

Chapter 2

Urban-Rural Integration and Spatial Agglomeration in the Process of Chinese Urbanization

Joseph Stiglitz, winner of the 2001 Nobel Prize in Economics, asserted at the World Bank Conference that urbanization in China and high-tech development in the United States will be the two key factors profoundly influencing human development in the 21st century.

Indeed, the continuation of and rapid improvement in urbanization in China will be a factor that will influence development there and in the world at large. Historically, the urbanization rate in China still stood at 43.9 %^{1,2} in 2006 after sustained rapid growth for nearly 30 years since the reform and opening-up began in 1978. By contrast, the urbanization rate in the Philippines and Mexico reached 63 and 76 %³ respectively around 2006. China's urbanization rate by urban population ratio was only 44.9 % by the end of 2007, while the share of secondary and tertiary industries in GDP reached 88.3 %.⁴ China's annual urbanization rate is predicted to grow by 1.5 % for the next few years. That is to say, about 10 million people will move to cities every year and the urbanization rate in China will only reach 60 % or so by 2020. China still has a huge room for urbanization.

The goal of urbanization is well defined, but the road to urbanization may be tortuous.

It seems that in the future China will have to choose one of two entirely different paths to urbanization and regional development. One is the path of "balanced development" that pursues balanced regional development in the short term at the

¹Data source: China Statistical Yearbook 2007. Data published by the World Bank is 41 % (*World Development Indicators 2007*). There are two opposite views on similar statistics. One view holds that China's urbanization rate will rise slightly if.

²—150 million rural migrant workers in the cities are included (Research Group of Academy of Macroeconomic Research, NDRC 2000). According to opponents, permanent residents are already included in the data and some permanent residents will return to rural areas and are not urban residents in a real sense, so the actual urbanization rate in China is insufficient (Ren 2004). Actually, urban population statistics published in recent China Statistical Yearbooks are based on or adjusted by the number of permanent residents. China's urbanization rate remains very low even according to the first view.

³Urbanization rate data of the Philippines and Mexico come from the *World Development Indicators 2007* published on the World Bank's official website.

⁴Data source: Statistical Communiqué of the People's Republic of China on the National Economic and Social Development 2007 published by the National Bureau of Statistics of China.

cost of the agglomeration effect in urbanization, while the other one is the path of “pursuit of efficiency” that gives full play to the agglomeration effect in urbanization. It is generally believed that these two paths represent an either-or choice. The former means that China may sacrifice the development of eastern coastal areas and embark on a path of unsustainable development, while the latter may further widen the development gap across regions and aggravate domestic contradictions. Is there any “third path” that gives considerations to both efficiency and balanced development?

The process of China’s urbanization and its impact on regional development are discussed from the perspective of urban-rural integration and spatial agglomeration in Chap. 2, where we explore a future path of balanced development between urban and rural areas and among regions in China. To this end, it is necessary to further study more of the details behind China’s urbanization. Indeed, we invariably pay attention to the overall improvement in urbanization levels when we point out China’s potential for urbanization. However, we do not realize that what is more important than overall improvement in urbanization for China, a populous country with vast territory, considerable regional differences and sustained economic growth, is adjustment to spatial pattern of urbanization and enhancement in factor mobility under the process of globalization, during which policy adaption to spatial agglomeration in urban development is of great importance.

Analysis of China’s inter-city panel data indicates that the agglomeration effect in urban development has indeed reinforced urbanization, but it has not fully played its role due to restrictions caused by lagged urbanization. Several misunderstandings about urban and regional development have existed in Chinese policies. Hence it is imperative for the nation to further follow market laws and give more reasonable play to the role of government in urban-rural integration, spatial agglomeration and balanced regional development.

In Sect. 2.1 we look at theories of new economic geography in relation to urban development. This indicates that the scale effect of spatial agglomeration in the cities will become more important in urban development in China. Changes to scale effect in China’s urbanization are analyzed based on inter-city panel data in Sect. 2.2, where we discuss the question of whether the scale effect is given full play. Four misunderstandings of obstacles to city scale effect are summarized in Sect. 2.3 in accordance with existing policies. Section 2.4 presents the significance of development models with a big city as the center of agglomeration. This is based on comparisons between Shanghai and Tokyo. The goals of future urban and regional development in China and policy adjustments are expounded in Sect. 2.5.

2.1 What Kind of Urbanization Do We Need?

As far as China’s urbanization is concerned, we need pay special attention on differences in spatial agglomeration in urban development besides the general trend of urban populations increase. Because of its large size and regional heterogeneity,

China cannot ignore cross-regional development gaps. China has proceeded toward a market economy and into globalization from a scattered industrial development pattern that was left over by the planned economy, indicating that adjustment to urban spatial layout in the process of urbanization is of great significance.⁵ Sustained economic growth in China determines that the adjustment will be a long-term process which requires us to seek answers to the question of what kind of urbanization we need from the spatial perspective of urban system. However, it is necessary to refer to new economic geography that introduces the factor of space into growth theories because traditional economic growth theories overlook the importance of space.⁶

According to new economic geography, the scale effect brought about by spatial agglomeration of economic activities is considered an important driving force of economic growth. Economic development will gain scale effects in at least the following three aspects when economic activity and population are concentrated in the big cities (Gill and Kharas 2007):

First, sharing. Producers will enjoy an extensive supply of inputs on a larger scale to give play to scale economy in production and lower average production costs while expanding the scale of production. Also, input suppliers will have greater market demand because of input sharing by product vendors as they provide highly specialized products and services according to specific demand.

Second: matching. All factors are well matched in the markets on a larger scale where enterprises more easily find out the inputs and employees with special skills meeting for their specific needs. Needs for diversified inputs are more easily satisfied and employees are more likely to find a proper employer in a place with numerous enterprises.

Third, learning. Spatial agglomeration helps to accelerate the flow of knowledge, exclusive or nonexclusive, explicit or implicit, to facilitate mutual learning between employees and entrepreneurs and among different industries.

It will become more important to give play to the agglomeration effect in cities to drive industrial development in consideration of the international environment facing China, which can be elaborated from the perspectives of post-industrialization and globalization.

