

15

chapter

Is China sacrificing growth when balancing interregional and urban-rural development?

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In the past 30 years of reform and opening up, China has enjoyed unprecedented economic growth in the context of globalization, industrialization, and urbanization. When China became fully integrated into the global economy, this populous country joined the global production system, bringing not only vast, cheap, and high-quality labor but also great market demand. China's integration has reshaped the global and, especially, the Asian industrial map. At the same time, China's manufacturing industry has become concentrated along the east coast and urban areas. Industrial agglomeration has been beneficial for China's economic growth, but it also has given rise to interregional and urban-rural disparities.

Because income disparities are disadvantageous for sustainable economic growth, China has been trying to balance interregional and urban-rural development by means of fiscal transfers. Despite the wisdom of the strategy, China's government is unduly dependent on fiscal transfers to achieve interregional and urban-rural balanced development. Fiscal transfers alone cannot keep interregional and urban-rural gaps from expanding further. To achieve this, the Chinese government will have to adjust its policy measures to integrate the interregional market, promote the agglomeration of labor resources to coastal and urban areas, and direct more investment to human capital and infrastructure in lagging and rural areas.

In China, when considering the relationship between interregional, urban-rural

balanced development and sustainable economic growth, we have to introduce a spatial perspective and take into account the role of the spatial agglomeration of economic activities. This chapter uses panel data at the provincial and city levels to describe industrial agglomeration in China. Generally speaking, cities achieve increasingly strong industrial agglomeration effects and scale economies. The chapter finds that industrial agglomeration in China is indeed accompanied by the widening of interregional and urban-rural gaps, which may exert a negative influence on economic growth and social harmony. To achieve balanced development while maintaining sustainable economic growth is a great challenge facing the Chinese government.

In the second part of this chapter, we present the trend of industrial agglomeration, use panel data at the provincial level to elaborate the interrelationships among industrial agglomeration, urbanization, and globalization, and use panel data at the city level to show the positive effects of scale on industrial growth.¹ The third part shows the changes in interregional and urban-rural gaps as well as the negative influences of income disparity on economic and social development. The fourth part discusses the adjustment process of interregional and urban-rural development policy from a historical perspective and examines adjustments in fiscal transfers of the central government and their influence on regional development. The fifth section concludes.

Industrial agglomeration and city development

Traditional economic growth theory does not stress the importance of space, whereas new economic geography models consider the economies of scale brought about by the spatial agglomeration of economic activities to be an important driver of economic growth. As economic activities and population are increasingly concentrated in large cities, economic development will secure scale economies in at least three areas. The first is sharing. Producers can acquire extensive supplies of inputs from a wider scope of suppliers, which could reduce average production costs as the scale of production increases. At the same time, the sharing of inputs encourages suppliers to provide highly specialized products and services to meet the demand. The second is matching. In a large market, enterprises are more likely to employ workers with special skills, helping companies to meet specific market demands. Meanwhile, having many potential employers and employees in the same location makes it easier to match them efficiently. The third is learning. Spatial agglomeration can accelerate the spillover of knowledge and make it easier for employees and entrepreneurs to learn from one another (Gill and Kharas 2007).

Before China's reform and opening up in 1978, many of China's industries were located in inland areas as a result of a strategy of balancing regional economic development with military strategy. Since 1978, market forces have dominated economic development and industrial layout, with agglomeration occurring toward the east coast, especially the Yangtze River delta and the Pearl River delta. This provides an excellent case in which to examine the interplay of economic development, industrial agglomeration, and city development.

Industrial agglomeration in globalization and industrialization

Until the early years of reform and opening up in 1978, China's industrial layout was geographically scattered:

- A few coastal and middle provinces accounted for a relatively small

proportion—below 4 percent—of national industrial output.

- Three provinces in northeastern China played an important role, with Liaoning ranking top in national industrial share. Gansu and Shaanxi, which are two western and inland areas of China, accounted for more than 2 percent of national industry, surpassing that of some middle and eastern provinces.
- Beijing, Shanghai, and Tianjin covered very small areas, but their industrial shares were larger than those of many other provinces (Chen, Jin, and Lu 2006).

Figure 15.1 divides China's provinces into coastal and inland provinces and depicts the share of each province in national industrial gross domestic product (GDP) from 1987 to 2005. Comparing the data for 2005 with the data for 1987 shows significant industrial agglomeration in China. To be more specific, during this time period:

- Industrial shares of coastal areas increased remarkably, with the top four provinces—Guangdong, Shandong, Jiangsu, and Zhejiang—accounting for 12.27, 11.20, 10.93, and 7.43 percent, respectively, in 2005.
- The industrial status of three northeastern provinces decreased noticeably, with the industrial share of Liaoning, Heilongjiang, and Jilin decreasing to 4.09, 3.16, and 1.60 percent, respectively.
- The industrial share of western provinces decreased on the whole.
- The industrial share of the four autonomous municipalities decreased distinctly, with that of Shanghai decreasing to 4.83 percent, Tianjin to 2.21 percent, Beijing to 2.0 percent, and Chongqing to 1.2 percent.

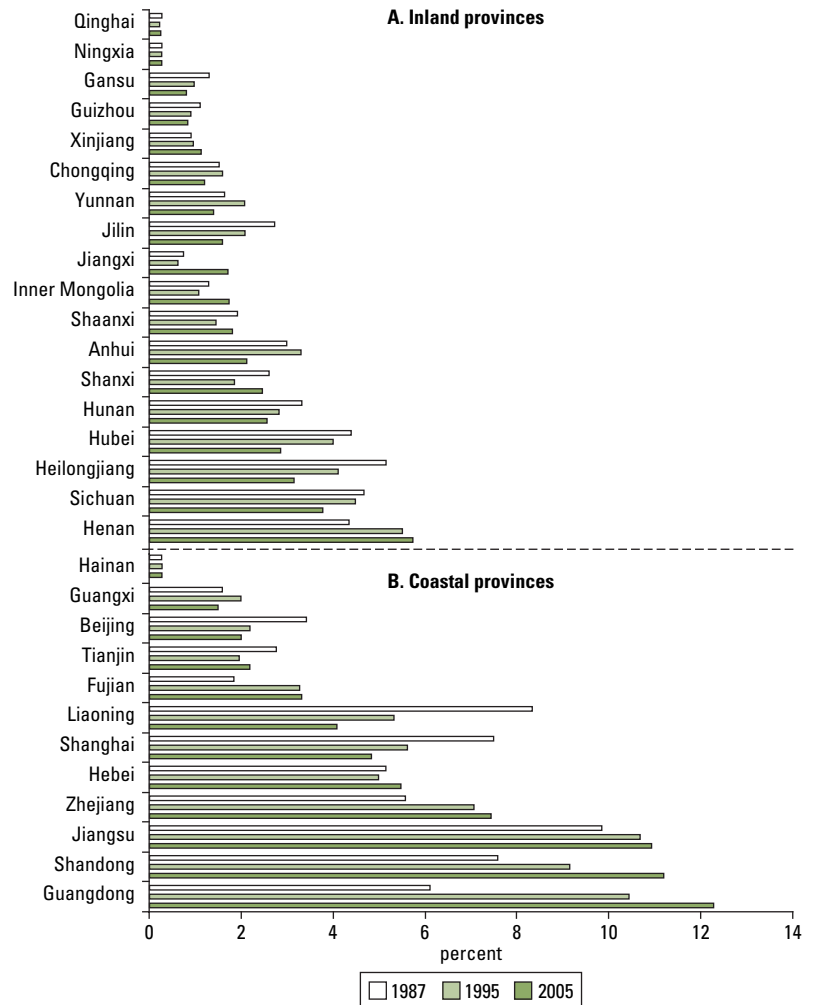
Industrial agglomeration showed other patterns as well. In 1987 only 2 provinces (Jiangsu and Liaoning) had more than 8 percent and 13 had less than 2 percent of industrial shares. In 2005 3 had more than 8 percent, and 14 had less than 2 percent. During the same period of time, 11 provinces increased their industrial share, including 7 coastal provinces, while 18 provinces decreased their industrial share, including 13 inland provinces. In the coastal areas, all

except the 3 autonomous municipalities of Beijing, Shanghai, and Tianjin and the provinces of Guangxi and Liaoning and the provinces lost industrial share for various reasons: 3 autonomous municipalities were entering the post-industrialization period, Liaoning was part of a regional decline in northeastern China, and Guangxi lost industrial shares to its neighboring province Guangdong. Although Guangxi is a coastal province, its economy is relatively backward and thus an object of China's "Go West" policy.

