

China's City Hierarchy, Urban Policy and Spatial Development in the 1980s

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Summary. Cities play an important role in population distribution and economic development. Policies which alter city systems can create new patterns of spatial economic development. This paper, using the most recent data, examines changes in China's city hierarchy, urban policy and spatial development in the 1980s in international, national and local contexts. The time series data show that the process of urbanisation had been gradual between 1949 and the late 1970s but accelerated rapidly in the 1980s. The growth of cities and towns in various size categories reflects the influence of urban policy in reshaping China's urban hierarchy. Using multiple measures of urban primacy, the analysis suggests that China has distinctive city systems at the regional level varying along demographic, industrial and infrastructural dimensions. Moreover, there is a growing discrepancy in socioeconomic development between inland and coastal cities that is consistent with the recent policy of favouring the coastal economy. The study provides perspectives and evidence on the extent to which economic efficiency and spatial equality are balanced under a changing model of socialist urban development.

1. Introduction

In 1980 the People's Republic of China created four Special Economic Zones (SEZs) in its south-eastern coastal cities to attract foreign investment and advanced technology. In 1984 China targeted another 14 cities on its eastern seaboard as 'open' cities for foreign investment and economic development. The favouring of the development of selected cities, coupled with a policy of channelling the growth of cities of varying sizes, has ushered in a new model of urban development in China. With the onset of the 1990s, this study examines retrospectively the changes that have taken place in the structural and spatial dimensions of China's urban land-

scape during the 1980s. It integrates analysis of both the general city structure and a sample of Chinese cities in international, national and local contexts.

Section 2 traces the growth of Chinese cities in the 1980s in the light of China's urbanisation process and changing definitions of urban places, identifying how administrative and economic factors have contributed to the increase and redistribution of cities by size. Section 3 focuses on China's urban primacy, or lack of it, through a twofold analysis of: (a) the annual national primacy index through the 1980s; and (b) changes in the various primacy indexes of 33 cities (included in

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the 1985 and 1988 editions of China's national and urban statistical yearbooks) between 1984 and 1987 by location (coastal vs inland) and across macroregions (e.g. East vs North). Moving beyond the conventional measure of urban primacy in population size at the national and provincial levels, these analyses take into account the extent of industrial and infrastructural primacy in China's city systems across location. Section 4 reports a more detailed analysis of the relationship between differential urban policy and varied socio-economic development in the 33 cities between 1984 and 1987. Section 5 concludes the paper.

2. The Evolving City Hierarchy

China's city system evolved in the first three decades after 1949 and changed dramatically in the 1980s in response to a number of demographic, economic and social factors. Notable among these factors have been the increasing pace of urbanisation, the changing definition of urban places and new economic policies. Although these administrative and political dimensions are interesting in their own right, here they serve as backdrops to the study of the structure of China's cities and their role in shaping spatial development in the 1980s. The geographic pattern and distribution of the benefits of economic development in a country are linked to its degree of urbanisation. There are several ways of measuring the degree of urbanisation, the most common of which is the percentage of the population in urban places, which include cities, towns and suburbs of varying definitions. Therefore, to understand a country's city system requires knowledge of the proportion of the population that is urban and of what defines an urban place (city or town) at various times.

Urbanisation and the City-size Categories

Historically, China has had a low percentage of its population in urban areas, with

most of its people concentrated in a few large cities (Pannell, 1984). But this pattern began to change in the early 1980s. A rapid increase in the percentage of the urban population, resulting largely from changes in the definition of urban places, indicates a quickening process of urbanisation, while changes in the city-size categories reflect the new distribution of the urban population. Although Western scholars have attempted to estimate China's urban population (Orleans, 1982; Pannell, 1984), more recent studies in the US (Goldstein, 1985; Banister, 1986) have relied on official Chinese data, especially those from the 1982 census. This study both updates the earlier time series and marshals complementary evidence on Chinese cities and towns of different sizes from newly available sources.

China's urban population grew by 5.9 per cent annually between 1949 and 1988, far outpacing the 1.8 per cent annual increase of the total population. While averaging 3.9 per cent in the first 31 years (1949–80), China's urban population increase accelerated to an annual rate of 13.9 per cent during the 1980s. It took three decades for China's urban population to double from 10.6 per cent to about 20 per cent of the total population, whereas it more than doubled to over 50 per cent in only eight years in the 1980s. The 574.9m Chinese in urban places in 1989 were second only to the total population of India. In terms of level of urbanisation, China had long remained well below the average (32 per cent in 1982) of developing countries (Goldstein, 1985), but exceeded that by over 18 per cent in 1989. In fact, China had reached and surpassed, ahead of schedule, the urbanisation level of 45 per cent projected by Banister (1986) for 1995. China has already graduated from the group of less-urbanised Asian countries (Bangladesh 15 per cent, Thailand 17 per cent, Vietnam 19 per cent, Indonesia 22 per cent, India 23 per cent and Burma 24 per cent), and may be joining the group of more-urbanised Asian countries that in-

cludes Malaysia (43 per cent), South Korea (57 per cent) and Taiwan (67 per cent) (Banister, 1986, p. 2).

China's faster tempo of urbanisation in the 1980s needs to be examined in tandem with the changing distribution of cities of different sizes. China classifies its cities (municipalities) into huge, large, medium-sized and small categories (State Statistical Bureau (SSB), 1985a).¹ Although the huge-city category includes all cities with a population greater than or equal to 1m, this study separates those with 2m and more population into a super-city category. Cities of all sizes grew rapidly during 1949–80 from a small initial base. In 1949 only Shanghai had more than 2m residents. In 1981 there were seven such cities. During this 32-year span, China added 160 cities, most of which were in the two smaller size categories.

Since the early 1980s the efforts of the Chinese government to enforce the policy of controlling the expansion of big cities by rationally developing medium-sized ones and rigorously building up small cities (see Chen, 1988a) have largely been successful. The number of super cities stabilised (except that Chongqing in Sichuan Province moved into the super-city category in 1984, for example). The huge cities grew most rapidly of the three largest size categories.² The number of cities with 500 000–999 999 residents was remarkably stable in the 1980s. In contrast, the policy of encouraging medium-sized and small cities appears to have had an effect. The number of medium-sized cities increased from 70 to 110 between 1982 and 1989, whereas the number of small cities more than doubled during the same period of time (Table 1).

Banister (1986) attributes the rapid, albeit unsteady, increase in China's urban population through the mid-1980s to: (a) the return of youth previously sent to the countryside; (b) the reclassification of rural places to urban ones; (c) the upgrading of towns to new cities; and (d) the reinstitu-

tion of previously abolished cities. In 1983, for example, 34 cities were newly established and 10 reinstated (Banister, 1986, p. 6). Rapid economic growth at the local level, coupled with favourable location features and historical conditions, played a strong role in getting new cities designated.³

China's total urban population consists of residents living in two components—*Shi-Zhen*, translated as city and town. *Cheng* (also meaning city) and *Shi* make up *Chengshi*, the Chinese municipality. It encompasses the total land and population in the *Chengqu* (urban districts), which include *Shiqu* (city districts) and *Jiaoqu* (suburban districts). A city may also administer one or more *Xian* (counties) within its municipal boundaries. Although this paper focuses primarily on Chinese cities (municipalities), the dynamics of *Zhen* (towns) are closely associated with the process of urbanisation and recent urban policy.

The definition of a town—the most basic unit of China's urban hierarchy—has undergone three rounds of modification and change. The first set of criteria for differentiating urban from rural places, officially approved by the Chinese state in 1955, has been well documented (Goldstein, 1985; Ministry of Public Security, 1985; Chen, 1988a).⁴ China's first national census in 1953 showed that China had 5404 towns, 256 of which had between 20 000 and 100 000 population and the remaining 5148 of which had fewer than 20 000 inhabitants, including 193 with fewer than 1000 people. The towns constituted 5.8 per cent of China's total population of 582.6m in 1953, whereas the 164 cities (municipalities) of 20 000 population and more contributed the other 7.5 per cent to make up 13.3 per cent of China's national population (Goldstein, 1985, pp. 6–7).⁵

In 1963 the Chinese government re-defined urban places by tightening the standards for towns to qualify as such,⁶ causing many towns to be reclassified as rural places under the jurisdiction of com-

Table 1. China's urban population and city-size categories, 1949-89 (selected years)

Year	Urban population (× 1000)	Urban percentage of total population	City-size category					Total ^b
			Super city ^a (≥ 2 000 000)	Huge city (1 000 000- 1 999 999)	Large city (500 000- 999 999)	Medium-sized city (200 000- 499 999)	Small city (< 200 000)	
1949	57 650	10.6	1	5	10	19	34	69
1978	172 450	17.9	—	—	—	—	11	194
1979	184 950	19.0	—	—	—	—	—	216
1980	191 400	19.4	—	—	—	—	—	223
1981	201 710	20.2	7	11	28	31 ^c	152	229
1982	211 540	20.8	7	12	29	70	114	239
1983	241 260	23.5	7	13	28	35 ^c	188	271
1984	330 060	31.9	8	12	30	81	164	295
1985	382 440	36.6	8	14	30	94	178	324
1986	437 530	41.4	8	15	31	95	204	353
1987	503 620	46.6	8	17	30	103	224	382
1988	543 690	49.6	9	19	30	50 ^c	324	432
1989	574 940	51.7	9	19	30	110	272	440

^aAccording to the Chinese government, cities with a population of 1 m and over are classified as huge cities. The super-city category is created for its distinctive significance. In terms of administrative functions, these cities also can be divided into five levels: (1) national capital (Beijing); (2) central government municipality (e.g. Shanghai); (3) provincial capital (e.g. Nanjing of Jiangsu Province); (4) region-level city (e.g. Qingdao of Shandong Province); and (5) county-level city (e.g. Zhongshan of Guangdong Province). See Appendix Table A1 for an illustration with 33 cities. Of the 300 cities in 1984, there were three central government municipalities (including Beijing), 26 provincial capitals, 122 region-level cities and 148 county-level cities.