Spatial agglomeration of economic activities will become more important after a city enters into the stage of post-industrialization. The latest empirical studies have indicated that scale effect mainly comes from diversified inputs in the process of population agglomeration (Au and Henderson 2006a). The share of service industries will increase after cities enter into the stage of post-industrialization and most service industries (including the production service industry) are non-tradable and face difficulties in cross-regional transport, so “sharing” and “learning” of the

⁵Empirical studies by Lu and Chen (2006), Jin et al. (2006) indicate weakening government intervention and globalization have considerably promoted industry agglomeration in China.

⁶Readers may read review articles in this regard (e.g. Neary 2001) to learn about research progress in economic geography.

scale effect need spatial agglomeration. For example, a big city can host large, high-quality performances and exhibitions because it has enough potential audience members to share costs and also can find various relevant professional service staff. Residents can enjoy a colorful life and consumers can enjoy diversified services, such as fine food from all over the country, in a big city where scale economy is realized. Residents in the big cities are well informed because the bigger the population, the greater the differences in individual knowledge, experience and taste. As a result, many creative ideas and thoughts come into being during face-to-face communication, and information and knowledge are spread by direct human-to-human interactions. This is how the agglomeration effect helps to improve labor productivity.⁷ Knowledge-based economies have gradually revealed their characteristics since the second half of the 20th century. Knowledge has played an increasingly significant role in economic development, which is obviously different from traditional economic growth models, which were mainly driven by the accumulation of material capital. Learning produced by the scale effect will be more important in the face-to-face interaction needed to produce and spread knowledge. The city will become an important place where highly skilled people will be spatially concentrated, that is why high-tech and creative industries achieve better development in the big cities.

Figure 2.1 shows the relation between optimal city size and industrialization and post-industrialization that was examined by Au and Henderson (2006a) in empirical studies of China's urban development. The quantity of employment represented by the horizontal axis reflects city size. It shows an inverted U-shaped relation with labor production as the vertical axis. The peak point of the curve is the status of highest labor productivity in the city, and the thinner curve represents the higher proportion of the service industry. As shown in Fig. 2.1, both curves are characterized by steep falls on the left of the peak point, indicating that the smaller the size, the greater the loss under deviation of the same degree to the optimal size because the agglomeration effect of city size can improve labor productivity in the city. Two inverted-U-shaped curves demonstrate that the agglomeration effect will be dominated by crowding effect if the city is oversized, and thus city productivity will decline. However, the scale effect produced by economic agglomeration in improving labor productivity will be increasingly important as the share in the economy taken by the service industry increases and more diversified services are used as intermediate good⁸ and, subsequently, optimal city size will also be increased (Au and Henderson 2006a, b). In the figure, the curves move toward the right when the share of the service industry rises. City size accordingly varies in space because of differences across regions in China in the development of urban service industries.

⁷Studies do indeed show that employees who have lived in cities produce more human capital (Glaser and Mare 2001). In China, labor productivity has been significantly improved in the process of agglomeration of economic activities and population (Au and Henderson 2006a; Fan 2006, 2008).

⁸This is embodied by the production function of complementation of input factors in their model.

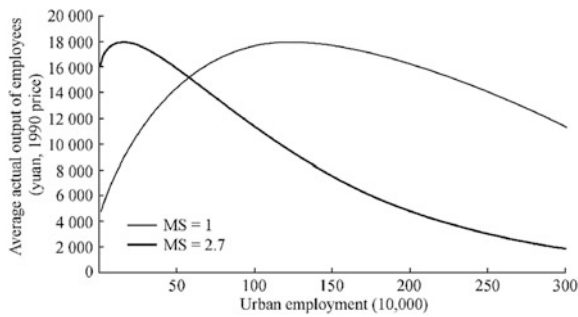


Fig. 2.1 Industrialization, post-industrialization and optimal city size. *Note* MS presents the ratio between value added in manufacturing industry and service industry. *Data source* Au and Henderson (2006a)

Economic globalization has also driven adjustment to urban spatial layout in China. The theories of new economic geography argue that agglomeration is more likely to happen in well-located regions in order to save transportation costs in international trade (Fujita 2007). On a world scale, big cities more easily cluster in coastal areas where the cost of ocean transportation is very low. The reality in China is that China relies more on international trade during further opening up and globalization.⁹ As a result, the effects of agglomeration are predicted to increase in the eastern coastal areas and big cities become more concentrated.¹⁰

2.2 Spatial Agglomeration and Scale Effect in Urban Development

China’s urbanization has gone through different stages since reform and opening-up. From 1978 to the late 1980s, a special rural industrialization model, in which “rural laborers worked at township factories”, appeared in China along with rapid development of township enterprises. Guided by the urban development guideline to “control the size of big cities, reasonably develop medium-sized cities and activity develop small cities”, the proportion of small-city population in the country kept increasing, while that of the big-city population declined. The overall urbanization rate rose from 20 % before the reform and opening-up to above 40 % (see Fig. 2.2). China’s urbanization entered a new stage around 1990. Reform of the land system launched in the late 1980s made it possible to transfer land use rights and contributed to more flexible land reallocation. Deepening market-oriented reform and opening-up helped to further strengthen industrial agglomeration in

⁹See Chap. 4 for development of China’s foreign trade.

¹⁰See Table 3.1 in Chap. 3.

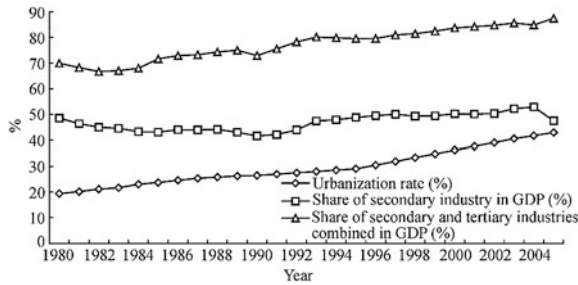


Fig. 2.2 Industrialization and urbanization in China (1980–2009). *Data source* China Statistical Yearbook, China Statistics Press, 2010 (In this figure, the urbanization rate is calculated based on urban population. Data 1980 are household registration statistics, data 1985 and 1988–1989 are adjusted subject to census data 1990, data 1990–2000 are adjusted subject to census data 2000, data 2001–2004 are based on sample survey data of population changes, and data 2005 are based on a national sample survey of population. As stated in the notes in the Questionnaire of the National Sample Survey of Population 2005 by the National Bureau of Statistics, respondents were residents in the sampled quarters and people who were living in the sampled quarters on the night of October 31, 2005, regardless of household registration, including people whose registered permanent residences were in villages, towns and neighborhoods; external population was also included. The proportion of the 2005 urban population already includes external residents who lived in cities and towns. It is inferred that the external non-registered population was included as a proportion of the urban population subject to adjustment of census data or data from the sample survey of population)

coastal areas and the Yangtze and Pearl River Deltas in particular (Jin et al. 2006; Chen et al. 2006; Lu and Chen 2006).¹¹ The urbanization rate increased by approximately 10 % points in the decade after 1990. China's urbanization has been increasing along with rapid economic growth since 2000. According to the sixth population census, the urbanization ratio was 49.68 % in 2010.¹²

