this measure, the number of people eligible to receive visas is expected to increase from 900,000 to 4 million.

III. Changes in the Export Mix of the Pearl River Delta Economic Zone

(1) Export Market Diversification

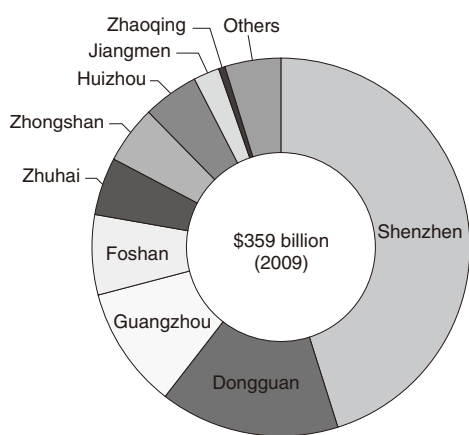
As in East Asia and other economic zones, export expansion has been the lever for economic development in the Pearl River Delta Economic Zone. Exports from Guangdong Province, which includes the Pearl River Delta Economic Zone, have grown rapidly from \$2.2 billion in 1980 to \$22.2 billion in 1990, \$91.9 billion in 2000 and \$359.0 billion in 2009. The 2009 total is comparable to that of South Korea (\$365.3 billion).

About 95% of exports from Guangdong Province originate in the Pearl River Delta Economic Zone (Fig. 10). Shenzhen is by far the biggest source, accounting for 45% of total exports from Guangdong Province. The three prefecture-level cities—Shenzhen, Dongguan and Guangzhou—together produce 70% of exports.

As is apparent from Fig. 11, which shows the main export markets for Guangdong Province,

neighboring Hong Kong is still by far the biggest market. Nor has there been any change in the positions of the United States and the EU, which remain in second and third places respectively.

Fig. 10 Export Shares of Prefecture-Level Cities in Guangzhou Province



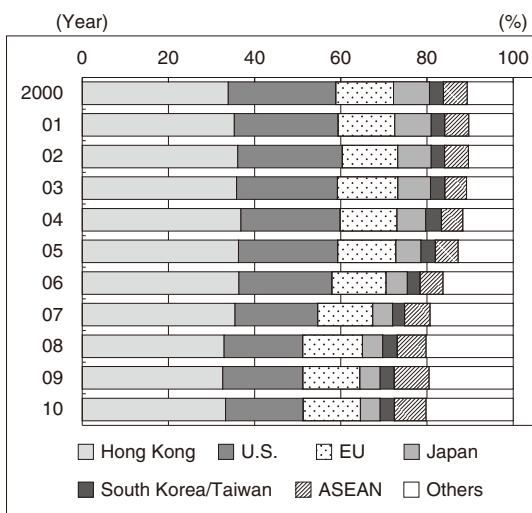
Source: Compiled by JRI, using National Bureau of Statistics of China, *China Statistical Yearbook for Regional Economy 2010*

However, the percentage of exports destined for the United States and Europe has tended to decline, falling from 38.3% in 2000 to 36.5% in 2005 and 31.3% in 2010. Japan's share has also fallen from 8.3% in 2000 to 4.6% in 2010. Over the same period, ASEAN's share has risen from 5.5% to 7.4%, and that of other markets from 10.7% to 20.2%.

Since many of the products exported from Guangdong Province to Hong Kong are re-exported worldwide via Hong Kong, we need to include Hong Kong's export markets among those of Guangdong Province⁽⁴⁾.