Changes in industrial share were accompanied by the movement of labor, especially redundant labor in rural areas, to the southeastern coastal areas. As indicated by an analysis of census data, labor flowed to the provinces that increased their industrial share (see Ding, Liu, and Cheng 2005).² Therefore, changes in industrial share reflect the trend of industrial agglomeration rather than differences in industrial growth across regions. Lu and Tao (2006) use data at the industry level to calculate the Ellison-Glaeser index between 1998 and 2003. They find that regional industrial agglomeration in China was still rising during this period. Inland cities are far from coastal lines of transportation, which increases the costs of transportation, but labor costs are relatively low. Therefore, products suitable for inland production include staples, such as coal, that are carried by train or ship, or products with high added value, such as computer chips, that are transported by plane (Gill and Kharras 2007).

Is industrial growth in these areas related to globalization and urbanization? To answer this question, we use provincial panel data and find that both economic opening up and urbanization enhance industrial agglomeration, while economic opening up is related to geographic location and initial degree of openness. At the same time, we also find that larger market size, improved transportation and telecommunications infrastructure, and weaker government intervention in a province are beneficial for industrial agglomeration (Chen, Jin, and Lu 2006). Figures 15.2 and 15.3 depict the relationship between the degree of globalization and urbanization and the level of industrial development.

Figure 15.1 Industrial share in China, by province, 1987, 1995, and 2005

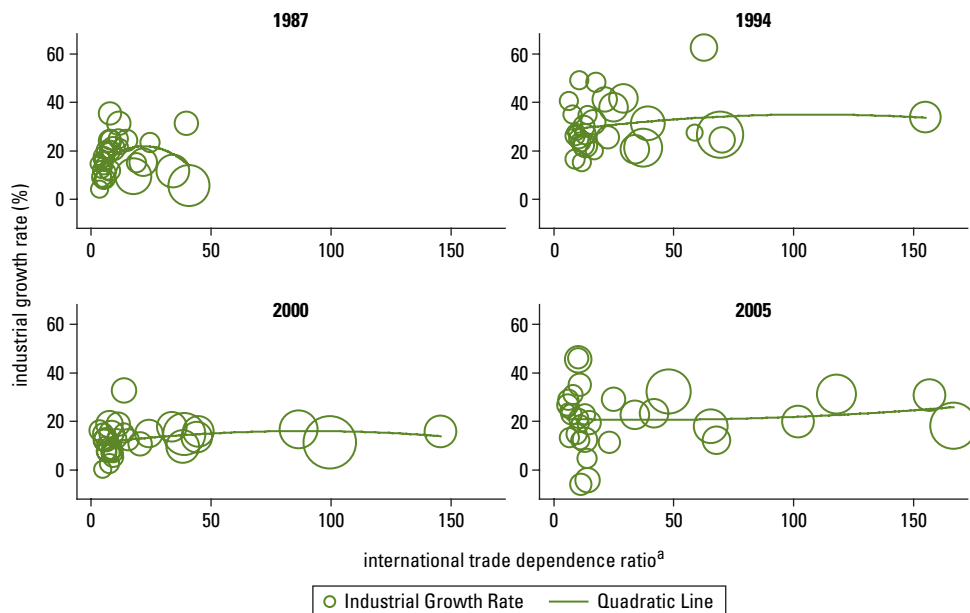


Source: National Bureau of Statistics of China (1999, 2006).
 Note: Beijing is counted as a coastal area. Provinces are sorted in ascending order in coastal and inland areas, respectively, according to their industrial shares in 2005.

Globalization is mainly the opening of commodity markets and capital markets. Both opening of capital markets as measured by per capita foreign direct investment (FDI) and opening of commodity markets as measured by dependence on international trade indicate that coastal areas have a higher degree of openness than inland areas and that globalization is the most important factor contributing to interregional income disparities (Wan, Lu, and Chen 2007). Does economic opening have something to do with industrial growth? To answer this question, we compare data for 1987, 1994, 2000, and 2005. In figure 15.2, the horizontal axis

Figure 15.2 Globalization and industrial growth in China, 1987–2005

Graphs by year



Source: National Bureau of Statistics of China (1999, 2005, 2006).

Note: Weighted by GDP per capita. The equations of the fitted lines are $y = -0.0223x^2 + 0.9852x + 11.007$ ($R^2 = 0.0998$) for 1987, $y = 0.0012x^2 - 0.1168x + 18.588$ ($R^2 = 0.0913$) for 1994, $y = -0.0007x^2 + 0.1178x + 10.799$ ($R^2 = 0.0576$) for 2000, and $y = 0.0003x^2 - 0.0245x + 21.142$ ($R^2 = 0.0104$) for 2005.

a. Ratio of import and export volume to GDP.

represents the proportion of import and export volume in GDP—that is, the international trade dependence ratio—of a specific province, the vertical axis represents the industrial growth rate of the province, and the width of the circles represents per capita GDP. By comparison, we find that the relationship between economic openness and industrial growth followed an inverse-U curve in 1987, 1994, and 2000, with most provinces located in the left half of the curve. This indicates that the phase of openness is beneficial for industrial growth. In these three years, the trade-related sector squeezed industrial growth when the degree of openness was too high. However, the curve for 2005 indicates that the relationship between economic openness and industrial growth sloped to the northeast. In other words, the higher economic openness is, the stronger is the effect of economic openness on industrial growth.

The agglomeration effect is manifested mainly in the effects of urbanization on industrial growth. To elaborate this point, we compare data for 1987, 1994, 2000, and

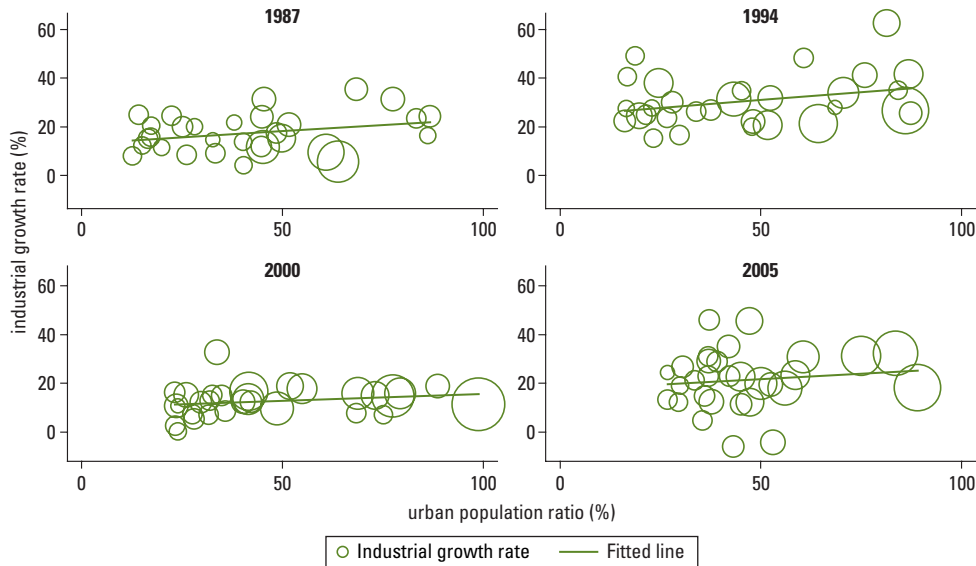
2005. In figure 15.3, the horizontal axis represents the proportion of urban dwellers in a specific province, the vertical axis represents the industrial growth rate of this province, and the width of the circles represents per capita GDP. We find that provinces with a higher urbanization ratio experienced more rapid industrial growth. In 2005 provinces with a higher urbanization ratio and more rapid industrial growth also had higher per capita GDP.