During China's urbanization, market forces from the agglomeration effect have continued to increase the number of big cities, although the government once controlled their expansion. From 1991 to 2003, the number of big cities with a population of more than 2 million increased from nine to 33 and the number of prefecture-level cities of the same population reached 37 in 2006.¹³ According to the latest *China Statistical yearbook* in 2013, the number of big cities with more than 5 million populations is 103 in 2012, which accounts for more than 35 % of the prefecture-level cities in China. Theoretically, expansion of local market capacity in the process of urbanization will increase the level of industrial agglomeration in cities. The share of the service industry will increase when industrial agglomeration in the big cities reaches a certain level and that is when the

¹¹See Chap. 3 for regional development related to economic agglomeration.

¹²Data source: State Statistical Bureau of China: The First Report on the Main Statistics of the Sixth Population Census, http://www.stats.gov.cn/tjfx/jdfx/t20110428_402722253.htm.

¹³Data source: China Statistical Yearbooks, various years.

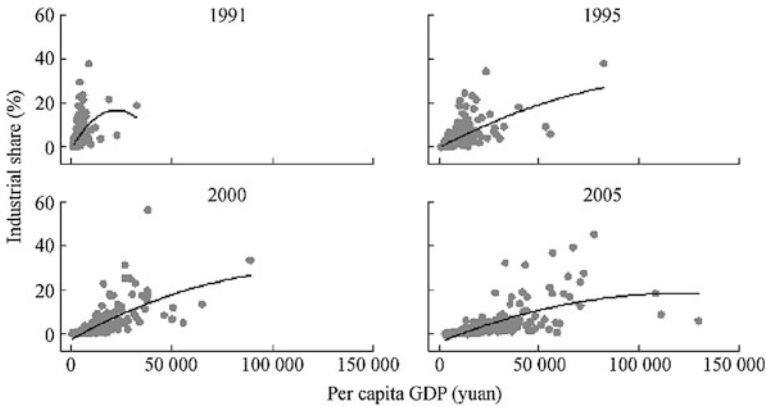


Fig. 2.3 Per capita GDP and industrial share (1991–2005). *Data sources* *Fifty Years of Cities in New China* (Xinhua Publishing House, 1999) and *China City Statistical Yearbooks* (China Statistics Press various years)

urban economy is very likely to enter the stage of post-industrialization. However, a fall in industrial share in the cities does not indicate a decline in absolute industrial scale in the big cities. On the contrary, complementation among different industries further promotes the agglomeration of more high value-added industries in and near big cities.

Inter-city panel data indicate that scale economy in China's urbanization has indeed been strengthening industrial agglomeration in cities. The relationship between urban per capita GDP and industrial share shown in Fig. 2.3 reflects the relation between urban development and industrialization in China since 1990. Urban per capita GDP on the horizontal axis presents local market capacity in cities, which is an important factor in generating the agglomeration effect, while the share of the city's industrial output value in the total¹⁴ on the vertical axis shows the level of urban industrial agglomeration. The fitted line, including the quadratic term added to the scatter diagram, clearly demonstrates the inverted-U-shaped relation between urban industrialization and urban development.¹⁵ Comparing data in different years we could find two important characteristics in China's urbanization and industrialization since 1990. First, most cities are still in the stage in which urbanization and industrialization promote each other, as shown by the tiny minority city samples on the right of the inverted-U-shaped curve in the figure. Second, urbanization and industrialization have increasingly promoted each other

¹⁴Data sources: *Fifty Years of Cities in New China* and *China City Statistical Yearbook*. We use only inter-city panel data without counties within the jurisdiction. Industrial share of one city means the proportion taken by the city in the sum of industrial output value of all sample cities. Data from Shenzhen and municipalities directly under the central government are dropped as outliers.

¹⁵It is noted that the inverted U-shaped curve also represents the law that cities enter post-industrialization with economic development.

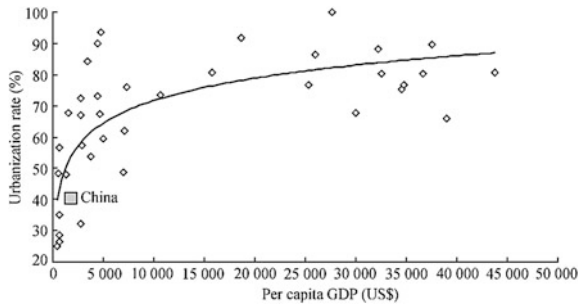


Fig. 2.4 Comparisons in economic development and urbanization by country (2008). *Data source* official website of the National Bureau of Statistics

over the years. The rightward location of the turning point in the fitted curve indicates economic development and market capacity measured by per capita GDP are increasingly conducive to industry agglomeration.¹⁶

However, it is noted that the agglomeration effect during China's urbanization is also driven by globalization, industrialization and marketization, which cannot conceal the fact that the urban agglomeration effect is limited because of lagged urbanization and constrained size of large cities.

Figure 2.2 also shows China's urbanization has lagged behind industrialization for a long time. Comparatively speaking, urbanization in Russia, Brazil, Mexico and South Korea surpassed industrialization in history, urbanization in Bangladesh always approached industrialization, while urbanization in India surpassed industrialization in 1997.¹⁷ The relations between economic development and urbanization in some countries are further explained in Fig. 2.4, taking into account the fact that urbanization and industrialization in the same period in countries at different development stages are not fully comparable. The horizontal axis presents per capita GDP and the vertical axis proportion of urban population. As shown in Fig. 2.4, China's level of urbanization is significantly lower than what its per capita GDP suggests: the Figure's projection of China's urbanization rate based on per capita GDP is 50.5 %, while the actual figure was 40.4 %, a difference of nearly 10 %. China's urbanization rate should be higher based on international comparisons, given that China's per capita GDP calculated by purchasing power parity is higher.