^bThere were actually 233 cities in 1981, 245 in 1982, 289 in 1983, and 300 in 1984. The difference was due to unreporting. One recent source (*Renmin Ribao*, 1989a) puts the total number of Chinese cities at 450 at the end of 1989, including three central government municipalities, 26 provincial capitals, 159 region-level cities and 262 county-level cities.

^cIn 1981, 1983 and 1988, cities with a population of 300 000-499 999 were medium-sized cities, whereas small cities included both the 100 000-299 999 and < 100 000 categories.

Source: Banister (1986), Liu (1987), *Renmin Ribao* (1989b) and SSB (1981, 1983, 1984, 1985a, 1986, 1987, 1988, 1989, 1990).

munes. As a result, China's second census in 1964 identified only 3148 towns, a 41.7 per cent decrease from 5404 in 1953. The new criteria led to a further reduction of towns to 2664 in 1982, when China's third census was taken (Goldstein, 1985, p. 8). A continued rise in the number of cities had raised the city share of the urban population. By the 1982 census, the urban population in 239 cities accounted for 14.3 per cent of the total population, whereas the town segment of the urban population as a share of the total population increased only slightly to 6.1 per cent from 5.8 per cent in 1953 (Banister, 1986).

In 1984 China readjusted and loosened the criteria for establishing towns in order to speed the development of *Xiaochengzhen* ('minor' cities or towns) and to reduce urban-rural discrepancies.⁷ The introduction of these new criteria was accompanied by a growing trend toward setting up new towns. By mid-1984, there were 5698 towns (doubling the number in 1982), and this rose to an estimated 7280 by the end of that year. The total population of these towns was about 138.7m, 13.4 per cent of China's total population (Banister, 1986). This was a much larger share than the 1982 figure, as the 191.4m population of the 295 cities in 1984 constituted 18.5 per cent of China's total population, a 40 per cent rise from 1982. A more reliable source put the number of towns in 1984 at 6211, with a population of 134.5m (Ministry of Public Security, 1985, p. 1), about 13 per cent of the total population. Subsequent population surveys showed that the towns' population as a share of the total in 1985 stood at 10.2 per cent, while 19.2 per cent of the total population lived in cities. The figures for 1986 rose to 10.8 per cent and 20.3 per cent, respectively (Guo, 1988).

These reported statistics are somewhat inconsistent. The combined population of cities and towns in 1985, for example, was not equal to the urban population in that year (see Table 1). The difference reflects the complex and confusing criteria for

defining urban places and population (see Orleans, 1982; Chan and Xu, 1985), such as whether the agricultural population within the boundaries of cities and towns was indeed counted as urban.⁸ According to Chan and Xu (1985), the total population of cities and towns, including the agricultural population in their boundaries, is the most useful indicator of China's total urban population. Although China has become much more 'urbanised' in the 1980s in terms of the proportion of population defined as urban, there is tremendous variation in urbanism by location. Not only do the major cities and small towns differ considerably in urban amenities, the towns themselves range from suburban towns (contiguous to the large cities), which have the majority of their population in non-agricultural activities and many urban attributes, to remote village towns (*Cunzhen*), where as many as 90 per cent of the population are peasants.

Despite the inaccurate or inappropriate definition of urban places, the number of Chinese cities and towns in 1987 was reported to have reached 11 484 (382 cities and 11 102 towns). In the 1980s, China gained more than 200 new cities (see Table 1) and added nearly 10 000 towns. More than 300m of the rural population have been 'urbanised' (*Renmin Ribao*, 1989c) by redefinition.

The data presented thus far should be viewed with considerable caution, but they serve two useful purposes. First, they have brought up to date the accelerated process of urbanisation that is unfolding in the 1980s. Second, they suggest that China's urban hierarchy (from super cities down to small towns) has evolved in response to new urban policy and changed definitions of urban places.

3. Multiple Levels and Facets of Urban Primacy

How have these changes affected the population distribution and functions of China's

large urban centres? Is there an identifiable relationship at the national level? If there is one, can it also be observed regionally? These important questions beg for answers in the light of China's recent urban policies of decentralising economic decision-making to the local level, encouraging the growth of medium-sized and small cities, especially the latter, and favouring the faster development of coastal areas. To answer these questions requires a re-examination of urban primacy in China on the basis of new and more comprehensive data, and of recent theoretical and methodological developments in the study of primacy (Smith, 1985a, b).

Urban primacy is present when the top-ranking city or cities in an urban system are considerably larger than cities of lower ranks. This general definition raises the question of how large the largest city has to be for primacy to exist. The primacy index has been used to detect and measure urban primacy under the assumption that the population of the largest city is equal to the population in the second, third and a fraction of the fourth rank cities, yielding the value of 1 if the cities follow the rank-size rule. The more the index exceeds 1 the more primate is the largest city. The four-city index can be modified to compare the largest city with the next 10; this is a more precise measure of the primacy of the largest city because more cities are included in the comparison. The degree of primacy is measured by how much the 11-city index is greater than the expected value of 0.50 (see Arriaga, 1975, pp. 63–64). The primacy index, derived theoretically from log-normal or rank-size expectations,⁹ does not fit all city systems. Most city-size distributions in developed economies (e.g. the US) are well integrated and thus tend to conform to log-normalcy. Many developing economies (e.g. Argentina), however, have 'primate' urban systems in which the first-ranking city deviates considerably from the rank-size distribution by being disproportionately large. Are primacy and rank size mutually exclu-

sive? A case-study from an historical perspective (Smith, 1985b) shows that Guatemala's urban system became more log-normal while exhibiting greater primacy. Guatemala City was much larger than expected in size, but the cities below formed a rank-size distribution, or close to it. Primacy and log-normalcy or rank size may also be linked with either the *concave* or the *convex* pattern of city distribution.¹⁰

Four forms of urban systems can be identified in a 2 × 2 fashion. First, an urban system takes on log-normalcy without its top city being primate. Second, log-normal urban systems develop primacy. Third, an urban system can have a concave (immature) distribution without a primate city. Fourth, an immature urban system can go hand in hand with primacy (Smith, 1985b, pp. 131–132). There is a variety of historical, political, social and economic conditions under which any of the four urban forms may exist.

How primacy is produced or forestalled is subject to different theoretical explanations. Smith (1985a) presents and criticises three. The first is that colonialism accounts for the emergence of primacy by making key cities in both metropolitan and colonised countries serve as exclusive centres of administrative, military and religious influence. While this largely applies to the primate urban systems in Asian colonies, primate cities in Latin America (e.g. Guatemala City), once administrative centres for European colonisers, did not become primate until the colonial period was over. Even if the theory can account for the absence of primacy by recognising the possible failure of administrative cities to assert colonial control, it fails to explore why primate cities emerged in some Latin American countries when they did. The second theory of urban primacy—export dependency—emphasises that export-oriented production of primary goods induces primacy. Nevertheless, the Central American experience suggests a mismatch between the time of urban primacy and the period of export dependency. Third, the

rural collapse (urban bias) theory of urban primacy stresses greater manufacturing activity, declining labour-intensive agricultural exports and massive rural-urban migration as important factors promoting and sustaining primacy. However, Smith argues that the primacy of Guatemala City had more to do with rural development than with rural collapse, which perpetuated the stagnation of Guatemala's secondary cities (see Smith, 1985a, pp. 99-116). While the measurement of primacy is not without difficulty, certain aspects of these theories may shed light on the historical and current features of China's urban system. It is to address these issues that we now turn.

(a) National Urban Primacy in China?