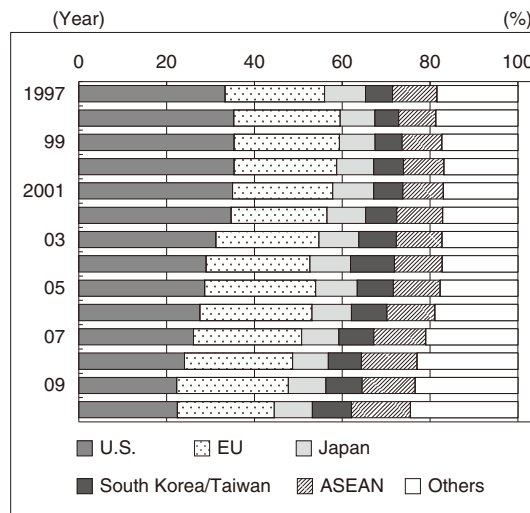
Fig. 12 lists Hong Kong's export markets (excluding China). As with Guangdong Province, the percentage of exports destined for Japan, the United States and Europe has tended to decline, falling from 67.2% in 2000 to 63.4% in 2005 and 53.2% in 2010. ASEAN's share has meanwhile risen from 9.2% to 10.7% and 13.4% respectively over the same period, and that of other markets from 16.8% to 17.7% and 24.5% respectively. These figures are indicative of a shift toward ASEAN and other regions in the weighting of the export markets of Guangdong Province and the Pearl River Delta Economic Zone.

Fig. 11 Export Markets for Guangzhou Province



Source: Compiled by JRI, using *World Trade Atlas*

Fig. 12 Export Markets for Hong Kong (Excluding Exports to China)



Source: Compiled by JRI, using *World Trade Atlas*

(2) Shift toward High-Added Value Exports

Initially the Pearl River Delta Economic Zone exported labor-intensive goods manufactured under contract to Hong Kong companies. By the 1990s, companies not only from Hong Kong but also from Taiwan were establishing operations in Shenzhen and Dongguang to process leather and plastics. The Pearl River Delta region has maintained its supply of low-cost labor by accepting large-scale migration from Sichuan and Guizhou Provinces, allowing it to continue in its role as an exporter of low-cost manufactured goods to the entire world.

An analysis of the types of foreign companies moving into the Pearl River Delta Economic Zone since 2000 reveals that there has been a gradual shift from labor-intensive to capital-intensive industries. This shift is one of the reasons for a major change in the main types of products exported (Table 3). In 2000, most of the top-ranking ex-

port items in terms of value were labor-intensive goods, including toys in third place, leather footwear in fourth, rubber footwear in sixth, and luggage in ninth. By 2010, however, the only labor-intensive item in the top 10 was ninth-ranked luggage, and all of the other top ten rankings were occupied by electronic and electrical equipment.

Exports of the number one item, communications equipment, including mobile telephones, amount to \$50.6 billion, or 14.4% of total exports. The Pearl River Delta Economic Zone is the source for 47.7% of China's total exports of these products, and 41.7% of its exports of printers, which are ranked fourth. As indicated by these figures, the Pearl River Delta Economic Zone has become China's biggest export manufacturing center for mobile telephones and printers. It also accounts for high percentages of exports of audiovisual products, such as LCD televisions and DVD decks.

While exports of computer parts have increased

Table 3 Items Exported from Guangzhou Province

2000					2010					
HS Code	Item	Value	Share		HS Code	Item	Value	Share		
1	8473	Computer-related parts	3,461.2	61.0	1	8517	Communications equipment, including mobile telephones	50,597.6	47.7	
2	8471	Computer-related products	3,298.3	30.0	2	8471	Computer-related products	25,265.6	18.2	
3	9503	Toys	2,148.8	43.1	3	8473	Computer-related parts	11,681.9	37.3	
4	6403	Leather footwear	1,540.3	35.8	4	8443	Printers	9,828.0	41.7	
5	8517	Communications equipment, including mobile telephones	1,400.5	44.8	5	8528	LCD televisions	9,101.5	28.5	
6	6402	Rubber footwear	1,380.9	40.1	6	9013	Lasers	8,228.3	29.5	
7	8516	Electric heaters	1,322.9	54.8	7	9403	Furniture parts	8,129.9	45.0	
8	2709	Crude oil	1,279.8	60.4	8	8504	Transformers	7,014.5	34.7	
9	4202	Luggage	1,260.7	32.8	9	4202	Luggage	6,699.3	37.2	
10	8504	Transformers	1,185.9	32.8	10	8516	Electric heaters	6,262.7	47.1	
11	6204	Suits for women and girls	1,162.6	25.3	11	6204	Suits for women and girls	5,893.1	59.1	
12	3926	Miscellaneous plastic products	1,138.5	34.7	12	9401	Chairs	5,245.8	35.1	
13	8527	Wireless reception equipment	1,073.5	35.6	13	8518	Microphones, loudspeakers	4,869.6	60.5	
14	7113	Jewelry	972.2	64.3	14	8521	DVD decks	4,825.6	56.0	
15	9405	Lighting equipment	894.0	37.0	15	8542	Integrated circuits	4,747.0	16.0	
		Others	38,767.2	20.4			Others	184,631.1	17.2	
Total				62,287.2	25.0	Total			351,603.2	22.3