Lag-behind urbanization makes it difficult for big cities to give full play to the agglomeration effect. As shown in Fig. 2.5, an inverted U-shaped relation between urban population density and per capita GDP exists in China, but most cities are on the left of the inverted U-shaped curve. Many Chinese cities suffer from losses in

¹⁶The good fit of the curve to data gradually rose from 0.255 to 0.367, 0.462 and 0.443 over the 15 years, indicating that generally speaking, urban per capita GDP plays an increasingly important role in promoting industry agglomeration over time.

¹⁷Urbanization and industrialization data of these countries are available on the official website of the National Bureau of Statistics of China.

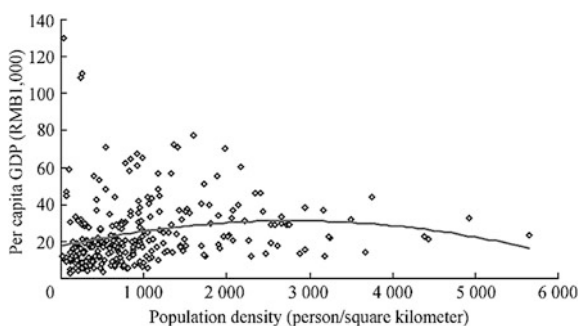


Fig. 2.5 Urban population density and per capita GDP (2005). *Note* Shenzhen with abnormal per capita GDP data is excluded. *Data sources* China City Statistical Yearbook, China Statistics Press, 2006

productivity because of their small size when optimal city size is measured by maximum per capita GDP. Quantitative analysis indicates approximately 51–62 % of cities in China are too small. The losses caused by the small size of typical cities account for about 17 % of average output of employees. Cities suffering from losses as high as 25–70 % in average output of employees account for a quarter of total city samples (Au and Henderson 2006a). Empirical studies by Fujita et al. found that size gaps among Chinese cities are far smaller than in other countries (Fujita et al. 2004).

Low efficiency of land use represents another serious consequence of inadequate population and spatial agglomerations; it is particularly severe in China where contradictions between population and land are prominent. According to statistics, the urban areas of 338 cities at prefecture-level and above have increased by 60 % from 16,000 to 250,000 m² over a period of 10-plus years since the middle 1990s, and urban population (including rural migrant workers) in the cities grew by about 10 % from 270 million to approximately 300 million in the same period. The growth rate of the urban area was six times that of the urban population (Yan and Jiang 2007). Scarcity of agricultural and industrial land and limited improvement in quality of life in backward regions are all attributed to low efficiency of land use. Worse still, urban development in inland areas will inevitably occupy a large quantity of land resources when inland residents can no longer move to and concentrate in coastal areas, which may give rise to unreasonable and difficult-to-adjust spatial distribution of land utilization.

2.3 Misunderstanding About Urbanization and Urban Development

Theories and empirical studies have proven that the agglomeration effect from scale economy helps to improve labor productivity in the cities, but China's urban development is faced with limited scale of large cities and limited diversification of city scale,

which are related to the following four misunderstandings about urbanization and urban development that are summarized in this section. Local governments have adopted policy measures that constrain urban agglomeration effect (Chen et al. 2008).

The first misunderstanding is, policy controlling inflow of external population protects the interests of urban residents. Many city governments have restricted by various means the inflow of external population to protect the interests of urban residents because they believe external population will scramble for limited city public resources and take too many jobs in the cities. However, policies that restrict the inflow of external population harm the interests of all parties concerned, including urban residents. First, the interests of external population and rural laborers in particular are harmed because they find it difficult to keep a foothold in the cities and have to depend on farmland. Second, enterprises are unable to employ more suitable laborers or have to pay higher wages to existing workers because of policies restricting population inflow. Consequently, enterprises will suffer from a loss in efficiency of labor resources and lose their competitive advantage due to rising costs.¹⁸ Third, in the long run, failure in full flow of labor factors will impose restrictions on factor matching, sharing and other mechanisms on which city scale effect depends. In fact, the external population helps to increase labor supply in cities and to improve the productivity of urban laborers through agglomeration. All restrictions in labor flow will harm urban development and the well-being of local residents in the long term.

To be specific to China, segmentation of urban and rural labor markets based on the household registration system (*Hukou* system) still exists in cities nationwide, and big cities in particular, although more and more rural laborers have entered cities since the mid-1980s. Rural migrant workers who do not have local *hukou* are not treated equally with urban residents in wages, social security, children's education and other services (Cai et al. 2003). As urbanization continues and more external people move to cities to find a job, a "dualistic society" in which local residents and non-local residents are separated will develop, especially in mega-cities like Beijing, Shanghai and Guangzhou, if current circumstances are not fundamentally changed. Rural migrant workers who do not have local *hukou* generally belong to the low-income population, which may lead to urban residential segregation and further accelerate the formation of a dualistic society in the cities (Chen et al. 2012). A dualistic society will make it even harder for low-income people to benefit from local public goods such as education and medical care among others and may further widen income gaps in the cities. All these problems will finally exert an influence on the accumulation of capital (including human capital) accumulation among low-income groups, intensify social contradictions among different groups in the cities and impose great challenges on city governance, harmonious social development and sustained economic growth in the cities.

¹⁸Chen and Lu (2008) analyze by a theoretical model the harm caused by labor market segmentation between urban and rural areas to the interests of urban and rural residents as well as obstructions to the process of urbanization.