The best way to begin examining urban primacy in China in the 1980s is to trace the historical development of the size distribution of Chinese cities. Pannell (1984) identifies a convex pattern (the reverse of primacy) of China's national urban system that persisted through much of this century. The primacy index declined continuously from 0.30 in 1937 to 0.28 in 1953, 0.23 in 1970 and 0.19 in 1980.¹¹ The convex distribution without primacy suggests that China had a national urban system with a number of large cities without an overly large primate city for a long time.

How do we account for China's non-primate urban system? Do any of the three theories mentioned previously fit China? There are several explanations for China's absence of national urban primacy. First, there existed a tradition of robust economic integration around several regional urban centres, preventing any one of them from becoming nationally dominant (Skinner, 1977). Second, colonial penetration of China was limited and did not gain complete control over the major coastal cities, including Shanghai (Murphey, 1974). Third, the lack of a transportation network across vast and varied geographic areas

handicapped commercial exchange and integration on a national scale. Fourth, traditional China experienced shifts of imperial capitals among major cities and the co-ordinating administrative functions and commercial activities that accompanied them. Hangzhou (Hangchow) had over 1m people and a well-developed infrastructure by the late 13th century (Gernet, 1977), while no city in Western Europe came even close to its size at that time. Both Nanjing and Xi'an grew rapidly in early historical periods because they were once centres of imperial administration and culture. Beijing (Peking) had been the world's largest city until 1750 and dropped only to 12th place in 1900 (Chandler and Fox, 1974) due to its position as the imperial capital for two Chinese dynasties from the mid-1600s to the early 20th century. Shanghai did not pass Beijing in population until 1937, even though it became China's top trading centre in the late 19th century.

The long-established city distribution pattern continued into the 1980s. Table 2 shows three measures of how China's largest cities were distributed along demographic, industrial and infrastructural dimensions for the period 1981-89.

China's city distribution was remarkably stable, as indicated by both the four-city and 11-city indexes. When the four-city index was less than half of unity, the absence of one-city dominance was obvious; so was the persistence of a convex urban system at the national level. The 11-city index reflects a more striking convex distribution, since the index value deviated even further from rank size, suggesting the presence of at least 10 large cities below Shanghai. Excluding the agricultural population residing in the cities raises both indexes slightly,¹² but does not alter their stability.

Urban population is used as the main measure of primacy. But the population index does not reflect the discrepancy or mismatch between population size and urban functions that may exist (Smith,

Table 2. Demographic, industrial and infrastructural primacy in China, 1981–89

Year	Four-city index ^a			11-city index ^b		
	Population ^c	GIOV ^d	RCSU ^e	Population	GIOV	RCSU
1981	0.43 (0.53)	1.13	0.54	0.19 (0.24)	0.60	0.18
1982	0.42 (0.53)	0.96	0.63	0.19 (0.24)	0.49	0.35
1983	0.43 (0.53)	0.91	0.42	0.19 (0.24)	0.46	0.15
1984	0.45 (0.55)	0.88	0.45	0.20 (0.25)	0.45	0.16
1985	0.45 (0.55)	0.91	0.45	0.20 (0.25)	0.46	0.16
1986	0.45 (0.55)	0.91	—	0.20 (0.25)	0.46	—
1987	0.43 (0.54)	0.84	0.40	0.21 (0.24)	0.43	0.14
1988	0.43 (0.54)	—	—	0.20 (0.24)	—	—
1989	0.45 (0.54)	—	—	0.20 (0.25)	—	—

^aShanghai (1), Beijing (2), Tianjin (3) and Shenyang (4) in rank order.

^bShanghai (1), Beijing (2), Tianjin (3), Shenyang (4), Wuhan (5), Guangzhou (Canton) (6), Chongqing (7), Harbin (8), Chengdu (9), Xi'an (10), and Nanjing (11) in rank order. Excluding the agricultural population changes the order slightly. In 1984, for example, Chongqing and Harbin switched places; Nanjing was the ninth largest city, whereas Chengdu dropped to the 11th spot.

^cThe figures in parentheses exclude the agricultural population residing in the cities' urban districts.

^dGross industrial output value.

^eNumber of retail, catering and service units.

Source: Computed from SSB (1981, 1983, 1984, 1985a, 1986, 1987, 1988, 1989, 1990).

1985a). In addition to population, urban primacy or lack of it can be indexed by measuring industrial and commercial functions. The data in Table 2 distinguish between population distribution and the extent of industrial and commercial dominance of the largest city. The trends of industrial and commercial functions differ considerably from those of population. Shanghai was slightly primate in terms of industrial strength in 1981, as both index values exceeded 1 and 0.50, respectively. In 1982 both indexes dropped just below rank size and then fluctuated slightly. They were indicative of a process by which the combined industrial output of the cities below Shanghai increased or decreased more quickly than that of the largest city. Despite these different growth rates, Shanghai's industrial capacity was close to the level expected of the largest-city population in the 1980s. However, Shanghai's initial dominance gradually waned. By contrast, Shanghai had less commercial infrastructure than expected for its size. Both indexes of the number of commercial

establishments fluctuated, reflecting the rise and fall in the share of Shanghai's commercial functions relative to other large cities.

To further illustrate the trend of China's urban rank in the 1980s, it is useful to examine specifically how China's top two cities—Shanghai and Beijing—measured up against their expected sizes and functions. In 1981 Shanghai was 51 per cent smaller than predicted by the rank-size rule, whereas Beijing's population was 85 per cent of its expected size. Although Shanghai's population stayed at almost half of its expected size up to 1987, Beijing's actual population rose to 92 per cent of the size it would have reached, had the urban system been log-normal. Shanghai's industrial output exceeded the expected level by 13 per cent in 1981, but declined to 94 per cent of the expected level in 1984 and to 88 per cent in 1987. Beijing's share of industrial output, compared with what was predicted by rank size, grew from 85 per cent in 1981 to 88 per cent in 1984 and dropped back to 85

per cent in 1987. Shanghai's actual share of its expected commercial functions declined continuously from 45 per cent in 1981 to 41 per cent in 1984 and then to 36 per cent in 1987. Beijing had 73 per cent of the expected number of commercial establishments in 1981 and only 45 per cent in 1984, before regaining some at 55 per cent in 1987 (calculated from SSB, 1985a, 1988).

These data suggest three observations. First, there was a continued absence of urban primacy measured by population. Second, the distribution of China's largest cities indexed by industrial strength evolved from slight primacy through the rank size to marginally non-primate. Third, the rank distribution of infrastructure was non-primate in China's largest cities, and most unstable in the 1980s. In general, there is a lack of a fully integrated urban and economic system at the national level.

(b) Regional Variation in China's City Systems

The above examination of China's national urban system raises the obvious question of whether and how urban primacy is reflected in the country's city subsystems. Regional and local analysis of city distributions requires proper specification of the subsets of cities. The criteria for doing so vary considerably from country to country due to such factors as size, ecological conditions, economic structure and administrative system. In studying regional city systems in 19th century China, Skinner (1977) uses an ecological criterion, major watersheds, to group cases. Here, regional and local classification of cities primarily employs China's spatial policies before and during the 1980s.

From the 1950s to the 1970s, China's urban policy was intended to promote regional equality and to create a more balanced urban structure by slowing the growth of large cities on the coast, developing medium-sized and small cities in the

interior, and extending investments and transportation into the interior (see Figure 1) (Pannell and Ma, 1983; Goldstein, 1985).¹³ The 1980s have witnessed a series of new policies for gradually shifting the development focus to the coastal cities and areas. In 1980 China established SEZs in four south-eastern and southern coastal cities (hereafter SEZ Cities) to attract foreign investments and technology. In 1984 China designated 14 cities on its eastern seaboard as 'Open Coastal Cities' for similar purposes. In 1985 China opened three large triangular coastal areas as foreign investment and economic development zones. In 1988 China extended the outward-oriented economic strategy to the entire 2500 mile long coastal belt, covering 284 cities and counties, about one-fifth of the national population and 3.3 per cent of the land mass.