Notes: Figures in the "Share" column denote Guangdong Province's share of China's total exports of each item.
Source: Compiled by JRI, using *World Trade Atlas*

in value terms, from \$3.5 billion in 2000 to \$18.2 billion in 2005 and \$25.3 billion in 2010, the region's share of China's total exports of these products has plummeted from 61.0% in 2000 to 38.1% in 2005 and 18.2% in 2010. The reasons for this decline will be examined in Part IV.

IV. Challenges on the Path to Sustainable Growth

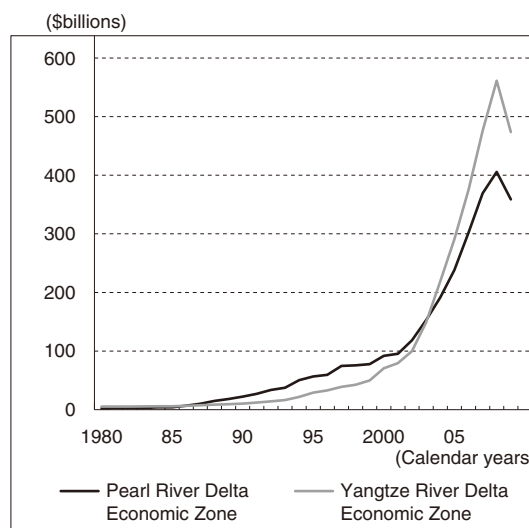
(1) Declining Presence in Relation to Exports and Foreign Investment

We will look next at changes in the Pearl River Delta Economic Zone's presence in China from the perspectives of trade and foreign investment. There appears to have been a relative decline in the presence of the Pearl River Delta Economic Zone because of the dramatic advances made by the Yangtze River Delta Economic Zone centering on Shanghai. For the sake of convenience, the performance of the Pearl River Delta Economic Zone will be based on statistics for Guangdong Province, and that of the Yangtze River Delta Economic Zone on aggregate statistics for Shanghai, Jiangsu Province Zhejiang and Province.

Economic growth in the Pearl River Delta Economic Zone has been driven by export growth resulting from an influx of foreign direct investment following China's shift to the reform and open-door policy. Until the mid-1980s, the bulk of China's exports came from the Yangtze River Delta Economic Zone centering on Shanghai. However, the Pearl River Delta Economic Zone overtook the Yangtze River Delta Economic Zone in terms of exports in 1986, and by the mid-1990s it was the source of over 40% of China's total exports (Fig. 13, 14). However, its share began to decline in the second half of the 1990s, and in 2004 it was again overtaken by the Yangtze River Delta. In 2009, the Pearl River Delta Economic Zone accounted for 29.9% of total exports, compared with 39.4% for the Yangtze River Delta Economic Zone.