The second misunderstanding is that during future urbanization, China's rural migrants should move into small cities (towns) rather than large cities, because of concerns over "urban disease". However, such a judgment is attributed to a failure to realize that "urban disease" does not necessarily happen in the big cities or the development of small cities (towns) rely on the agglomeration effect of big cities. This misunderstanding in practice will result in limited size of big cities and limited diversification of city size across China. In fact, development of small cities is a result of an ever-enhanced agglomeration effect of big cities. With decreasing transportation cost the economic activities in the big cities spill over to a wider range along with further agglomeration effect in central urban areas. However, land rent as well as wage and other commercial costs increases during the same process, which results in further crowding-out effect and promotes the relocation of some industries toward surrounding areas, resulting in "city circles" or "urban belts" which economically complement each other and giving full play to the scale effect of big cities (Fujita 2007). More diversified demand and supply, better public service and improved city governance will all be embodied in the development of big cities, which is hard to be realized in small cities (towns).

At present, some big cities have consciously controlled the expansion of city size because of concerns about population-carrying capacity, and governments yet have not become aware that a city can improve its governance along with expansion of the city scale and subsequently increase its population-carrying capacity. The Tokyo Circle has accommodated 35 million residents and become the biggest city in the world because it maintains convenient transportation, a clean environment and a low crime rate. Economic development in Japan has benefited from the agglomeration effect of these conditions. As far as Shanghai is concerned, if the municipal government could achieve a better governance it has great potential to contain more population and further expand. The Report to the Seventeenth National Congress of the Communist Party of China said that "focusing on increasing the overall carrying capacity of cities, we will form city clusters with megacities as the core so that they can boost development in other areas and become new poles of economic growth", and "taking a path of urbanization with Chinese characteristics, we will promote balanced development of large, medium-sized and small cities and towns on the principle of balancing urban and rural development, ensuring rational distribution, saving land, providing a full range of functions and getting larger cities to help smaller ones". This was a positive signal that the government wanted to correct this misunderstanding. Shanghai and Tokyo are compared in Sect. 2.4 to demonstrate how big cities in China should free up their attitudes to development, move beyond population control in city management and fully pursue agglomeration.

The third misunderstanding is that the current scarcity of rural migrant workers indicates the era of labor shortage and industrial relocation toward inland region is coming closer. It seems that the scarcity of rural migrant workers since the spring of 2004 foreshadows the arrival of the era of labor shortage in China and capital should actively transfer to inland areas where laborers are abundant. Such kind of conclusions would be drawn without consideration of further urban agglomeration

effects and possible system changes in the process of urbanization. However, there is ample evidence that policy discrimination against rural migrant workers in the urban labor market, in addition to factors causing partial short-term shortages of migrant rural workers, is the root cause of the scarcity of such workers. There are great differences in employment, social security, children's education and other social benefits between migrant workers and urban residents. Migrant workers in cities without local hukou do not enjoy equal social security with urban residents, their rights as employees are invariably not considered equally by city authorities and their children are frequently discriminated against in education policy, although they can find a job in the cities. Due to institutional urban-rural divide, rural labor flow in China is dominated by short-term flow and most migrant workers (women in particular) will return to rural areas after they get married or during their pregnancy (Chen et al. 2008). Many rural laborers are unable to become residents with urban household registration during urbanization due to man-made labor market segmentation and migration cost. In other words, a great quantity of "potential" surplus labor still exists in rural areas in China. Many of these workers should transfer to modern secondary and tertiary industries to inject new vitality into China's economic growth.

In addition, from the perspective of labor supply, some obvious troughs have existed in rural population structure in China due to the "Three Years of Natural Disasters" from 1959 to 1961 and the one-child policy that has been vigorously implemented since the late 1970s. As well, the size of the population aged 20–25 as the main force of labor flow was low during 2002–07, and this was one of the main reasons for the scarcity of rural migrant workers in recent years. Meanwhile, the policies to support and benefit agriculture, rural areas and farmer that has been implemented by the central government since 2004 has reduced the relative interests of rural migrant workers in the cities and constitutes another objective cause of the labor shortage.¹⁹ Of course, non-transferable rights to rural land have hindered the permanent settlement of rural laborers in the cities. The rapid growth of labor-intensive industry after China's accession to the WTO has driven demand for low-skilled laborers and intensified labor shortages in coastal developed areas in the short term (Meng et al. 2007).

The fourth misunderstanding is that it is necessary to adopt policy measures to restrict city development in eastern areas because the agglomeration effect in urban development will widen the urban-rural and regional development gap in China. This understanding is analyzed at the following levels.

First, objectively, the city agglomeration effect indeed may widen the development gap between urban and rural areas. However, the widening gap is embodied in GDP statistics rather than in real per capita income when there is free laborer mobility and the labor market is fully competitive. In fact, rural migrant workers in the cities spend most of their income on their rural family. According to a survey of

¹⁹Laborers flowing into cities are likely to flow back to rural areas when a policy change is not conducive to attracting farmers to find jobs in cities.

the Chinese Green Book of Population and Labor 2007 issued by the Chinese Academy of Social Sciences, the average monthly wage of rural migrant workers who were engaged in production and business activities in non-local areas rose from RMB781 to RMB953 from 2003 to 2006. It is roughly estimated that the total wages of rural migrant workers account for approximately 7 % of national GDP and that most wages are returned to rural areas as well as central and western regions in various forms (Cai 2007).

Second, capital, technology, management skill and other scarce resources accumulated by rural laborers in the cities and brought to rural areas help to considerably promote the development of rural areas and narrow the urban-rural gap to some extent. Our studies find that urbanization helps to narrow the income gap between urban and rural areas (Lu and Chen 2004, 2006).

Third, in the long run, some industries will be relocated to inland areas or rural areas only when the urban agglomeration effect is given play, and by then labor outflow and increasing per capita resources (in particular land and other natural resources) in inland areas will inevitably contribute to an increase in labor productivity and income in the inland areas. Therefore, the agglomeration effect that has been given full play to in the long term will not widen the income gap among regions. Studies by the World Bank indicate that factor mobility rather than special regional policies contributed to inter-regional income convergence in the US, Chile and Pakistan. Widening the regional gap has also occurred at times in developed countries such as the US and France, which, however, showed a trend of continuous decline afterwards. Only factor mobility and sustainable development can finally help to narrow the regional gap. Globally, the richer a country is, the smaller the regional gap is (Uchida, forthcoming). Regional balanced development will be discussed in detail in Chap. 3.