The emphasis on coastal development has moved the issue of spatial inequality between inland and coastal cities and across regional sets of cities to the forefront. To evaluate inequality requires data on cities of different sizes, locations and features. These data have recently become available in SSB (1985a, b; 1988), which contain social and economic indicators for a large number of cities. The 33 cities recorded in SSB (1985a) are used as a 'convenient' and baseline sample for analysing change from 1984 to 1987, for which data are available in SSB (1988).¹⁴ Although not based on a large and random sample, the 33-city data have several advantages. First, they include the four SEZ Cities, the 14 Open Coastal Cities and 15 major inland cities. Second, they include cities from all five size categories (eight super cities, 11 huge cities, two large cities, nine medium-sized cities, and three small cities). Third, the sample encompasses cities from all China's administrative regions and levels, except for the county-level cities (see Appendix Table A1). Fourth, the 33 cities are the country's key industrial cities, as they accounted for 35.4 per cent of the national gross industrial

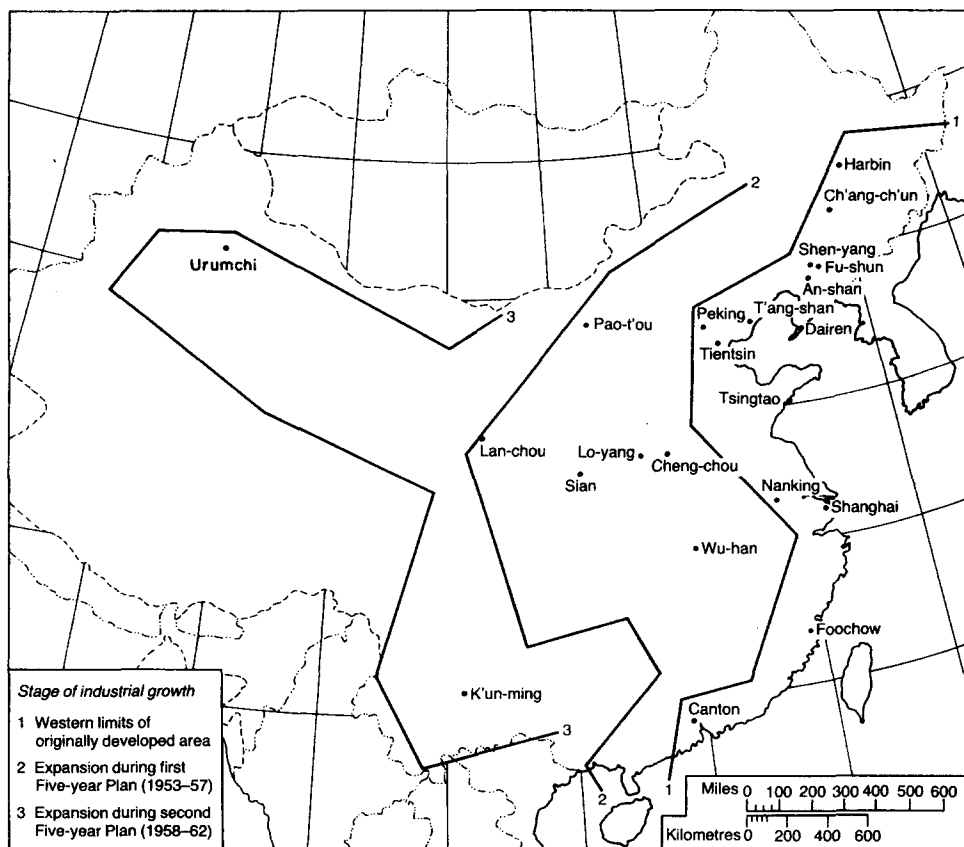


Figure 1. Regional stages of industrial development, 1973.

output while having only 6.4 per cent of the total population in 1984 (SSB, 1985a).

The analysis begins with an examination of the three primacy indexes (see Table 3). Neither the inland cities nor the coastal sites showed population primacy. In both the four-city and 11-city indexes, the inland cities deviated further than the coastal sites from rank size in convex form. Slight increases in both index values suggest that Beijing (the top-ranking of the inland cities) grew in size more rapidly than lower-ranked cities between 1984 and 1987. In contrast, both indexes for coastal cities in 1987 decreased slightly from 1984, reflecting greater expansion of a number of coastal cities relative to Shanghai. In terms of industrial and commercial functions, the inland cities had a

different pattern of rank distribution than the coastal cities. While Beijing was not dominant in industrial output in 1984 and 1987, the largest coastal city—Shanghai—dominated the cities below in both years. However, Shanghai inched downward toward a rank-size distribution. The inland cities had a more striking degree of non-primacy than the coastal cities in the number of commercial establishments. Like the population measure, the indexes for the inland and coastal cities moved in opposite directions. Beijing gained some ground over lower-ranked cities in commercial functions between 1984 and 1987, whereas Shanghai lost a little more infrastructure than expected for its size relative to other coastal cities.

Table 3 also presents the four-city index

Table 3. Demographic, industrial and infrastructural dominance of 33 cities, by location and macroregion, 1984 and 1987^a

Location or macroregion	1984						1987												
	Population			GIOV ^b			RCSU ^c			Population			GIOV			RCSU			
	Four-city index	11-city index	Four-city index	11-city index	Four-city index	11-city index	Four-city index	11-city index	Four-city index	11-city index	Four-city index	11-city index	Four-city index	11-city index	Four-city index	11-city index	Four-city index	11-city index	
Inland cities (N=15)	0.56	0.23	0.78	0.34	0.28	0.11	0.62	0.25	0.72	0.31	0.37	0.13							
Coastal cities (N=18)	0.68	0.43	1.29	0.92	0.47	0.30	0.64	0.40	1.16	0.78	0.45	0.26							
North (N=4)	0.76	—	0.87	—	0.45	—	0.84	—	0.85	—	0.64	—							
North-east (N=6)	0.69	—	0.70	—	0.71	—	0.63	—	0.65	—	0.64	—							
East (N=11)	1.42	0.75	2.71	1.60	1.09	0.54	1.24	0.66	2.28	1.28	0.84	0.40							
Central-South ^d (N=7)	0.69	—	0.96	—	0.48	—	0.69	—	0.79	—	0.34	—							
South-west and North-west ^e (N=5)	0.43	—	0.45	—	0.33	—	0.43	—	0.47	—	0.32	—							

^aSee Appendix Table A1 for the name and location of each city.

^bGross industrial output value.

^cNumber of retail, catering and service units.

^dSeparating Central from South (i.e. with Guangzhou (Canton) instead of Wuhan as the first city) yields indexes of 1.75, 3.84 and 2.01 for 1984 and 1.67, 2.03 and 1.87 for 1987.

^eThe South-west (N=3) and North-west (N=2) regions are combined for both computing and substantive reasons. Source: Computed from SSB (1985a, 1988).

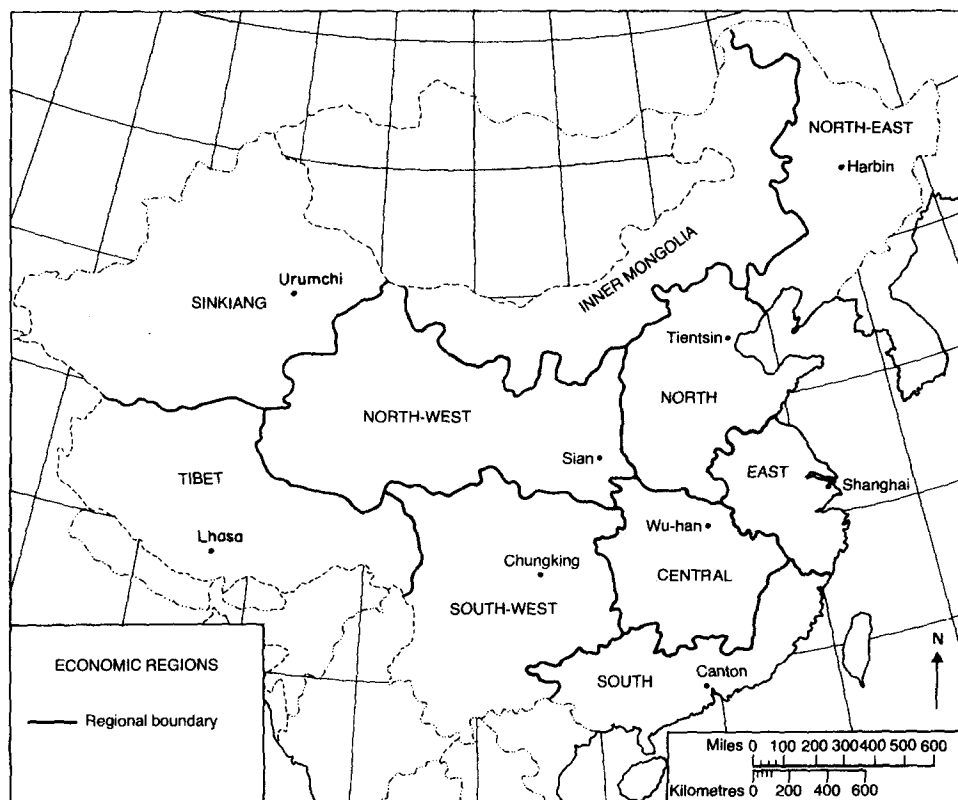


Figure 2. Administrative and regional divisions, 1973.

of the three measures for the 33 cities grouped in five major regions (for the East the 11-city index is also computable). These are distinctive regions (see Figures 2 and 3), and their primacy index values are also distinctive. Beijing is non-primate over the other three cities in the North, but grew faster in population and commercial establishments and lagged slightly behind in industrial output. Smaller than expected by the rank-size rule, Shenyang—the largest city in the North-east—grew less rapidly in population, industrial output and commercial functions than the next three cities combined. The East is the only region with a primate city, Shanghai. By both the four-city and 11-city indexes for 1984, Shanghai exceeded expected size on all three measures, especially industrial output. Shanghai's primacy in population and industrial output moderated slightly in 1987, while its limited primacy in commercial functions

fell below rank size. In the Central-South region the non-primate population distribution of the cities remained unchanged in 1984 and 1987. Wuhan—the largest city in the region—was outpaced by the next three cities in industrial and commercial functions. Isolating the South shows that Guangzhou (Canton) stayed dominant over a few very small cities on all three measures in the period 1984–87. To obtain enough cases for computing the four-city index, the five cities in two regions of the South-west and North-west (which are conventionally regarded as China's Western region) are combined (see Figures 2 and 3). For this broader region, the non-primate pattern was most stable between 1984 and 1987, with only slight variation on the industrial and infrastructural indexes.