Industrial agglomeration and scale economy in cities

Urbanization supports industrial growth mainly due to economies of scale. To elaborate the relationship between scale effect in city development and industrial agglomeration, we use data at the city level to examine the relationship between per capita GDP and industrial share. The higher per capita GDP is, the larger is the local market, and the more beneficial this is for industrial agglomeration. However, when per capita GDP exceeds a certain level, the share of service industry is higher, and the city's economy may enter the

Figure 15.3 Urbanization and industrial growth in China, 1987–2005

Graphs by year



Source: National Bureau of Statistics of China (1999, 2005, 2006).

Note: Weighted by per capita GDP. In the data, the urbanization ratio in Shanghai in 2005 (point located in the most right position) was even lower than it was in 2000. This is because of a substantial increase in the number of rural population. The equations of the fitted lines are $y = 0.1028x + 13.039$ ($R^2 = 0.0878$) for 1987, $y = 0.1286x + 24.543$ ($R^2 = 0.0915$) for 1994, $y = 0.0546x + 10.126$ ($R^2 = 0.0407$) for 2000, and $y = 0.0884x + 17.262$ ($R^2 = 0.0134$) for 2005.

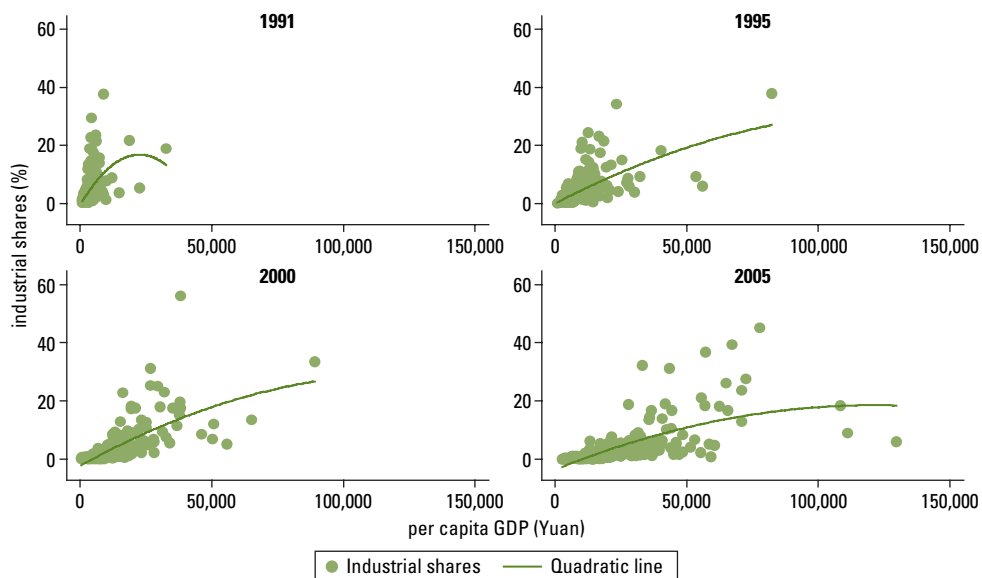
post-industrialization phase, which means that industrial shares may decrease instead. A typical example is Shanghai, which has always been the country's top city in share of industry; however, Shanghai's industrial share first ascended and then descended as the city entered the post-industrialization era. In 1997 the value of its service industry in total production surpassed 50 percent for the first time. In 2006 its service industry provided more than half of employment opportunities for the first time.³

In figure 15.4, the panel data we use only refer to the cities; counties are not included. Industrial share of a city means the proportion of industrial value that this city accounts for in the sum of all sample cities. To eliminate the influences of some outlier points, we do not include either cities with industrial growth above 100 percent or below -50 percent or autonomous municipalities. Because Shenzhen has a high proportion of floating population, its per capita GDP, calculated according to population with local household registration (*hukou*) status, is extraordinarily high and thus is not included in our analysis. In

figure 15.4, the horizontal axis represents per capita GDP in a city, while the vertical axis represents the industrial share of this city in the value of national industrial production. We present the data for 1991, 1995, 2000, and 2005 in a scatter diagram and add quadratic lines. Observing and comparing the figures for these four years, we find that (a) on the whole, the higher per capita GDP is in a city, the higher is its industrial share (although we add quadratic lines, very few sample cities appear on the right half of the inverse-U curve), and (b) with the elapse of time, the turning point of the quadratic curve moves to the right. For 2000 and 2005, the quadratic curves are substantially closer to the upward trend line. That is to say, with the elapse of time, economic development and market volume measured by per capita GDP became more and more beneficial for further industrial agglomeration. Moreover, in this period of 15 years, the goodness of fit of the lines increased from 0.2552 to 0.3678, 0.4628, and 0.4435. In other words, per capita GDP in a city has stronger explanatory powers for industrial agglomeration in recent years than in earlier years.

Figure 15.4 Per capita GDP and industrial shares of cities in China, 1991–2005

Graphs by year



Source: National Bureau of Statistics of China, *China City Statistical Yearbook* (various years).

Note: The equations of the fitted lines are $y = -3E-08x^2 + 0.0015x - 0.542$ ($R^2 = 0.2552$) for 1991, $y = -2E-09x^2 + 0.0005x - 0.007$ ($R^2 = 0.3678$) for 1995, $y = -2E-09x^2 + 0.0005x - 2.3832$ ($R^2 = 0.4628$) for 2000, and $y = -2E-09x^2 + 0.0004x - 3.6737$ ($R^2 = 0.4435$) for 2005.

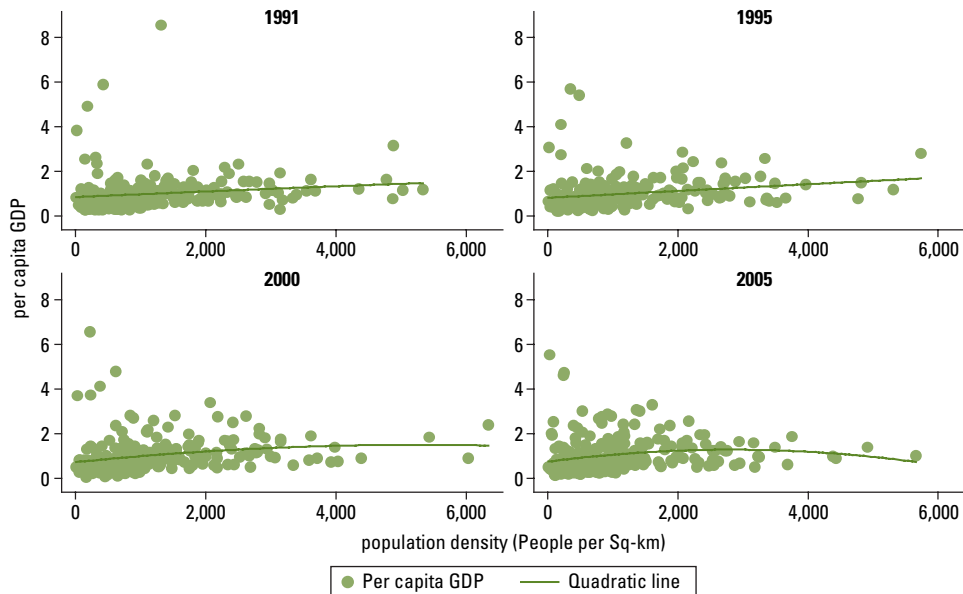
If scale economies are beneficial for industrial agglomeration and growth, then, in a city with a given area, enhancing a city's population density should improve labor productivity, as shown in figure 15.5.⁴ More notably, except for 1995, an inverse-U curve appears for the relationship between population density and per capita GDP, and most cities are found in the left half, which means that, to maximize per capita GDP, cities could have their own optimal scale. In other words, during this period a great number of cities in China were suffering productivity losses as a result of their small scale. Econometric analysis indicates that 51 to 62 percent of the cities in China have unduly small scale. In typical cities, losses caused by small scale account for 17 percent of the average output of employees, and cities in which losses reach 25 to 70 percent of the average output account for a fourth of all the sample cities. As the services industry continues to grow, diversifying the service input in production chains will become increasingly important. At the same time, the scale effects of economic agglomeration on economic growth will also become more and more important, and the optimal scale of cities will become bigger and bigger

(Au and Henderson 2006a, 2006b). Although a congestion effect will appear in the process of city expansion, it could be alleviated with improved transportation, environment, and security, which, in turn, would promote city development on a larger scale.