2.4 Agglomeration Effect of Metropolises: Comparisons Between Shanghai and Tokyo

The latest economic studies and the history of world city development have indicated that concentration of economic activity and population in metropolises is an important driving force behind economic growth and social development. In particular, population agglomeration represents an effective approach to improving efficiency in land use in Asia where per capita land is quite limited. Metropolitan regions in China and cosmopolises such as Shanghai and Beijing should become images of China's economic and international status as well as growth poles of the regional and national economies in the future by embracing development, ending population control in urban management and addressing issues in city expansion.

Analysis in the following sections shows that scale effect constitutes an important driving force in modern economic growth and that spatial agglomeration of the economy will become more important after a city enters the post-industrialization stage. Figure 2.1 shows that smaller city sizes will cause a

decline in efficiency, and therefore the government should deregulate control of the size for large cities. In this sense, giving up scale is giving up development.

The strategy of balanced development between urban and rural areas and among regions requires China to accelerate population agglomeration in cities and, in particular, megacities when it is possible. It will be difficult to guarantee China's sustainable economic development and future international competitiveness if there is no metropolitan circle and cosmopolis that matches China's increasingly improving economic status in the world. It is a consensus among researchers that population density in Chinese megacities is far below that in cosmopolises such as Paris, London, Tokyo and New York. Take Shanghai for instance. Shanghai has been positioned as a center of the economy, finance, trade and shipping and should become a cosmopolis that represents China's economic and international status. This would require a population of at least 25 million permanent residents that will match the goal of the city's development in the next 20–30 years. To this end, Shanghai should take the lead in changing its attitude to pioneer a new model of cosmopolis development by giving play to the city agglomeration effect.

Shanghai and Tokyo are compared in this section to illustrate the significance of further expansion of Chinese metropolises. Tokyo prefecture is used to demonstrate the ideal population for Shanghai. As shown in Fig. 2.6, in 1953, the population of Tokyo prefecture exceeded its previous population peak in 1942 before the World War II, and average annual population increase stood at 208,400 during 1953–1973. Afterwards, the population of Tokyo prefecture remained slightly below 12 million for a long time.

Tokyo once went through a period of “dispersion of capital functions” in the 1990s, and consequently the population of Tokyo declined, along with its rate of development and international status. Academics consider this period as “a lost decade” (Wang 2003).

More interestingly, the agglomeration effect of population in the Tokyo prefecture has also affected overall economic growth in Japan. Data analysis in Fig. 2.7 indicates a positive relationship between the share of population in the Tokyo prefecture and Japan's economic growth rate since 1963. The population share of the prefecture reached at least 10.67 % (1973) in the year when Japan's economic growth rate was above 8 %, while it was up to 9.7 % (2003) in the year when

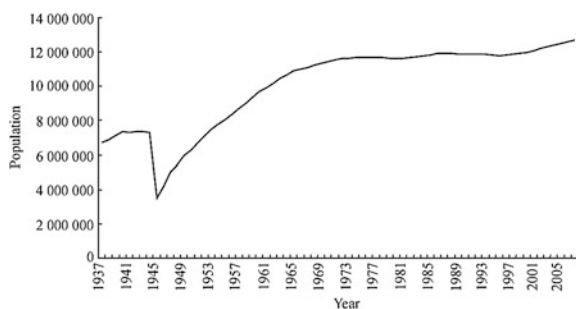
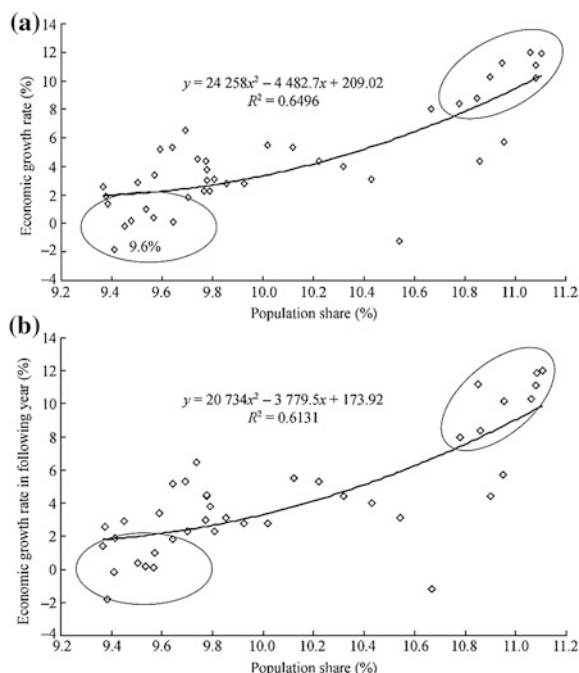


Fig. 2.6 Population growth of Tokyo prefecture (1937–2006)

Fig. 2.7 Population shares of Tokyo prefecture in the national total and Japan's economic growth rates (1963–2004)



economic growth was below 2 % (see Fig. 2.7a). Tokyo's population share was still in positive correlation to economic growth as it was delayed by one year (see Fig. 2.7b). The population gross has entered a period of significant increase in recent years, and this has contributed to gradual economic recovery in Japan. During 1996–2006, the average annual population increase stood at 88,800, and showed no sign of slowing down.²⁰ In particular, the population of big city Osaka declined along with the growth of Tokyo, indicating that the agglomeration of economic activities and population in a few metropolises indeed embodies the objective law of city development.

As shown in Table 2.1, population with local hukou in Shanghai increased by 96,400 on annual average during 1978–2006, and by 56,200 during 1992–2006 when the economy grew rapidly. In 2006, the number of residents without local hukou who had lived in Shanghai for more than half a year reached 4,672,600. By including such population without local hukou in Shanghai's total population and supposing people without local hukou before the reform and opening-up was zero, the average annual population increase in Shanghai was 263,200 during 1978–2006 and 223,100 during 1992–2006. This growth rate is roughly equivalent to Tokyo

²⁰Data about Japan and Tokyo prefecture are sourced from official websites of Japan Statistics Bureau and Tokyo Prefecture Statistics Bureau unless specifically stated. Data about Shanghai come from Shanghai Statistical Yearbook 2007 and Shanghai Municipal Statistics Bureau's website.

Table 2.1 Shanghai's population increase (1978–2006) (Unit: 10,000 persons)

Average annual population increase 1978–2006	9.64
Average annual population increase 1992–2006	5.62
Annual increase of permanent resident without local hukou 1978–2006	16.69
Average annual population increase 1978–2006 (including immigrants without local hukou)	26.32
Average annual population increase 1992–2006 (including immigrants without local hukou)	22.31

prefecture's in the period of Japan's rapid economic development. The population growth rate of Shanghai is very low given that its land area is three times the size of Tokyo's.