The regional analysis reveals that other than Shanghai, which had some demographic and industrial dominance over the

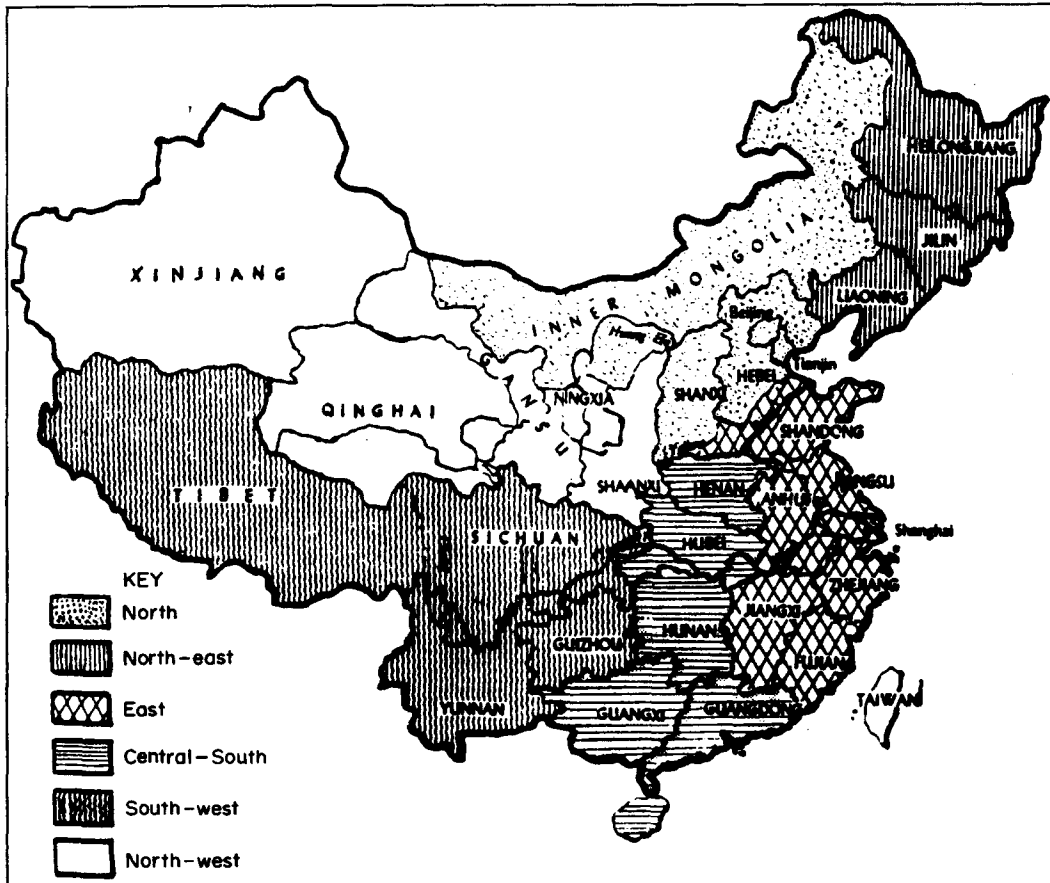


Figure 3. Administrative and regional divisions, 1982.

cities in the East, China's city subsystems in the 1980s, either in coastal/inland terms or in the five macroregions, remained distinctively non-primate and relatively stable. There are disparities between population size, industrial strength and commercial infrastructure. Several factors may account for these patterns. First, the absence of national primacy and the lack of it at the regional level today can be traced to the historical pattern of city distribution due to incomplete colonial dominance and regional commercial development. Second, although China's open economic policy of the 1980s has exposed the coastal cities more intimately to the international economy, foreign investments and export-oriented production at the local level have grown rapidly in a large number of coastal

cities (instead of being confined to one of them) and many inland cities. This prevents the sort of primacy depicted by the export dependency theory from occurring in China. Third, the rural bias theory has little to say about the Chinese experience. Agricultural reform from the late 1970s, combined with continued official control over migration, pre-empted the formal and permanent migration of a large number of peasants to major cities, although many have entered the cities and become the so-called 'floating' population.¹⁵ Given the coastal orientation of China's open economic policy in the 1980s, it is reasonable to expect that the most striking regional variation manifests itself in socioeconomic discrepancies between the coastal and inland cities.

4. Coastal Bias and Spatial Equality

Development of China's spatial economy has been greatly influenced by historical events and current conditions. In the second half of the 19th century the major Western countries pressured China to open its port cities and this led to faster and more concentrated commercial and manufacturing development in the coastal cities and areas. After the Communist Revolution of 1949, China began to commit resources to developing cities and regions in the interior. Intended to narrow the regional gap, this spatial policy exemplified a socialist development goal to ensure balanced and equitable growth across regions. From the early 1980s, with the establishment of the SEZ Cities and later designation of the Open Coastal Cities, China gradually shifted the development priority to its coastal areas.

Three rationales for adopting a coast-oriented development strategy can be identified. First, the coastal areas are endowed with a stronger industrial base, a more comprehensive infrastructure and a better educated and more skilled labour force than the inland areas. Second, the coastal cities are better positioned physically to benefit from overseas capital investment (especially in labour-intensive manufacturing) that has moved China's way because of its huge market and the growing labour costs in the rapidly industrialising economies of South Korea, Taiwan and Hong Kong. Third, the intensifying competition between coastal and inland areas for domestic materials and markets due to extensive decentralisation of economic decision-making to the local level places pressure on coastal areas to utilise foreign resources and explore the international market. These rationales suggest a targeted spatial development strategy that encourages the more advanced coastal cities and areas to grow quickly in order to stimulate backward interior regions through an east-to-west transfer of resources, technology and wealth.

The data on the 33 cities provide a means of examining whether and how comparative structural and locational advantages are associated with the pattern of foreign investment and economic development. These cities vary in size, quality of infrastructure, investment incentives and physical access to foreign investors. Do these factors make either the coastal or the inland cities more attractive environments for foreign investment? The analysis begins with this question.

(a) Local Environment and Overseas Investment

Neoclassical economics and industrial location theories would suggest that investors tend to locate where favourable conditions such as better infrastructure, stronger incentives and closer integration with the world economy exist. First, since the SEZ Cities and Open Coastal Cities possess more of these conditions, they may be expected to attract more foreign investment than the inland cities. Second, given that the policy of favouring the Open Coastal Cities began in 1984, the data are expected to show a widening gap in population growth, development of infrastructure and attraction of overseas investment between the Open Coastal Cities and inland cities from 1984 to 1987.

The average population of the 33 Chinese cities grew by 9.9 per cent in three years to over 2m in 1987 (Table 4). The inland cities were larger than the Open Coastal Cities, which had more population than the SEZ Cities on average. While the inland cities and Open Coastal Cities and SEZ Cities grew at a similar rate, Shenzhen—the most prominent of the SEZ Cities bordering on Hong Kong—exploded through absorbing massive immigration from China's interior (Chen, 1987).¹⁶ The Open Coastal Cities were the most densely populated, followed by the inland cities and SEZ Cities. While both the inland cities and Open Coastal Cities experienced a drop in density, the SEZ Cities, espe-

Table 4. Demographic and infrastructure indicators for 33 Chinese cities, 1984 and 1987 (percentage changes in parentheses)