Due to the obstacles to labor flow and interregional market segmentation, industrial agglomeration in China has been far slower than possible and, indeed, necessary. Compared with Western countries, industrial agglomeration in China is still rather low (Lu and Tao 2006). Differences in scale among Chinese cities are much smaller than differences among cities in other countries (Fujita and others 2004). Lack of spatial agglomeration of population results in the inefficient use of land; this is especially evident in China. Since the mid-1990s, 338 big cities around the country have expanded their downtown area from 16,000 square kilometers to 25,000 square kilometers, with an increase rate of 60 percent. In the same period, population in the downtown area of these same cities increased from 0.27 billion to 0.3 billion, including migrant workers, with a growth rate of only 10 percent. The expansion rate of area is six times that of the population (Yan and Jiang 2007). Inefficient

Figure 15.5 Population density and per capita GDP of cities in China, 1991–2005

Graphs by year



Source: National Bureau of Statistics of China, *China City Statistical Yearbook* (various years).

Note: The vertical axes are relative measures—namely, GDP per capita divided by the mean of the year. The equations of the fitted lines are $y = -2E-09x^2 + 0.0001x + 0.8461$ ($R^2 = 0.0226$) for 1991, $y = -7E-10x^2 + 0.0002x + 0.8157$ ($R^2 = 0.0453$) for 1995, $y = -3E-08x^2 + 0.0003x + 0.7212$ ($R^2 = 0.0581$) for 2000, and $y = -7E-08x^2 + 0.0004x + 0.7406$ ($R^2 = 0.043$) for 2005.

use of land makes it difficult to improve the quality of life and to increase the amount of resources per capita in lagging areas. Worse still, if the population in inland areas cannot agglomerate toward coastal areas, migrants will move toward cities in inland areas. And once an unreasonable pattern of land use is formed, it will be very difficult to change.

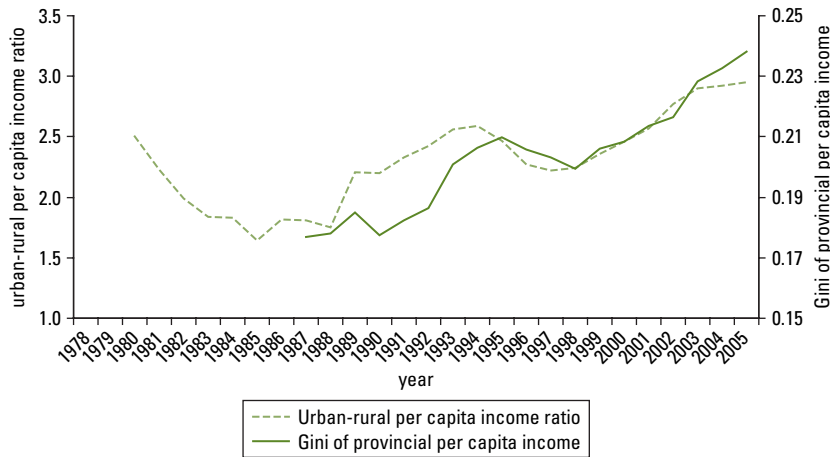
China's urban-rural and interregional development: is there a tradeoff between efficiency and equality?

To understand the relationship between China's economic growth and income inequality, a spatial perspective is absolutely necessary. Correspondingly, if policy aims to balance urban-rural and interregional development, it is necessary to pay attention to the positive effect of spatial agglomeration on economic growth. Nevertheless, it is very important to balance interregional and urban-rural development with sustainable economic growth. In this section, we discuss the relationship between income disparities and economic growth.

Growth at the cost of interregional and urban-rural inequality

Numerous studies have indicated that interregional and urban-rural income disparities are the two major contributors to national income disparities (Kanbur and Zhang 1999; Khan and Riskin 1998; Li 2003; World Bank 1997; Yang 1999; Yao and Zhu 1998; Zhao and others 1999), while detailed analysis of income disparities shows that interregional disparity itself has something to do with China's vast urban-rural income disparities (Hussain, Lanjouw, and Stern 1994; Kanbur and Zhang 1999; Tsui 1993). The recent decomposition of inequality shows that 70 to 80 percent of interregional income disparity is contributed by urban-rural income disparity (Wan 2007).

Figure 15.6 indicates that urban-rural income disparity narrowed in the early 1980s mainly because rural reform raised the income of rural dwellers. Thereafter, this ratio widened, before dropping again after 1994, when the government raised the purchase price of agricultural products. But since 1997, urban-rural income disparity has been growing. Although the government

Figure 15.6 Urban-rural and interregional income disparities in China, 1978–2005

Sources: For urban-rural per capita income ratio, data for 1980 to 1987 are from Ravallion and Chen (2007); the Gini of provincial per capita income is calculated according to National Bureau of Statistics of China, *China Statistical Yearbook* (various years). Urban and rural per capita income is deflated by urban and rural consumer price index. Interregional inequality is calculated as Gini coefficient of per capita income in every province, and original data are from National Bureau of Statistics of China (2005) and National Bureau of Statistics of China, *China Statistical Yearbook* (various years). We first deflate per capita urban disposable income and rural per capita net income by urban and rural CPI, respectively. Then we conduct weighted average income with the proportion of agricultural population as the weight, which yields the per capita income of every province.

has made great efforts to treat the problems affecting agriculture, peasants, and rural areas—for example, the agricultural tax exemption and subsidy for grain-planting peasants—the gap is still expanding.

Figure 15.6 also indicates that the interregional gap is generally expanding and that changes in interregional income disparity are very similar to changes in urban-rural income disparity. In the existing research, interregional disparity in China arose for the following reasons:

- Preferential policies in which coastal areas benefited from deregulation, which promoted economic openness and marketization, improving their ability to compete in global markets and to absorb more FDI (Démurger and others 2002; Wan, Lu, and Chen 2007);
- Unbalanced development of private economies and township-and-village enterprises (Rozzelle 1994; Wan 1998; Wan, Lu, and Chen 2007);
- Fiscal transfers in favor of eastern areas (Ma and Yu 2003; Raiser 1998);
- Differences in infrastructure in different areas (Démurger 2001);

- Industrial agglomeration toward coastal areas, especially the Yangtze River delta, Pearl River delta, and Bohai Bay area (Chen and others 2007; Lu and Chen 2006; Wen 2004).

A report by the World Bank (1996) argues that, although disparities are increasing because of policy bias in trade and investment, the fundamental reason is that comparative advantages of different areas in China were inhibited before the reform and favorable policies granted to coastal areas after the reform have brought interregional comparative advantages into play. In the process of opening up, the inflow of foreign capital and the development of an export-oriented economy began to create interregional comparative advantages. Our decomposition of interregional income disparities shows that per capita FDI and trade dependence have jointly become the most important among nine contributors to interregional income disparities (Wan, Lu, and Chen 2007).

Of all the elements affecting interregional disparities in the literature, the most essential is the difference in geography and policies, while others are more likely manifestations of disparities in interregional development. Geographic advantages and preferential policies are the major reasons for the current pattern of industrial agglomeration.

Income disparities and sustainable growth

Spatial agglomeration and regional comparative advantages enhance efficiency but also exacerbate interregional and urban-rural income disparities. However, income inequality itself might be detrimental to social harmony and economic growth. Most existing studies find that widening income disparities will have a negative influence on economic growth by reducing the accumulation of physical and human capital. In recent years, some literature using data from China has studied the influence of income disparities on economic growth. Ravallion (1998) uses survey data for rural areas in China and finds that inequality of wealth has a negative effect on the growth of consumption per capita at both the family and the

village levels. Benjamin, Brandt, and Giles (2004) use panel data at the village level in China and find no evidence that income disparities block economic growth, but they do find, in the long run, a negative relationship between them. In our own study based on provincial panel data, we introduce the polynomial inverse lag (PIL) framework, which allows us to measure the impacts of inequality on investment, education, and ultimately on growth at precisely defined time lags. Combining PIL with simultaneous systems of equations, we analyze the relationship between inequality and growth in post-reform China, finding that this relationship is nonlinear and negative, irrespective of time horizon (Wan, Lu, and Chen 2006).