The share of the service industry in GDP exceeded 50 % for the first time in 1999 and the industry's share of employment passed 50 % for the first time in 2006, indicating that Shanghai was entering the post-industrialization stage. However, the city's service industry has grown very slowly since 1999. What is the optimal population size for Shanghai in the post-industrialization stage when the service industry is creating jobs and absorbing more foreign capital? The future population size of Shanghai is forecast in Table 2.2.

Table 2.2 Shanghai population size forecasts

	Area (10,000 km ²)	Permanent resident population (10,000 persons)	Population density (persons/km ²)	Population forecast (10,000 persons)	Population increase (10,000 persons)
<i>High scheme</i>				<i>Shanghai readies population density of Tokyo prefecture</i>	
Tokyo prefecture (2005)	0.22	1254.40	5819.80		
Shanghai (2006)	0.62	1815.08	2918.77	3619.13	1804.05
<i>Medium scheme</i>				<i>Shanghai and Jiangsu reach Japan's population density</i>	
Japan	10.87	1,2775.70	1175.58		
Shanghai (2006)	0.62	18,15.08	2918.77	2479.49	664.41
Jiangsu (2006)	10.26	7549.50	735.82	10,313.01	2763.51
Shanghai + Jiangsu (2006)	10.88	9364.5S	860.57	12,792.50	3427.92
<i>Low scheme</i>				<i>Shanghai and Suzhou reach population density of Tokyo circle</i>	
Tokyo circle (2005)	1.33	3447.20	2595.59		
Shanghai (2006)	0.62	1815.08	2918.77	2246.00	430.92
Suzhou (2006)	0.60	750.00	1247.92	928.06	178.06
Shanghai Suzhou (2006)	1.22	2565.08	2097.60	3174.05	608.97

Note Area of Shanghai and Suzhou refers to land area, and Japan's area is calculated by plain area (total area of 374,744 km²)

Shanghai has maintained an annual per capita GDP growth rate of about 10–11 % in recent years. In 2006, the permanent resident without local hukou (including residents living there for more than six months) in Shanghai totaled 18,150,800, based on which per capita GDP in the city was converted into approximately US\$7490 per person. Per capita GDP in Shanghai will be US\$55,427.87 by 2027 based on an average annual growth rate of 10 %. It will be roughly equivalent to Tokyo's in 2003 (US\$57,598.45). Shanghai's per capita GDP will surpass Tokyo's current figure by 2034 based on an average annual growth rate of 8 %. Population density in Tokyo prefecture under present development is 5819.80 persons per sq km. With an area of 621.49 km², the 23 core urban districts had a population of 8,489,700 in 2005 and population density of 13,660 persons per sq km. Comparatively, permanent resident population density in Shanghai was only 2918.77 persons per sq km in 2006. The population density of the 10 most densely populated districts, covering an area of 660.19 km² and a population of 8321,500, in Shanghai (excluding the large Pudong New Area) alone stands at 12,604.7 persons per sq km, which is still less than the population density of core districts in the Tokyo prefecture. Gross population will reach 36,191,300 based on Tokyo's population density (see Table 2.2 for population forecasts). This figure may be overrated because Shanghai is three times as large as Tokyo and population density of areas outside the central areas will be greatly lowered. However, gross population will amount to 9,018,000 when 10 districts with the highest population density reach Tokyo's population density, reserving a growth room of 700,000. Shanghai's gross population will be 24,403,700 based on Tokyo's population density for an area equivalent to Tokyo's and average population density for remaining areas.

Shanghai and Suzhou are compared with Tokyo circle in the low scheme in Table 2.2. The gross population of Shanghai and Suzhou with a combined area of 12,200 km², which is roughly equivalent to the area of Tokyo circle, will be 31,740,500 based on Tokyo circle's population density (2595.59 persons per sq km). The population of Shanghai is estimated to be 22,460,000 on the basis of population proportions of Shanghai and Suzhou. However, future population of Shanghai is underestimated in this way because population will be relatively more concentrated in Shanghai under the process of agglomeration and thus Shanghai's population will be larger.

Shanghai and Jiangsu are compared with Japan in the medium scheme. Japan covers 374,700 km², which includes a plain area of approximately 108,700 km². Population density will be 1175.58 persons per sq km based on the assumption that all Japanese people live in the plains. The combined area of Shanghai and Suzhou is 108,800 km², being roughly equivalent to Japan's plain area. Shanghai and Jiangsu should accommodate a population of 127,925,000 based on Japan's plain population density, and Shanghai should have a population of 24,794,900 based on the current population proportion of Shanghai and Jiangsu.

Therefore, the proportionate permanent resident population will be at least 25,000,000 and the annual permanent resident population will increase by approximately 228,300–342,500 when Shanghai reaches Tokyo's present

Table 2.3 Infrastructure comparisons between Tokyo prefecture (2005) and Shanghai (2012)

Road	Length (km)	Area (10,000 km ²)	Length per 10,000 persons (km)	Length per square kilometer (km)	Area per 10,000 persons (10,000 m ²)	Average area (10,000 square/km ²)
Tokyo	24,105.00	17,643.80	19.18	11.47	14.04	8.39
Shanghai	17,316.00	26,813.00	12.19	2.73	18.88	4.23
Subway	Mileage (km)	Passenger flow (10,000 persons per year)	Length per 10,000 persons (km)	Length per square kilometer (km)	Passenger flow per kilometer (10,000 persons per year)	
Tokyo	279.40	2,087,921.90	0.22	0.13	7472.88	
Shanghai	468.19	227,573.00	0.22	0.07	486.07	

development level 20–30 years later. However, given that the population density of the central urban areas of Shanghai is very close to that of core districts in Tokyo, peripheral districts will dominate future increases in Shanghai's population. Gross population in Shanghai is even likely to reach 30,000,000 if the population density of central urban areas in Shanghai comes closer to the highest population density in the downtown area.