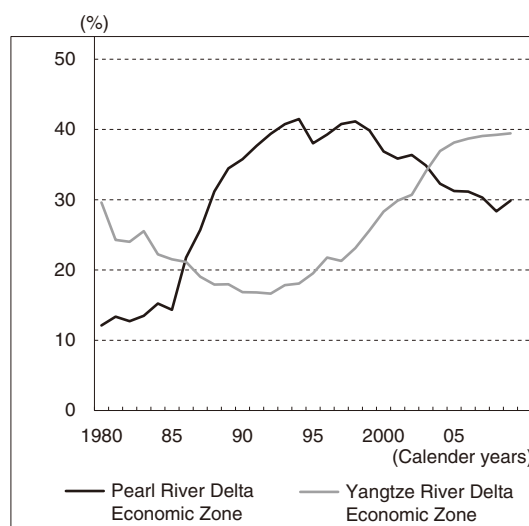
However, an analysis of export shares in individual product categories shows that the region's

Fig. 13 Exports from the Pearl River Delta Economic Zone and the Yangtze River Delta Economic Zone



Source: Compiled by JRI, using National Bureau of Statistics of China, *China Compendium of Statistics 1949-2004*, *China Statistical Yearbook*

Fig. 14 Export Shares of the Pearl River Delta Economic Zone and the Yangtze River Delta Economic Zone



Source: Compiled by JRI, using National Bureau of Statistics of China, *China Compendium of Statistics 1949-2004*, *China Statistical Yearbook*

presence has not declined in all areas. Fig. 15 compares changes in the Pearl River Delta Economic Zone's shares of total exports of its top 30 items (in 2010) between 2000 and 2010 with the corresponding statistics for the Yangtze River Delta Economic Zone. Changes in the export shares of the Pearl River Delta Economic Zone are shown on the vertical axis and those of the Yangtze River Delta Economic Zone on the horizontal. The size of the bubbles represents the value of exports in 2010. A negative figure on the vertical axis indicates that the export share of the Pearl River Delta Economic Zone has fallen in the corresponding product category, while a positive figure on the horizontal axis signifies an increase in the export share of the Yangtze River Delta Economic Zone.

From Fig. 15 we can see that there has been a decline in the shares of the Pearl River Delta Economic Zone in the areas of computer-related parts and computer-related products, while the shares of the Yangtze River Delta Economic Zone have risen. This suggests that the main focus of production in these categories could be shifting from the Pearl River Delta Economic Zone to the Yangtze

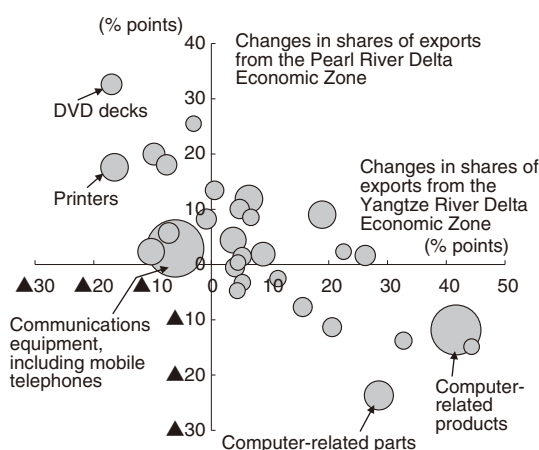
River Delta Economic Zone. Other categories in which the shares of the Pearl River Delta Economic Zone are falling while those of the Yangtze River Delta Economic Zone are rising include semiconductor devices, optical fiber and sound recording equipment. Interestingly, a similar trend is apparent in the rubber footwear and leather footwear categories.

There are also categories in which the shares of the Pearl River Delta Economic Zone have risen and those of the Yangtze River Delta Economic Zone have fallen. Examples include DVD decks, printers, and communications equipment, including mobile telephones. These changes are indicative of improvements in the production and export competitiveness of the Pearl River Delta Economic Zone. Of course, there are also many categories in which the shares of both regions have risen. These include furniture, LCD televisions, transformers and printed circuit boards.

Changes in investment by foreign companies have played a major role in these changes in export mixes. Between 1980 and 1990, foreign direct investment in Guangdong Province increased dramatically from \$100 million to \$10.2 billion. In the second half of the 1980s and the first half of the 1990s, its share of total foreign direct investment was 30-40%, or double that of the Yangtze River Delta Economic Zone (Fig. 16, 17).