The ratio of urban-rural income per capita, a proxy of inequality at the provincial level, has an effect on investment, education, and economic growth. A ratio of urban-rural income that is one unit higher will have a negative cumulative influence on investment, proxied by the ratio of investment to GDP, but a positive cumulative influence on education, proxied by per capita schooling. Higher urban-rural income disparities will have a lasting negative influence on economic growth. Because the negative effects of inequality on investment dominate the positive effects of inequality on education, and physical capital accumulation remains the major driver of China's economic growth, it makes sense that the influence of income disparities on economic growth will be negative.

Theoretically, income disparities can affect investment in many ways. First, due to imperfections in the credit market, higher income disparities will constrain poor people by tightening credit lending and lowering their investment in physical and human capital (for example, Fishman and Simhon 2002; Galor and Zeira 1993). Second, in a democratic society, greater income gaps will make more people support higher taxation for redistribution, while it will have a negative influence on economic growth (Alesina and Rodrik 1994; Bénabou 1996; Persson and Tabellini 1994). Third, higher income disparity will also result in social and political unrest, constrain the investment environment, and direct more resources to the protection of property rights, thus reducing the

accumulation of productive capital (see, for example, Benhabib and Rustichini 1996). The first two mechanisms could hardly be tested empirically, while the third mechanism may find some indirect evidence. Figure 15.7 shows the urban-rural income disparities and the number of infringement cases in China. Both trends are very similar.

In China, greater interregional income disparity is accompanied by market segmentation and local protectionism, which is harmful for sustainable economic growth. Before 1978, China made many industrial investments in the inland areas, in effect promoting interregional balanced development. During the reform period, fiscal transfers from the central government have been invested in economically richer areas to promote preferential development of the coast. Meanwhile, local governments on various levels have secured the power to make local economic policies. Because lagged areas receive fewer fiscal transfers from the central government, these local governments have sought to protect disadvantaged enterprises in the short term. Lagging areas invest in newly emerging industries and then protect their products to strengthen the bargaining power of local governments to negotiate fiscal transfers from the central government. Although the strategic actions of lagging areas could benefit the local area, they result in numerous duplicative constructions and loss of efficiency, which are disadvantageous for interregional specialization, economic

Figure 15.7 Urban-rural income disparities and infringement cases in China, 1981–2004



Sources: National Bureau of Statistics of China, *China Statistical Yearbook* (2005); authors' calculations.

agglomeration, and sustainable growth (Lu and Chen 2006). In our empirical study concerning market segmentation, we find that government intervention—proxied by the government consumption ratio and share of employment in state-owned enterprises lagged one year—increases the interprovincial market segmentation index. Although China's domestic commodity market has been integrating gradually since the mid-1990s, government intervention as measured by the ratio of local government expenditure to local GDP has risen, which is disadvantageous for market integration, scale economy, and sustainable economic growth in China (Chen and others 2007).

Interregional and urban-rural economic development: policy adjustment and fiscal transfer

Obviously, the Chinese government has recognized the need to adjust its regional economic development policies. Deng Xiaoping, the general architect of China's reform, mentioned in a speech dated 1986, "We allowed first prosperity of some areas and some people just to better achieve common prosperity, and we need to prevent polarization. This is called socialism." (Deng 1993: 195). In the early years of reform, China adopted economic opening policies intended to support the economic development of coastal areas, and these policies widened interregional gaps while promoting the preferential development of coastal areas. However, since the end of the twentieth century, the government has sought to balance interregional and urban-rural development, as symbolized by a series of regional development strategies, including the "Go West" policy, "Revitalizing the Northeast," and "Central Rising" programs, as well as by recent policies on agriculture, peasants, and rural areas.

The history of regional and urban-rural development policies

The policies of economic opening were first adopted in the coastal areas that had geographic advantages, taking the form of special economic zones (SEZs) or economic development zones. The Chinese

government established SEZs in Shantou, Shenzhen, Xiamen, and Zhuhai in 1980 and in Hainan in 1988. SEZs were given greater powers of economic management and were allowed to establish joint venture, cooperative, and wholly foreign-funded enterprises. Enterprises in SEZs enjoyed managerial autonomy and preferential taxation rates.⁵ In 1984 the central government decided to open 14 coastal cities, granting preferential treatment to foreigners who invest in China and bring advanced technologies and expanding the ability of these cities to pursue foreign business activities. In 1985 the Yangtze River delta, Pearl River delta, and a triangular area in south Fujian comprising Quanzhou, Xiamen, and Zhangzhou began to enjoy the status of coastal economic open areas; Shanghai began to enjoy the status of a coastal economic open area and an open city. In 1988 coastal open areas were expanded to 153 cities and counties in 7 eastern provinces and municipalities and in Guangxi. The first 14 national economic and technological development zones (ETDZs) established between 1984 and 1988 were all located on the east coast. The effect of the opening policies adopted in the 1980s was to widen the regional disparities between coastal and inland areas.

During the 1990s, the central government began to seek balanced interregional development. In 1992, 15 additional ports and 26 additional counties were declared as "opening," which brought the number of open ports and cities or counties to 167 and 825, respectively. In this period, opening policies began to reach inland areas. In March 1992, border economic cooperation areas were set up in 4 cities in the northeastern provinces and Inner Mongolia, making a national total of 14 border economic cooperation areas that year, most of which were located in middle and western areas (see table 15.1). In August 1992, the government announced its intention to declare as coastal open cities 5 cities along the Yangtze River, the capital cities of the 4 border provinces, and the capital cities of 11 provinces in inland areas. Concrete policies included expanding the powers of open cities to conduct foreign cooperation, introduce foreign advanced technologies and managerial

Table 15.1 Historical development of opening areas

Period and type of opening	Year	East	Middle	West	Total for period
1978–88					
Special economic zone	1980	4 cities	None	None	5
	1988	1 province			
Coastal open city	1984	14 cities	None	None	14
National economic and technological development zone	1984	10 cities	None	None	14
	1985	1 city			
	1986	3 development zones in Shanghai			
Coastal economic open area	1985–88	7 provinces, 2 autonomous municipalities	None	1 province	10
1988–98					
Capital city, city along Yangtze River	1992	1 city	11 cities	1 city	23
National border economic cooperation areas	1992	1 city	4 cities	9 cities	14
National economic and technological development zone	1992	4 cities, 2 development zones in Fujian	None	None	18
	1993	3 cities, 2 development zones in Guangdong	4 cities	1 city	
	1994	1 city	None	1 city	
National high-tech industry development zone	1988	1 development zone in Beijing	None	None	53
	1991	10 cities, 1 development zone in Shandong, Fujian, Guangdong, respectively	5 cities, 1 development zone in Hubei	5 cities	
	1992	11 cities, 1 development zone in Shanghai	7 cities	6 cities, 1 development zone in Inner Mongolia	
	1996	1 city	None	None	
	1997	None	None	1 development zone in Shaanxi	
National industrial park	1989–94	1 park in Jiangsu, Shanghai, Zhejiang, Fujian, Hainan, respectively	None	None	5
National tax-free zone	1990–2000	10 cities, 1 park in Shanghai, Tianjin, Fujian, respectively	None	None	13
1998–2008					
National economic and technological development zone	2000	None	4 cities	7 cities	17
	2001	None	1 city	3 cities	
	2002	1 city	None	1 city	
National high-tech industry development zone	2007	1 city	None	None	1

Source: <http://www.cadz.org.cn/>.