There are many concerns about Shanghai's population capacity, but these are actually static views. One worry is that Shanghai cannot accommodate a larger population because of its limited urban management and infrastructure capacity. It is noted that urban management and infrastructure capacity keep improving along with population growth and that urban development happens in this process when various problems are solved, echoing our view that giving up scale is giving up development.

Take infrastructure as an example. As shown in Table 2.3, in Tokyo, road length per sq km is 11.47 km and road length per 10,000 persons is 19.18 km. In Shanghai the respective figures are 2.35 and 8.05 km. Total subway length in Tokyo stands at 279.40 km,²¹ with 0.13 km per sq km and 0.22 km per 10,000 persons, while the corresponding data in Shanghai in 2012 were 468.19, 0.07 and 0.20 km. Based on present subway capacity, passenger capacity per km is 74,728,800 persons per year in Tokyo, while in Shanghai it is 4,860,700 persons per year. Shanghai still has a lot of room for improvement in transport infrastructure, hardware and management.

Take social security as another example. Some observers say that an ever-expanding population will impose unbearable stress on social well-being in the big cities like Shanghai. As a matter of fact, statistics indicate lower average age, better health and lower unemployment rates for population without local hukou than the locally registered population. In other words, social security expenditure will be relatively reduced when the population without local hukou is included in

²¹This data excludes rail transits other than subway.

Shanghai's pension, medical and unemployment security system on equal terms with the hukou population, which will relieve rather than increase pressures on social well-being in Shanghai.

More importantly, Shanghai finds it difficult to control increases in non-hukou residents although it may relieve the growth rate of population with local hukou by administrative means, but increases in the non-hukou population at present are important to the city's economic development. The permanent resident population in Shanghai reached 18,580,000 by the end of 2007, an increase of 430,000 in 2006, which conforms to its strong economic growth. The Liberation Daily reported on February 27, 2008, that in 2007, the permanent resident population in Shanghai reached 18,580,000, with hukou population at 13,788,600 and the floating population at 6,660,000. On this basis, the non-hukou population in the permanent resident population has already reached 4,791,400 or 25.79 % of total permanent resident population. There will be serious potential hazards to social integration and harmonious development in Shanghai if such a high proportion of permanent residents do not enjoy equal rights with the hukou population during the city's sustained population increases in the future.

Population agglomeration constitutes a prerequisite for development of cosmopolises around the world. Chinese metropolitan circles may draw ideas and lessons from the history of Tokyo's population increases, decreases and then increases, as well as their relationship to economic growth in Tokyo and Japan at large. At present, Tokyo circle is one of the most dynamic regions in the world with a gross population of 35 million. Economists argue that low costs in 3 M—Time, Grime and Crime—namely convenient transport, an agreeable environment and social stability—constitute one of the secrets of harmonious development in city agglomeration when summarizing Tokyo's experience. Correspondingly, Chinese metropolises should seek development and improve their international status by actively addressing various issues in transport, environment and public security among others.

2.5 Toward Balanced Urban-Rural Development and Policy Adjustments

Because of the various misunderstandings just discussed, we argue that China should take a path that gives play to the spatial agglomeration effect and pays attention to balanced urban-rural development by aiming at social harmony in the cities during future urbanization and urban-rural development. How to promote social harmony in the city, give full play to the agglomeration effect and realize balanced development between urban and rural areas are discussed in this section from the policy perspective. We find that all these policies should be coherent with each other and require the government to end urban-rural segregation and achieve urban-rural integration.

First, promoting social harmony in the city. An important factor that may cause discord in cities during rapid urbanization is the formation of a dualistic society

caused by polarization between hukou and non-hukou populations, which is attributed to the household registration system. There is still no ready-made answer to criteria on social harmony in cities although the Chinese government has proposed the goal of building a harmonious society. We hereby attempt to put forward four criteria for harmonious society in cities: an interest appeal mechanism, wide social security coverage, discrimination-free public services and equal development opportunities. Interest appeal mechanism is a guarantee that the wishes of vulnerable groups can directly influence government decisions, and that these people will have channels of appeal when their interests are harmed or they are treated unequally. Wide social security coverage means the basic social security system should include all permanent resident populations in cities, regardless of local or urban household registration. Discrimination-free public services require the government to increase public fiscal investments to provide discrimination-free public services, especially children's education. Equal development opportunity means all people should enjoy equal development opportunities (in particular in investment in human capital and treatment in the labor market) by the system regardless of differences in identity and income.

Second, giving full play to the agglomeration effect in cities. Urbanization in China is yet to be greatly improved. Currently, most Chinese cities are in the stage when per capita GDP drives industry agglomeration, and increasing population density also helps to increase per capita GDP. To further give play to the city agglomeration effect, more rural laborers should flow to cities during urbanization, and people from the central and western regions should further concentrate in the eastern regions, while all big cities nationwide should continue to expand. Based on the development experiences of Asian cities, transport, environment, housing, security and other issues can be addressed during city development. One of the important contributors to the rapid economic recovery in East Asia in recent years was that the region fully seized the opportunity of economic globalization and integration and gave play to the agglomeration effect of the urban economy (Gill and Kharas 2007).

To further give play to the city agglomeration effect in the context of current economic and social development, the Chinese government should make a series of system adjustments which fall into two categories: (1) Lowering the institutional cost of population mobility. The government should relax control over labor flow, reduce discrimination in social security and children's education among other issues against urban residents without local hukou and at least provide permanent residents without local hukou who have been working in cities with equal access to local public services as local registered residents. To lower the institutional cost of labor flow, it is also necessary to build a national social security system that includes compatible social security services in different cities. In addition, the government should attach great importance to the rental market and give tenants equal rights with homeowners in residence registration applications and related local public services such as children's education. (2) Shifting government functions from micro-intervention to macro-management. As market economy is established in China stage by stage and the economy further develops, the

government should formulate rules for the market economy instead of directly intervening market choice, and shift its functions from micro-intervention to macro-management. Decreases in government intervention will help to relieve domestic market segmentation and administrative barriers and further give play to the agglomeration effect. Domestic market segmentation is further discussed in Chaps. 3 and 5.

Only by constantly giving play to economic agglomeration can China promote sustainable economic development. Only further population agglomeration in eastern coastal areas can help relatively backward rural areas obtain higher per capita resources and lay a solid foundation for balanced development between urban and rural areas.

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