Indicator	Year	Total sample (N=33)	SEZ Cities				
			Inland cities (N=15)	Open Coastal Cities (N=14)	Shenzhen	Others (N=3)	Total (N=4)
<i>Demographic</i>							
(1) Population ($\times 1000$)	1984 1987	1852 2036 (9.9)	2394 2634 (10.0)	1684 1848 (9.7)	191 287 (50.3)	474 517 (9.1)	404 455 (12.6)
(1a) Density (persons/km ²)	1984 1987	2240 2117 (-5.5)	1736 1628 (-6.2)	3088 2863 (-7.3)	584 875 (49.8)	1359 1498 (10.2)	1165 1342 (15.2)
<i>Educational</i>							
(2) College students/ 10 000 population	1984 1987	112 ^a 143 ^a (27.7)	140 183 (30.7)	87 ^b 99 ^b (13.8)	36 151 (319.4)	85 ^c 127 ^c (49.4)	69 ^d 135 ^d (95.7)
(2a) Vocational school students/10 000 population	1984 1987	38 60 (57.9)	39 59 (51.3)	35 58 (65.7)	49 104 (112.2)	38 62 (63.2)	41 72 (75.6)
<i>Health</i>							
(3) Doctors/10 000 population	1984 1987	44 44 (0.0)	47 49 (4.3)	42 41 (-2.4)	66 69 (4.5)	26 30 (15.4)	36 40 (11.1)
(3a) Hospital beds/10 000 population	1984 1987	52 56 (7.7)	58 63 (8.6)	48 54 (12.5)	64 53 (-17.2)	37 28 (35.7)	42 42 (13.5)
<i>Commercial service</i>							
(4) Retail units/10 000 population	1984 1987	73 105 (43.8)	59 82 (39.0)	71 104 (46.5)	143 163 (14.0)	127 202 (59.1)	131 192 (46.6)
(4a) Service units/10 000 population	1984 1987	19 23 (21.1)	18 21 (16.7)	20 23 (15.0)	20 32 (60.0)	18 33 (83.3)	18 33 (83.3)
<i>Telephone and housing</i>							
(5) Telephones/100 population	1984 1987	2.2 3.8 (72.7)	2.4 3.2 (33.3)	2.0 3.1 (45.0)	4.5 17.9 (297.8)	1.5 4.9 (226.7)	2.3 8.2 (256.5)
(5a) Living space per capita (m ²)	1984 1987	5.4 6.2 (14.8)	4.9 5.8 (18.4)	5.3 6.1 (15.1)	11.8 11.3 (-4.2)	6.8 7.6 (-7.4)	8.1 7.6 (-6.2)

^aN=31; ^bN=13; ^cN=2; ^dN=3.

Source: Computed from SSB (1985a, b, 1988).

cially Shenzhen, became more crowded over time.

The inland cities were most advanced in higher and vocational education ((2) and (2a)). Although the inland cities doubled the growth of college students relative to the population in the Open Coastal Cities, they trailed in the expansion of vocational education. The SEZ Cities experienced most rapid growth in college enrolment on a population basis and obtained the highest ratio of vocational students to population in 1987. Generally, the inland cities had more doctors and hospital beds on a population basis than both the Open Coastal Cities and SEZ Cities, except Shenzhen. While the ratio of doctors to population increased slightly in the inland cities and SEZ Cities, all cities except Shenzhen (whose hospital bed/population ratio declined sharply) added a large number of hospital beds relative to their populations.

The commercial and service functions in the SEZ Cities were most developed, followed by the Open Coastal Cities and inland cities. A measure of communication capacity, the ratio of telephones to population in Chinese cities, was very unfavourable compared with the major cities of many countries (Chen, 1990). Leading the pace of growth, the SEZ Cities had the largest number of telephones relative to their population by 1987. The inland cities and Open Coastal Cities had almost identical amounts of living space in per capita terms. Despite a decline in per capita living space, the SEZ Cities had the most spacious residential quarters in 1987.

In addition to these measures of infrastructure, there are other criteria for gauging comparative advantages. The SEZ Cities offer an Enterprise Income Tax (EIT) of 15 per cent compared with 33 per cent in other cities.¹⁷ They could initiate investment projects of up to \$50m (US dollars, 1984 price) without central government approval. By the end of 1984, the upper limits were \$30m for other cities in Guangdong and Fujian Provinces and

Shanghai and Tianjin (Open Coastal Cities), \$10m for Guangzhou (Canton), Dalian (Open Coastal Cities) and Beijing (inland city), and \$5m or less for other smaller provinces and cities (*China Business Review*, 1986). The SEZ Cities are also favoured by their closer proximity to Hong Kong, Macao and Taiwan—major sources of direct and indirect (in the case of Taiwan) overseas Chinese investments (see Silk, 1988).

Table 5 presents the locational distribution of foreign (including overseas Chinese) investments across the total sample and three subsets of cities. Since the data pertain to a larger urban unit (the cities plus their suburban counties) and are cumulative up to 1984 and yearly for 1987, the comparison is confined to showing the differentials between the three subsets of cities up to 1984 and in 1987, rather than charting change between 1984 and 1987. The SEZ Cities signed a much larger number of agreements with foreign investors than the Open Coastal Cities, which attracted more such agreements than the inland cities. In 1987 the SEZ Cities lost some ground relative to the other cities in signing foreign investment agreements, whereas the Open Coastal Cities further outdistanced the inland cities in entering agreements with overseas investors. Up to 1984, the Open Coastal Cities ranked higher than the inland cities in capitalisation per agreement (1a). In 1987 the inland cities secured more capitalised agreements on average. Per capita foreign investment in the SEZ Cities was much larger due to smaller populations. Up to 1984, the Open Coastal Cities' per capita foreign investment was 5 times that of the inland cities. This differential was reduced to 2.3 times in 1987.

(b) Locational Variation in Development Outcomes

If there is a variation in infrastructure and foreign investment across these cities during 1984–87, we would expect to find

Table 5. Geographic distribution of foreign investments in 33 Chinese cities, 1984 and 1987^a

Indicator	Year	Total sample (N=33)	SEZ Cities					Total (N=4)
			Inland cities (N=15)	Coastal Cities (N=14)	Shenzhen	Others (N=3)	Others (N=3)	
(1) Average number of agreements for utilising foreign investment	1984	154	33	52	3 495	120	964	
	1987	39	14	38	323	72	135	
(1a) Capital/agreement (\$10 000)	1984	144	192	311	66	376	299	
	1987	266	363	205	200	90	118	
(1b) Foreign investment per capita (\$)	1984	726	18	89	12 045	1 278	5 614	
	1987	115	19	44	2 247	210	719	
(2) Total number of joint ventures ^b	1984	665	75	151	321	39	439	
	1987	NA	NA	NA	NA	NA	NA	
(2a) Capital/firm (\$10 000)	1984	238	644	479	100	287	84	
	1987	NA	NA	NA	NA	NA	NA	
(3) Total number of co-operative business ventures ^c	1984	914	20	257	423	71	637	
	1987	NA	NA	NA	NA	NA	NA	
(3a) Capital/firm (\$10 000)	1984	459	234	462	358	680	465	
	1987	NA	NA	NA	NA	NA	NA	

^aData are cumulative up to 1984 and therefore are not comparable with the annual data for 1987. The data refer to the cities plus the counties under their jurisdiction.

^bA joint venture must be set up inside China as an economic entity enjoying the status of a legal person, with Chinese and foreign investors as shareholders. In a joint venture, whatever the forms of investment, the shares contributed by the shareholders must be counted in terms of money, and the risks and profits are shared according to the ratio of capital contributions.

^cA co-operative business venture is sometimes called a contractual joint undertaking. It differs from a joint venture in the following respects: (1) a co-operative business venture does not have to be an economic entity set up inside China as a legal person, and the Chinese and foreign investors can co-operate with each other as separate legal persons; and (2) in a co-operative venture, the shares of participants need not be counted in monetary terms, and risks and profits need not be shared on the basis of capital contributions. The forms and amounts of investment, the rights and obligations of the parties concerned are all specified in the contract (Chu, 1986, pp. 20-21).

NA, Not available.
Source: As Table 4.

Table 6. Industrial output, average wage and resident savings^a in 33 Chinese cities, 1984 and 1987 (percentage changes in parentheses)

Indicator	Year	SEZ Cities					
		Total sample (N=33)	Inland cities (N=15)	Open Coastal Cities (N=14)	Shenzhen	Others (N=3)	Total (N=4)
(1) Gross industrial output per capita (\$)	1984	1178	1132	1230	2568	707	1172
	1987	1618 (37.4)	1393 (23.1)	1588 (29.1)	5796 (125.7)	1488 (110.5)	2565 (118.9)
(1a) Heavy industrial output per capita (\$)	1984	571	722	501	558	151	253
	1987	745 (30.5)	872 (20.8)	653 (30.3)	1214 (117.6)	390 (158.3)	596 (135.6)
(1b) Light industrial output per capita (\$)	1984	607	410	728	2007	555	919
	1987	840 (38.4)	449 (9.5)	936 (28.6)	4382 (128.3)	1098 (97.8)	1969 (114.3)
(2) Average monthly wage (\$)	1984	29.7	28.4	28.3	55.4	33.0	38.6
	1987	43.6 (46.8)	39.8 (40.1)	44.1 (55.8)	77.7 (40.3)	50.9 (54.2)	57.6 (49.2)
(3) Resident savings per capita (\$)	1984	148	130	171	599	404	489
	1987	349 (135.8)	268 (106.2)	329 (92.4)	1469 (145.2)	474 (17.3)	723 (47.9)

^aConverted to US dollars based on the 1984 exchange rate of \$1 = 3 Chinese yuan.