Note: The east area includes 11 provinces or cities: Beijing, Fujian, Guangdong, Hainan, Hebei, Jiangsu, Liaoning, Shandong, Shanghai, Tianjin, and Zhejiang; the middle area includes 8 provinces: Anhui, Heilongjiang, Henan, Hubei, Hunan, Jiangxi, Jilin, and Shanxi; the west area includes 12 provinces or cities: Chongqing, Gansu, Guangxi, Guizhou, Inner Mongolia, Ningxia, Qinghai, Shaanxi, Sichuan, Tibet, Xinjiang, and Yunnan. Inner Mongolia and Guangxi are included in the west, because they are objects of the Go West policy.

practices, grant preferential treatment to foreign-invested enterprises, and allow the creation of ETDZs when conditions permitted. Some of the national ETDZs and national high-tech industry development zones established between 1992 and 1994 were located in the middle and western areas.

In recent years, the government has adopted various strategies to address the interregional development gap. In 2000 the government adopted the Go West policy, which sought to speed up the construction of infrastructure in the western areas, strengthen ecological and environmental protection and construction, actively adjust the industrial structure, accelerate

the cultivation of talented people, and open up the economy. Thereafter, government investment grew each year, so that, by 2005, the central government had invested Y 460 billion for construction projects in the western areas and distributed fiscal transfers and subsidies totaling more than Y 500 billion; one-third of national bonds for long-term construction were used in the western areas. The country established 60 key projects with an investment of Y 850 billion, in which investment funded by national bonds amounted to more than Y 270 billion. In the same period, western areas absorbed more than US\$9 billion in FDI; together with loans provided by international organizations and foreign governments,

western areas absorbed US\$15 million in foreign capital. More than 10,000 enterprises entered western areas to invest and develop their businesses, investing more than Y 300 billion.⁶ Government also invested in the construction of rural infrastructure and social affairs in the western areas.

In 2003 government put forward the Reviving the Northeast policy; deepened the reform of economic systems; promoted the upgrading of industrial structure; accelerated regional cooperation; sped up the transformation of resource-exhausted cities; strengthened ecological construction and environmental protection; quickened development in education, public health, culture, and sports; and granted preferential policies in taxation, national fiscal investment, and introduction of foreign capital in the three northeastern provinces and some areas of Inner Mongolia.

In 2004 government explicitly launched the Central Rising policy, promulgating its guiding documents in 2006. Moreover, the national ETDZs and high-tech industry development zones established since 2000 have favored the west (table 15.1).

With respect to urban and rural policies, China used to artificially depress the price of agricultural products and to restrict the interregional flow of labor from rural to urban areas. After the reform, the household responsibility system was implemented in rural areas, the centralized planning of the pricing and sale of agricultural produce was reformed, and the purchase price of agricultural produce was enhanced.

Between 2004 and 2007, the government stressed the problems affecting agriculture, rural areas, and peasants. As agricultural produce came to be priced by the market, the government sought to narrow the urban-rural income gap. In 2000 government experimented with reforms of the agricultural tax and fees in Anhui province, extending these reforms to 16 provinces, cities, and autonomous regions in 2002. The reform included canceling some administrative or institutional fees and governmental funds, reducing and then canceling all compulsory work, adjusting the policy of agricultural

tax and measures for collecting the tax on special agricultural products, and reforming the collection and use of village funds. In 2004 the government declared its intention to lower the agricultural tax over the course of five years, canceling it altogether in 2006. In 2004 the government stopped subsidizing peasants indirectly by subsidizing the state-owned food supply and distribution enterprises and began subsidizing peasants directly, which helped to stabilize the price of grain and enhanced peasants' income. Meanwhile, in education and medical care, government began to adopt a preferential policy step by step. In 2006 government declared its intention to waive all of the study and logistic fees for compulsory education in the rural areas within two years and pledged to provide poor students with free textbooks and to subsidize living costs for those in boarding school. This policy was expanded gradually from the western areas to the middle and eastern areas. Finally, in 2004 the government experimented with a new type of medical cooperation system in an attempt to reduce the burden of health care for peasants.

Finally, China's current household registration system and the regionally segmented social security system, together with poorly defined property rights of land, which limit the ability to trade land freely in the market, have become major obstacles to the interregional flow of labor.

Adjustment in the direction of fiscal transfers

China's attempt to adjust interregional and urban-rural policies is clearly embodied in the system of fiscal transfers. Figure 15.8 presents the change in the proportion of eastern, middle, western, and the three northeastern provinces in net fiscal transfers from the central government.⁷ After implementation of the Go West policy, western areas accounted for a growing share of central fiscal transfers between 2000 and 2002.

Because provinces in these four major areas are at different stages of development, figure 15.9 shows the relationship between the area's share of net central fiscal transfers and its per capita GDP. Until 1998, wealthy

provinces received more fiscal transfers from the central government than poor provinces, but this relationship disappeared in 1999. Since 2000, central government transfers have been directed to poor provinces.

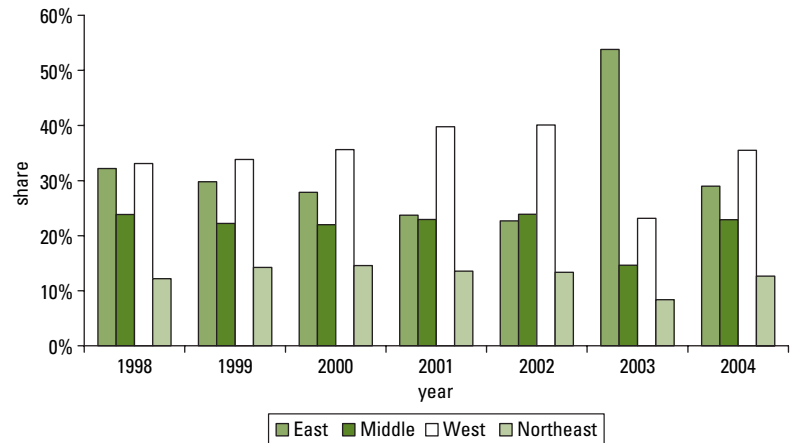
The share of agriculture-related expenditures in total fiscal expenditure also changed, as depicted in figure 15.10.⁸ Agricultural expenditures increased remarkably in 2004. This change appeared in 2002, as shown by the fitted trend line, but was interrupted in 2003, perhaps as a result of the appearance of SARS (severe acute respiratory syndrome).

Did more fiscal transfers bring higher growth rates? Figure 15.11 depicts the relationship between fiscal transfers and economic growth. In the figure, the horizontal axis represents the difference between the provincial share of fiscal transfers in a particular year and the average share in all years; the vertical axis represents the difference between the growth rate in a province in a particular year and the average growth rate in all years. We de-mean the data to eliminate the influence of time-invariant fixed effects of each province. Panel A of figure 15.11 depicts the relationship between central fiscal transfers and economic growth in a given year. Because central fiscal transfers may be both the reason for and the result of economic growth, panel A may not reflect how fiscal transfers affect economic growth. To alleviate the influence of two-way causality, in panel B of figure 15.11, the vertical axis represents the de-measured growth rate of the following year. Figure 15.11 shows that higher shares of central fiscal transfers did not bring higher economic growth, at least in the short run. In other words, there is no evidence to indicate that central fiscal transfers enhance development in any way other than through income redistribution. For the moment, the market forces that drive interregional inequality may dominate governmental efforts to equalize regional income.

Conclusions and policy implications

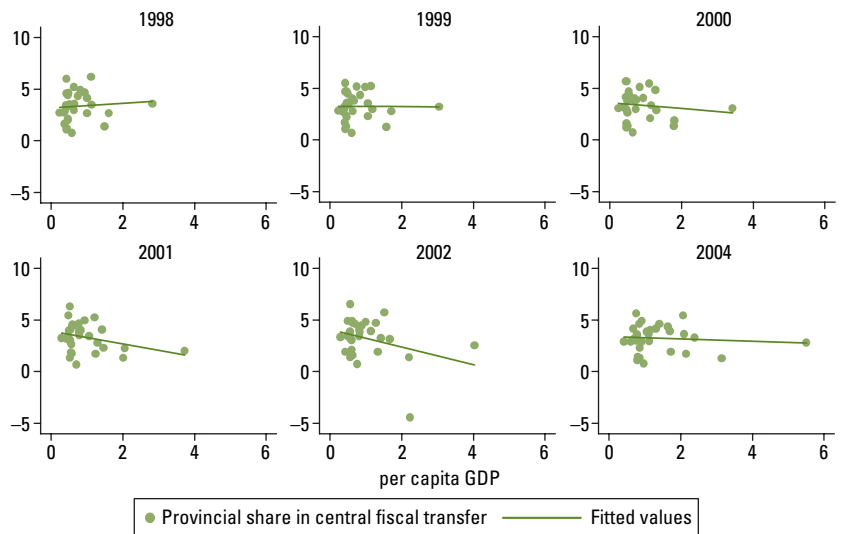
The starting point of China's reform and opening up was an economy dominated for many years by a planned economic system and interregionally balanced develop-

Figure 15.8 Share of net fiscal transfers in China from the central government, by geographic region, 1998–2004



Sources: National Bureau of Statistics of China, *China Finance Yearbook* (various years); authors' calculations. Note: Data for Chongqing are missing for 2000. The share of eastern areas climbed abruptly in 2003 because Guangdong obtained 38.71 percent of the central fiscal transfers in that year. Guangxi and Inner Mongolia are included in the western areas.