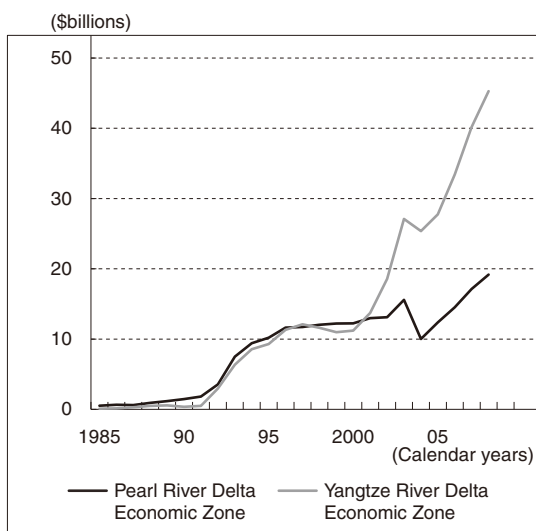
However, after speeches made by Deng Xiaoping during his tour of southern China in 1992, the Chinese government began to welcome investment by foreign companies actively, with the result that foreign direct investment began to flow into all coastal regions. Foreign direct investment in the Yangtze River Delta Economic Zone showed particularly rapid growth, rising from \$500 million in 1991 to \$3.0 billion in 1992. In 2000, when China joined the WTO, the Yangtze River Delta Economic Zone received foreign direct investment amounting \$11.2 billion. It overtook the Pearl River Delta Economic Zone in 2001, and its 2008 total of \$45.3 billion was more than double that of the Pearl River Delta Economic Zone (\$19.2 billion). This gap in foreign direct investment was a factor in the decline of the relative importance of the Pearl River Delta Economic Zone.

Fig. 15 Changes in Export Shares of Items Exported from the Pearl River Delta Economic Zone and the Yangtze River Delta Economic Zone (2000, 2010)



Source: Compiled by JRI, using *World Trade Atlas*

Fig. 16 Foreign Direct Investment in the Pearl River Delta Economic Zone and the Yangtze River Delta Economic Zone



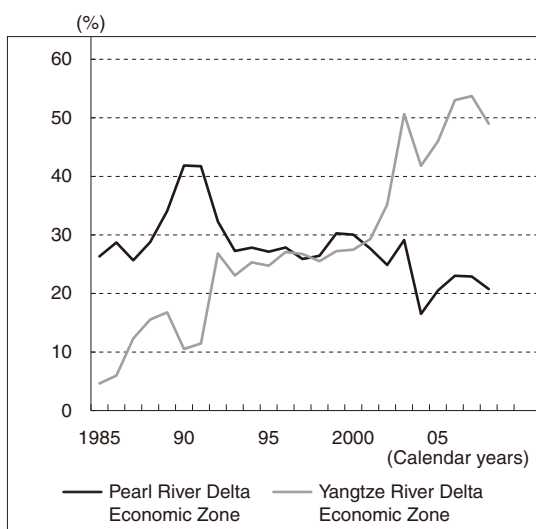
Source: Compiled by JRI, using National Bureau of Statistics of China, *China Compendium of Statistics 1949-2004*, *China Statistical Yearbook*

(2) Rising Wages and Labor Shortages

One of the factors that has driven the development of the Pearl River Delta Economic Zone has been its ability to attract more labor from other regions than any other region in China. Fig. 18 shows population trends in Guangdong Province. From 52.3 million in 1980, Guangdong's population has risen to 63.5 million in 1990, 86.5 million in 2000 and 95.4 million in 2008. Provisional results from the 2010 population census indicate that the figure is now over 100 million⁽⁵⁾. This means that the population of Guangdong Province has almost doubled over the past 30 years. The region's average population growth rate for the past 30 years is 2.3%, which is substantially higher than the Chinese average of 1.0%. During the 1990s the average climbed to over 3%. Obviously most of this growth was the result of migration from other provinces. The influx of labor into the Pearl River Delta Economic Zone has been especially remarkable.