Source: As Table 4.

varied economic development across space as well. The extent of that variation can be measured in industrial output, wage level and per capita savings.

As Table 6 indicates, the inland cities, the Open Coastal Cities and SEZ Cities shared similar per capita gross industrial output in 1984, with Shenzhen boosting the average of the SEZ Cities. The inland cities were oriented more toward heavy industries, whereas the Open Coastal Cities and SEZ Cities, especially the latter, had a larger share of light industries ((1a) and (1b)). During 1984–87, the SEZ Cities more than doubled their industrial output on all three measures, industrialising much more rapidly than both the inland cities and the Open Coastal Cities, in spite of the controversy about their development strategy in 1985 (Harding, 1987, pp. 168–169). In the wake of a more favourable policy, the Open Coastal Cities grew more rapidly than the inland cities, especially in light industrial output.

The data show a spatial wage hierarchy in which the SEZ Cities had the highest wage, the Open Coastal Cities ranked in the middle and the inland cities were at the bottom.¹⁸ The average wage in the Open Coastal Cities increased most rapidly during 1984–87, creating a gap between themselves and the inland cities. This may reflect the fact that there were more coastal cities than inland cities in higher wage zones. Nevertheless, given the generally low and flat wage scale in China, the 11 per cent differential in monthly wage between the two groups of cities in 1987 may imply major disparities in the standard of living. The discrepancy in per capita resident savings was in the same rank order across the three sets of cities. However, the typical resident in the inland cities increased his or her savings more rapidly than the average person in the other cities (with the exception of Shenzhen) during 1984–87, narrowing the gap between them.

Comparing the three groups of cities reveals local variation in infrastructure, foreign investment, industrial output and

wage level in 1984, when the SEZ Cities were only four years old and the Open Coastal Cities had just been designated. At that point, there was a limited gap between the inland cities, the Open Coastal Cities and the SEZ Cities in per capita gross industrial output (ranging from 3.5 per cent to 8.7 per cent); the average wages in the inland cities and Open Coastal Cities were identical. But the deepening of the coastal development strategy led to uneven growth of the inland and coastal cities, enlarging the discrepancies. Both sets of coastal cities (the SEZ Cities and Open Coastal Cities) experienced faster growth than the inland cities, with respect to almost all indicators. The inland cities' average population grew by 3.2 per cent annually during 1984–87, whereas on average the Open Coastal Cities and SEZ Cities expanded at annual rates of 4.1 per cent and 7.0 per cent, respectively, the pooled group mean of the 18 coastal cities being 4.7 per cent. In 1987 the Open Coastal Cities established a total of 365 firms involving foreign capital (averaging 26 per city). The four SEZ Cities set up 434 such firms (averaging 109 in each city). By contrast, the inland cities added only 166 foreign-participating firms, averaging 11 in each city. But the average capitalisation of each firm was, in descending order, inland cities (\$5.13m), Open Coastal Cities (\$2.19m) and SEZ Cities (\$1.48m). This was consistent with the 1984 pattern (see Table 5). The inland cities' gross industrial output value grew by 35.9 per cent between 1984 and 1987, low growth in comparison to that of the Open Coastal Cities (55.7 per cent), the SEZ Cities (162.0 per cent) and their joint average of 79.3 per cent. The number of commercial establishments in the inland cities expanded by 49.2 per cent, trailing behind the Open Coastal Cities' 61.8 per cent and the SEZ Cities' 76.5 per cent (SSB, 1985b, 1988).

Besides the differentials in the growth of the inland and coastal cities, cities located in specific interior and coastal regions can be contrasted. The top five cities in the East

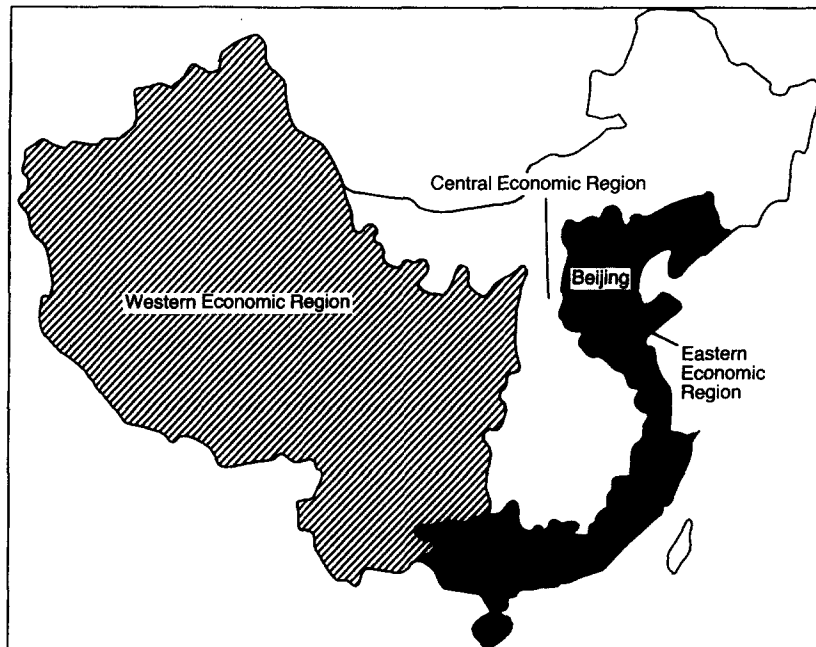


Figure 4. Broad economic regions, 1986.

(the core section of the coastal area) grew by 4.8 per cent annually in population, 9.8 per cent in industrial output and 80.9 per cent in commercial establishments between 1984 and 1987. In the same period, the five largest cities in the combined regions of the South-west and North-west (no cities from Xinjiang, Qinghai, Ningxia and Tibet were included) grew by only 1.9 per cent annually in population, 9.9 per cent in industrial output and 42.7 per cent in commercial functions (see Figures 2 and 3). Except for industrial output, the growth of the cities in the East exceeded that of the interior cities. This mirrors a more general pattern of regional city growth. During the period 1984–87, the number of cities in the Eastern Economic Region (consisting of eight coastal provinces and the three central government municipalities) grew by 39.5 per cent, more than the 24.6 per cent for cities in China's two broad inland economic regions (Figure 4) (SSB, 1985a, 1988).¹⁹ In the first six months of 1989, the Eastern Economic Region absorbed as much as 85 per cent of the total foreign investment in equipment and goods, 14 per

cent of which was claimed by the four SEZ Cities alone; by contrast, only 15 per cent of the overall investment went to China's Central and Western Economic Regions (*Renmin Ribao*, 1989d).

5. Conclusions

This paper has examined changes in China's national and regional urban systems in the 1980s. Nationally, the city hierarchy has been marked by accelerating urbanisation. Both the proportion of urban population and the number of cities more than doubled in the 1980s. Cities of the three largest categories as a proportion of all cities shrank from 23 per cent in 1949 to 20 per cent in 1981 and then to 13 per cent in 1988. Faster growth of the medium-sized and small cities helped balance the city hierarchy further. In addition to the rapid expansion of cities, the speedy and extensive development of towns was a driving force behind urbanisation. It is projected that half of China's population will live in cities and towns by the year 2000 (Banister, 1986), a proportion already realised in 1989

according to official definitions. By the year 2000, China is also expected to have between 540 and 600 cities and between 15 000 and 20 000 towns (Liu, 1987). Although the frequently changed definition of urban places remains ambiguous and inconsistent, the 1980s are a watershed of rapid urbanisation and city growth.

The changing urban system in the 1980s did not alter the established rank distribution of China's largest cities. The absence of population primacy persisted through 1989. Moving beyond the conventional measure of urban primacy in population size, this study has found disparities between the population, industrial development and infrastructure of China's top cities. Their approximate rank-size distribution edged gradually toward a convex form, suggesting that the cities ranked from two to 11 closed the gap in industrial output between them and Shanghai. By either a four-city or 11-city index, China's largest cities did not have a log-normally distributed and stable pattern of infra-structure measured in commercial establishments. China's city subsystems have been examined on two regional levels and at two points in time (1984 and 1987). Not only were there major differences between the inland and coastal cities with regard to measures of demographic, industrial and infrastructural primacy, but there was much variation across the five administrative regions. Between 1984 and 1987, limited industrial dominance by Shanghai over the coastal cities was observed, and so was its primacy relative to other cities in the East.