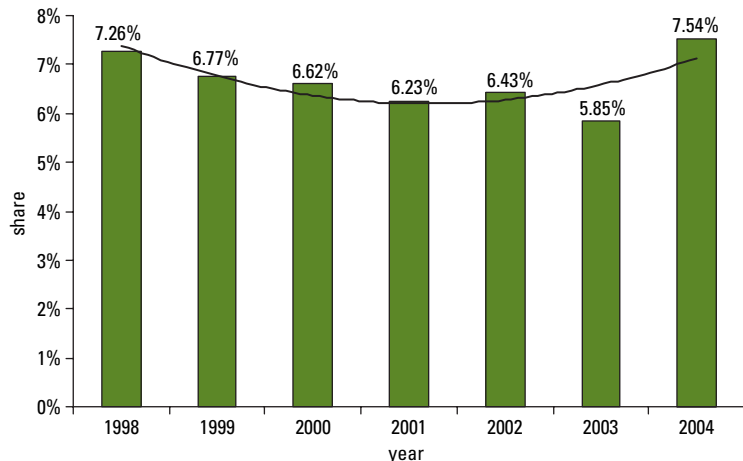
Figure 15.9 Level of economic development and central fiscal transfers, 1998–2004



Sources: National Bureau of Statistics of China, *China Finance Yearbook* (various years); authors' calculations.

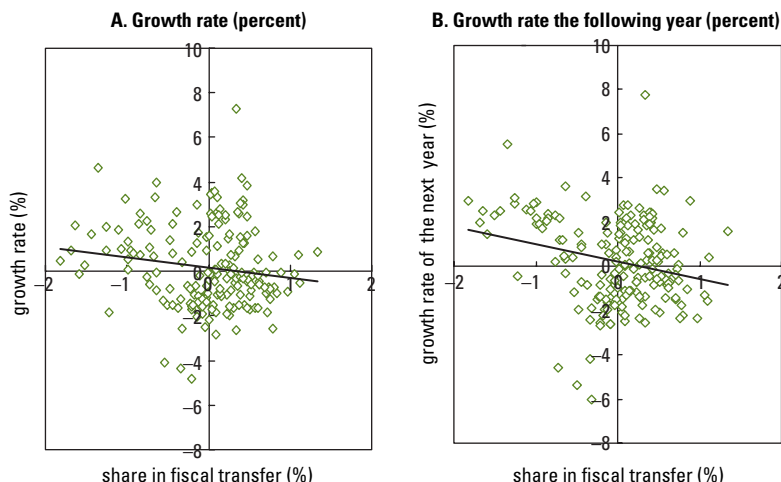
ment. Therefore, China offers a good case for studying industrial agglomeration and regional economic development in the context of globalization, urbanization, and industrialization. China's industry is experiencing agglomeration, with industry becoming highly concentrated in the coastal areas, especially the Yangtze River delta, the Pearl River delta, and the Bohai Bay area. Industrial agglomeration has boosted economic growth but also exacerbated interregional

Figure 15.10 Changes in the share of agricultural expenditures, 1998–2004



Sources: National Bureau of Statistics of China, *China Finance Yearbook* (various years); authors' calculations.

Figure 15.11 Central fiscal transfers and economic growth



Note: Data are missing for Chongqing in 2000, which means that the fiscal transfer data for this year are not comparable with those of other years. Shares of Beijing in 2002 and Guangdong in 2003 are outliers and thus are excluded from the two figures.

and urban-rural income disparities. Meanwhile, two other forces have kept industrial agglomeration from advancing further: market segmentation by local governments and the household registration and land property systems in rural areas, which restrict the flow of labor. The size of cities in China typically is controlled, and differences in their scale are small, stunting economic development in the long run.

With the development of industrial agglomeration, interregional and urban-rural income gaps are expanding, and this could have a negative impact on sustainable

economic growth. The Chinese government has realized the importance of balancing urban-rural and interregional development and has begun to invest more in lagging inland and rural areas by means of fiscal transfers. However, there is no evidence that fiscal transfers by the central government have promoted economic growth, perhaps because market forces have dominated the development-balancing function of fiscal transfers or because fiscal transfers have only been able to alleviate income gaps, not boost economic development. Therefore, interregional and urban-rural income gaps are still growing. How to balance interregional and urban-rural development is a challenging problem.

To sustain economic growth while balancing interregional and urban-rural development, the government should consider adjusting its policies in the following ways:

- Stop market segmentation and reform the household registration and land property systems in rural areas to promote interregional and rural-to-urban labor migration, improve urbanization, and enhance industrial agglomeration, especially toward the Yangtze River delta, Pearl River delta, and Bohai Bay area. Reasonable labor migration is beneficial for taking advantage of scale economies and improving the amount of resources per capita in lagging and rural areas; it also helps to narrow interregional and urban-rural income gaps.
- Promote the interregional and urban-rural evenness of social services, rather than simply making fiscal transfers or investing directly in industries in which inland areas have no comparative advantages.
- Emphasize investment in human capital and infrastructure in lagging and rural areas. When labor cannot move freely, such investment would help to create the conditions for long-term economic growth and enhance economic agglomeration toward coastal areas.
- Address urban-rural income gaps, especially in inland areas. This could substantially narrow interregional inequality, while narrowing urban-rural gaps.

Notes

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1. If not specifically mentioned or noted, provincial panel data in this chapter come from National Bureau of Statistics of China (1999, 2005) and National Bureau of Statistics of China, *China Statistical Yearbook* (2006). City panel data come from Beijing Bureau of Statistics (1999) and National Bureau of Statistics of China, *China City Statistical Yearbook* (various years).

2. In the period of the National People's Congress and the National Political Consultative Congress of 2007, the number of migrant workers was widely quoted as amounting to 150 million.

3. Data are from the Shanghai Statistical Bureau.

4. The figure excludes the autonomous municipalities: Shenzhen for its abnormal per capita GDP and Putian, in Fujian province, for its abnormal population density.

5. China has frequently adjusted the preferential policies for special economic zones (SEZs). The Income Tax Law of People's Republic of China for enterprises, enacted on January 1, 2008, unifies the tax system between foreign-invested enterprises and domestically funded enterprises, which is expected to end the last preferential policy for SEZs.

6. Data are from the State Department's Office of the Development of the West, <http://www.chinawest.gov.cn>.

7. The net central transfer is central-to-local subsidy less local-to-central contribution. Traditionally, China was divided into east, middle, and west areas. The reason for separating the three northeastern provinces is to check the influence of the Reviving the Northeast policy. Among the three northeastern provinces, Liaoning is usually included in the east, while Heilongjiang and Jilin are included in the middle.

8. In the budget and final accounts of every province, three categories of expenditures are related to agriculture: production expenditures supporting rural areas; agricultural comprehensive development expenditures and institutional fees for agriculture, forestry, water conservation, and weather before 2002; and agricultural

expenditures for forestry, water conservation, and weather in 2003 and 2004.