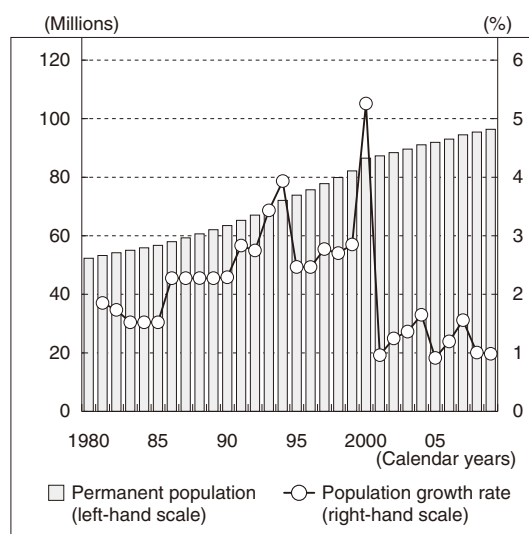
Fig. 19 divides Guangdong Province into four categories based on changes in the working population in the six years from 2003 to 2009. The categories are 1) prefecture-level cities in which the

Fig. 17 Shares of Foreign Direct Investment in the Pearl River Delta Economic Zone and the Yangtze River Delta Economic Zone



Source: Compiled by JRI, using National Bureau of Statistics of China, *China Compendium of Statistics 1949-2004*, *China Statistical Yearbook*

Fig. 18 Population of Guangdong Province (1980-2009)



Source: Compiled by JRI, using *Guangdong Province Statistical Yearbook 2010*

working population fell (less than 1.0 times), 2) prefecture-level cities in which the working population increased by 1.0-1.3 times, 3) prefecture-level cities in which the working population increased by 1.3-1.6 times, and 4) prefecture-level cities in which the working population increased by over 1.6 times. There are six cities in the Pearl River Delta Economic Zone where the working population rose by a factor of 1.3 or more (4.5% per annum or higher) (Guangzhou, Shenzhen, Foshan, Huizhou, Dongguan, Zhongshan). Apart from Guangzhou and Huizhou, the other cities recorded growth in excess of 1.6 times, while Dongguan's working population increased by a factor of 4.4 (27.9% per annum), from 980,000 in 2003 to 4.29 million in 2009.

However, the growth of the working population is now slowing. A comparison between 2000-2005 and 2005-2009 shows that the rates of increase fell in all cities except Guangzhou. Shenzhen's growth rate fell from 1.9 times to 1.2 times, and that for Dongguan from 4.0 times to 1.1 times.

Labor shortages and rising wages have become problems in recent years. The minimum wage in cities in Guangdong Province was raised on

March 1, 2011. This follows an earlier increase in May 2010. These two increases in the space of a single year lifted the minimum wage in Guangdong Province by 51.2%.

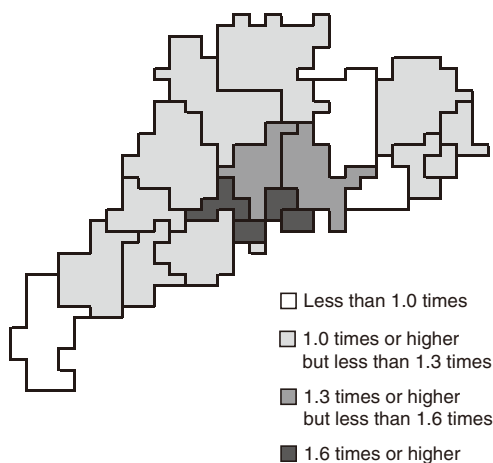
These increases became necessary because the minimum wage in Guangdong Province had fallen below levels in inland regions, making Guangdong less attractive to workers from inland China. However, the falling birthrate in inland China should also be seen as a reason for the labor shortage. According to the 2010 population census, the populations of Sichuan and Guizhou Provinces, both of which are sources of labor for Guangdong Province, have fallen from 82.12 million and 37.3 million respectively in 2005 to 80.42 million and 34.75 million respectively in 2010. These are substantial declines of 1.27 million and 2.55 million respectively (Fig. 20).