References

- Alesina, Alberto, and Dani Rodrik. 1994. "Distributive Politics and Economic Growth." *Quarterly Journal of Economics* 109 (2): 465–90.
- Au, Chun-Chung, and J. Vernon Henderson. 2006a. "Are Chinese Cities Too Small?" *Review of Economic Studies* 73 (3): 549–76.
- . 2006b. "How Migration Restrictions Limit Agglomeration and Productivity in China." *Journal of Development Economics* 80 (2): 350–88.
- Beijing Bureau of Statistics. 1999. *50 Years of Cities in New China*. Beijing: BBS.
- Bénabou, Roland. 1996. "Inequality and Growth." *NBER Macroeconomics Annual 1996*, eds. Ben Bernanke and Julio Rotemberg, pp. 11–76. Cambridge, MA: MIT Press.
- Benhabib, Jess, and Aldo Rustichini. 1996. "Social Conflict and Growth." *Journal of Economic Growth* 1 (1): 129–46.
- Benjamin, Dwayne, Loren Brandt, and John Giles. 2004. "The Dynamics of Inequality and Growth in Rural China: Does Higher Inequality Impede Growth?" Working Paper, University of Toronto.
- Chen, Min, Qihan Gui, Ming Lu, and Zhao Chen. 2007. "Economic Opening and Domestic Market Integration." In *China: Linking Markets for Growth*, eds. Ross Garnaut and Ligang Song, pp. 369–93. Canberra: Asia Pacific Press.
- Chen, Zhao, Yu Jin, and Ming Lu. 2006. "Economic Opening and Industrial Agglomeration in China." In *Asian Regional Economic Integration from the Point of View of Spatial Economics*, eds. Masahisa Fujita and Akifumi Kuchiki, pp. 97–132. Joint Research Program Series 138. Chiba, Japan: Institute of Developing Economies.
- Démurger, Sylvie. 2001. "Infrastructure Development and Economic Growth: An Explanation for Regional Disparities in China?" *Journal of Comparative Economics* 29 (1): 95–117.
- Démurger, Sylvie, Jeffrey D. Sachs, Wing Thye Woo, Shuming Bao, Gene Chang, and Andrew Mellinger. 2002. "Geography, Economic Policy, and Regional Development in China." *Asian Economic Papers* 1 (1): 146–97.

- Deng, Xiaoping. 1993. *Selected Works of Deng Xiaoping* [in Chinese]. Vol. 3. Beijing: People's Publishing House.
- Ding, Jinhong, Zhenyu Liu, and Danming Cheng. 2005. "Regional Difference and Flow Direction of Migration in China [in Chinese]." *Geography Journal [Dili Xuebao]* 60 (1): 106–14.
- Fishman, Arthur, and Avi Simhon. 2002. "The Division of Labor, Inequality, and Growth." *Journal of Economic Growth* 7 (2): 117–36.
- Fujita, Masahisa, J. Vernon Henderson, Yoshitugu Kanemoto, and Tomoya Mori. 2004. "Spatial Distribution of Economic Activities in Japan and China." In *Handbook of Urban and Regional Economics*, vol. 4, eds. J. Vernon Henderson and Jacques-François Thisse, pp. 2911–77. Amsterdam: North-Holland.
- Galor, Oded, and Joseph Zeira. 1993. "Income Distribution and Macroeconomics." *Review of Economic Studies* 60 (1): 35–52.
- Gill, Indermit, and Homi Kharas. 2007. *An East Asian Renaissance: Ideas for Economic Growth*. Washington, DC: World Bank.
- Hussain, Arthur, Peter Lanjouw, and Nicholas Stern. 1994. "Income Inequalities in China: Evidence from Household Survey Data." *World Development* 22 (12): 1947–57.
- Kanbur, Ravi, and Xiaobo Zhang. 1999. "Which Regional Inequality? The Evolution of Rural-Urban and Inland-Coastal Inequality in China from 1983 to 1995." *Journal of Comparative Economics* 27 (4): 686–701.
- Khan, Azizur R., and Carl Riskin. 1998. "Income Inequality in China: Composition, Distribution, and Growth of Household Income, 1988–1995." *China Quarterly* 157 (June): 221–53.
- Li, Shi. 2003. "A Survey and Perspective on China's Income Distribution [in Chinese]." *China Economic Quarterly [Jingjixue Jikan]* 2 (2): 379–403.
- Lu, Jiangyong, and Zhigang Tao. 2006. "Regional Industrial Agglomeration and International Comparison [in Chinese]." *Economic Research Journal [Jingji Yanjiu]* 3: 103–14.
- Lu, Ming, and Zhao Chen. 2006. *Market Integration and Industrial Agglomeration in China's Regional Economic Development* [in Chinese]. Shanghai: Shanghai People's Press.
- Ma, Shuanyou, and Hongxia Yu. 2003. "Fiscal Transfer and Convergence of Regional Economy [in Chinese]." *Economic Research Journal [Jingji Yanjiu]* 3: 26–33.
- National Bureau of Statistics of China. 1999. *Comprehensive Statistical Data and Materials for 50 Years of New China*. Beijing: China Statistical Publishing House.
- . 2005. *Comprehensive Statistical Data and Materials for 55 Years of New China*. Beijing: China Statistical Publishing House.
- . Various years. *China City Statistical Yearbook*. Beijing: China Statistical Publishing House.
- . Various years. *China Finance Yearbook*. Beijing: China Statistical Publishing House.
- . Various years (2005–06). *China Statistical Yearbook*. Beijing: China Statistical Publishing House.
- Persson, Torsten, and Guido Tabellini. 1994. "Is Inequality Harmful for Growth? Theory and Evidence." *American Economic Review* 84 (3): 600–21.
- Raiser, Martin. 1998. "Subsidising Inequality: Economic Reforms, Fiscal Transfers, and Convergence across Chinese Provinces." *Journal of Development Studies* 34 (3): 1–26.
- Ravallion, Martin. 1998. "Does Aggregation Hide the Harmful Effects of Inequality on Growth?" *Economics Letters* 61 (1): 73–77.
- Ravallion, Martin, and Shaohua Chen. 2007. "China's (Uneven) Progress against Poverty." *Journal of Development Economics* 82 (1): 1–42.
- Rozelle, Scott. 1994. "Rural Industrialisation and Increasing Inequality: Emerging Patterns in China's Reforming Economy." *Journal of Comparative Economics* 19 (3): 362–91.
- Tsui, Kai-yuen. 1993. "Decomposition of China's Regional Inequality." *Journal of Comparative Economics* 17 (3): 600–27.
- Wan, Guanghua. 1998. "An Empirical Study on the Change in Interregional Income Disparity of Rural Residents [in Chinese]." *Economic Research Journal [Jingji Yanjiu]* 5: 36–41.
- . 2007. "Understanding Regional Poverty and Inequality Trends in China: Methodological Issues and Empirical Finding." *Review of Income and Wealth* 53 (1): 25–34.
- Wan, Guanghua, Ming Lu, and Zhao Chen. 2006. "The Inequality-Growth Nexus in the Short and Long Run: Empirical Evidence from China." *Journal of Comparative Economics* 34 (4): 654–67.

- . 2007. "Globalization and Regional Income Inequality: Empirical Evidence from within China." *Review of Income and Wealth* 53 (1): 35–59.
- Wen, Mei. 2004. "Relocation and Agglomeration of Chinese Industry." *Journal of Development Economics* 73 (1): 329–47.
- World Bank. 1996. *World Development Report 1996: From Plan to Market*. New York: Oxford University Press.
- . 1997. *Sharing Rising Incomes: Disparities in China*. Washington, DC: World Bank.
- Yan, Wei, and Nan Jiang. 2007. "Land Saving Is Necessary during Urbanization [in Chinese]." *Newspaper of Social Science [Shehui Kexue Bao]*, August 9.
- Yang, Dennis Tao. 1999. "Urban-Biased Policies and Rising Income Inequality in China." *American Economic Review Papers and Proceedings* 89 (May): 306–10.
- Yao, Shujie, and Liwei Zhu. 1998. "Understanding Income Inequality in China: A Multi-Angle Perspective." *Economics of Planning* 31 (2–3): 133–50.
- Zhao, Renwei, and others, eds. 1999. *A Research on China's Income Distribution: Income Distribution in Economic Reform and Development* [in Chinese]. Beijing: China Finance and Economics Press.