Some observers have commented that there are still ample resources of surplus population in inland rural areas. However, most of these people are aged over 40 and are becoming unsuitable for new migration to coastal regions or training for new occupations. We must conclude, therefore, that the Pearl River Delta Economic Zone can no longer look forward to sustainable growth based on an industrial structure in which cheap labor is the main advantage. This situation has already prompted some foreign companies to relocate their production operations to other regions and may also be one of the reasons for the region's declining share of exports of computer-related parts and products and some labor-intensive items.

With its relative importance waning because of the expansion of the Yangtze River Delta Economic Zone, and no longer able to rely on cheap labor as in the past, the Pearl River Delta Economic Zone appears to have reached a turning point. This situation is viewed with considerable alarm by the Chinese government.

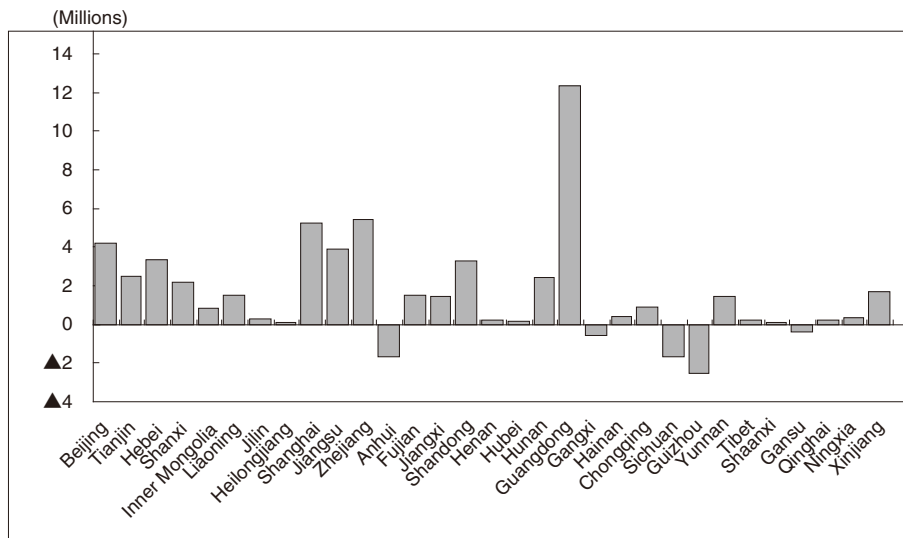
In response to this situation, the National Development and Reform Commission announced *The Outline of the Plan for the Reform and Development of the Pearl River Delta (2008-2020)* in January 2009, while in July 2010 the government of Guangdong Province released a plan calling for the integration of the nine prefecture-level cit-

Fig. 19 Growth of Working Population of Guangdong Province (2003-2009)



Source: Compiled by JRI, using National Bureau of Statistics of China, *China Statistical Yearbook for Regional Economy* (2004, 2010)

Fig. 20 Population Change in China (2005 and 2010)



Source: Compiled by JRI, using National Bureau of Statistics of China, *China Statistical Abstract 2011*

ies contained in the Pearl River Delta Economic Zone. The content of these plans and progress toward their implementation will have a significant bearing on the ability of the Pearl River Delta Economic Zone to achieve sustainable growth.

End Notes

1. See Oizumi, Sano [2009] for an analysis of the Yangtze River Delta Economic Zone.
2. The World Bank classifies countries according to their gross national income (GNI) in 2009. The categories are “low income” (\$995 or lower), “lower middle income” (\$996-3,945), “upper middle income” (\$3,946-12,195) and “high income” (\$12,196 or higher). (World Bank, *World Development Indicators 2010*)
3. The influx of Japanese companies has been especially conspicuous. Honda Motor, Toyota Motor and Nissan Motor have already established business operations and are active in the region.
4. Guangdong Province accounts for 75% of China’s exports to Hong Kong.
5. According to the 2010 census, Guangdong Province has a population of 143 million (*China Statistical Abstract 2011*).

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