A coastal/inland categorisation is meaningful for analysing variation in spatial development, given the links between China's urban policy and open economic strategy in the 1980s. Although the 33 cities are not selected randomly, they include all the cities that have been selected by the government for coast-oriented development. The data show that the initial gap between the inland and the Open Coastal Cities and SEZ Cities in 1984 widened over time. With the combined advantages of

favourable location, stronger industrial bases and closer integration with the world economy, the coastal cities, especially the SEZ Cities, appear to be developing much more rapidly than the inland cities. Limited as they are by a small and non-representative sample of 33 cities, the main analytical findings in this study may not be generalised to the populations of inland and coastal cities in China. However, the scenario of growing inequality between sets of cities seriously challenges the once held and practised socialist principle of spatial equality in socioeconomic development. The strategy of favouring the SEZ Cities and Open Coastal Cities suggests that China may be toying with or even embracing the model of growth-pole and trickle-down development by encouraging the favoured coastal cities to facilitate integration of the domestic economy by diffusing resources and growth benefits to inland cities and regions.

China's new spatial development strategy has spurred increasing interaction between the coastal and inland cities, primarily through joint ventures. By 1985, the largest SEZ City (Shenzhen) had set up 442 industrial and commercial projects worth \$417m in capital, with 24 central ministries and agencies (based in Beijing) and 25 provinces and autonomous regions. By the end of 1986, the Open Coastal City of Dalian had signed over 1600 agreements of economic and technological co-operation with interior cities and regions (Chen, 1988b). Does the closer relationship between the coastal and inland cities create the diffusion of development benefits from the former to the latter? By participating in joint ventures in the coastal cities, the firms from the inland cities are supposed to benefit through: (1) acquiring direct access to concentrated foreign capital and technology; (2) having a better chance to export and earn foreign exchange; and (3) exposing their workforce and technicians to more advanced training and management experience (Chen, 1988b). But recent reports (e.g. Lei, 1989) suggest that interior

cities and areas end up losing more to the coastal cities and regions, which enjoy more favourable policies and absorb already scarce financial resources and technical personnel from the interior. At the same time, the rapid growth of processing industries in the interior has reduced the amount of raw materials going east, contributing to increased prices of the products manufactured by the coastal industries.

The type of interaction between the inland and coastal cities differs from the classical model of general diffusion (Rogers, 1983) and its spatial manifestation. In terms of 'senders' and 'receivers' of innovations, the coastal cities have not demonstrated a capacity for beaming development impulses to the receiving interior cities. Instead, the existing relationship seems to be one of competition and contention. While the conventional growth-pole approach aims to promote spatial equity by favouring urban centres in underdeveloped regions (Smith, 1985b), China appears to be encouraging the emergence of growth poles in the more developed coastal regions. Richardson (1978, 1987) advocates the correction of weaknesses of the growth-pole strategy such as capital concentration and weak spatial diffusion by integrating national urban policy, rural development and macro-economic planning. China has been pursuing a decentralised economic policy at the regional or local level. This could lead to the increasing stratification of localities. In China's recent spatial development, early differences in size, industrial strength and locational advantages have been reinforced by recent policies that favour some over others. Unbalanced opportunities to obtain foreign investment and resources are accompanied by uneven economic and social development.

China's new (and perhaps experimental) model of spatial development tests the potential advantages and pitfalls of targeted and diffusion-oriented urban development. It offers lessons to developing societies undergoing rapid urbanisation,

just as might have been learned from the Maoist model of balanced urban development. Evaluating the long-term influence of China's recent spatial development strategy requires studies that will use improved and time series data on cities to look beyond the pattern of the 1980s.

Notes

1. Some Chinese scholars classified China's cities into large cities (>500 000), medium-sized cities (200 000–500 000) and small cities (<200 000) (cited in Pannell, 1984, p. 197). The huge-city grade was added subsequently by the SSB in compiling *China Urban Statistics 1985* (SSB, 1985b). The size of a city is determined according to the population in its urban districts, which consist of the main city and suburbs, but excludes the counties under the jurisdiction of each city (SSB, 1985a). If the agricultural population in the city's urban districts was included, the distribution of city-size categories would be different. There would be 13 cities in the super-city category instead of eight in 1985, for example.
2. In 1985 Zhengzhou (Henan Province) and Hangzhou (Jiangsu Province) entered the huge-city category. By 1987, Changsha (Hunan Province), Nanchang (capital of Jiangxi Province) and Qiqihar (Heilongjiang Province) had also moved into the huge-city category.
3. Of the new cities approved by the State Council in 1986, Renqiu in Hebei Province and Yizheng in Jiangsu Province became cities for their key national engineering projects. Zhangjiagang in Jiangsu Province was given city status because of its favourable port facilities for foreign trade. Qufu in Shandong Province acquired city status for being the home of Confucius and becoming increasingly attractive to tourists (*Renmin Ribao*, 1987).
4. The Stipulation of the Standards for Differentiating Urban and Rural Areas was approved on 7 November 1955 by the 20th Meeting of the Plenary Session of the State Council. This document defined a place as urban if: (1) it had a municipal people's committee or was the seat for a people's committee at the *Xian* (county) level or above; (2) it was a residential area with a permanent population of 2000 or more, of whom at least 50 per cent were non-

- agricultural; or (3) it was a site or employee residential zone for industrial and mining enterprises, railway stations, commercial centres, transportation hubs, schools of middle level and above or scientific research units with between 1000 and 2000 permanent residents, of whom at least 75 per cent were non-agricultural. Areas beyond the three types of towns were designated as *Cun* (village). All residential areas contiguous to the city district were classified as *Chengzhenqu* (town district), regardless of their shares of agricultural population, with the city's immediate suburbs bounded by its municipal people's committee (Ministry of Public Security, 1985, p. 100).
5. These percentages refer to the cities' and towns' non-agricultural population who had the status of permanent residents and were authorised to receive government-supplied grain rations (Banister, 1986). They accounted for 83 per cent of the cities' population and 95 per cent of the towns' population. If urban was defined as including the agricultural population (those who were allotted grain by the communes instead of by the government) within the boundaries of the cities or towns, the city share of the urban population would account for 9.0 per cent of China's total population, with the urban population in towns making up 6.1 per cent of the national population. Their combined share would raise the percentage of population urban from 13.3 per cent to 15.1 per cent (Goldstein, 1985).
 6. In December 1963, China redefined its urban places. A place was urban if: (1) it had concentrated industries, commerce and hand-craft trades and a population of 3000 and above, of whom at least 70 per cent were non-agricultural; (2) it had a population between 2500 and 3000, of whom at least 85 per cent were non-agricultural and required the administration of the county government; (3) it was an area of minority nationalities with concentrated industries, commerce and hand-craft trades, and required county-level administration, although its population was under 3000 or less than 70 per cent were non-agricultural. The existing towns, which failed to meet the above conditions and which could be administered more efficiently by people's communes at the village level, lost that status. In areas stripped of the town status, all residents would be reclassified as rural population (Ministry of Public Security, 1985, p. 101).
 7. In November 1984, the State Council modified the 1955 and 1963 standards. First, any area could be designated a town if it was the seat for county-level administration. Second, a *Xiang* (an administrative unit usually encompassing several villages) of less than 20 000 population could be upgraded to a town if it was the seat for the village people's government and its non-agricultural population exceeded 2000. Third, a *Xiang* could be designated a town if it had a population of 20 000 or more and was a seat for the *Xiang* people's government with a non-agricultural population exceeding 10 per cent of the *Xiang's* total population. Fourth, a place could be designated a town if it was an area of minority nationalities, or a sparsely populated remote area, a mountainous area, a small mining area, a border area or a port of entry, even though its non-agricultural population was under 2000. Fifth, once a *Xiang* became a town, the *Zhen-guan-Cun* system (town managing village) was to be instituted. Those *Jizhen* (market towns) that had not yet qualified for a town should be managed by designated staff of the *Xiang* people's government (Ministry of Public Security, 1985, p. 102).
 8. In the 1982 census, all persons who had lived for one year or longer within the formal boundaries of a city or town were counted as the urban population. Included were individuals and households who lived inside the city proper or town boundary while continuing to engage in part-time or full-time farming. This definition broadened the narrower definition prior to the census that counted as the 'urban population' only the non-agricultural population (Banister, 1986, p. 7). For a clarification of the ambiguities and inconsistencies in the various conceptions of China's urban place and population, see Chan and Xu (1985).
 9. According to the theory of rank size (Zipf, 1941), three models can be constructed to predict city distributions. Model 1 uses the population of the largest city as the numerator over the ranks of the individual cities in a city system to derive the expected populations. Model 2 takes account of the reciprocal rank intervals and the differences between the actual and expected populations across all cities in a system. Model 3 tests the negative rank-size slope by: (1) finding the slope via a log-normal

- bivariate regression; and (2) exponentiating the resultant log values.
10. The concave pattern of distribution refers to an immature urban system in which most cities fall below the log-normal line, whereas the convex (overmature) shape refers to cities distributing themselves along a smooth curve outside the log-normal slope.
 11. Pannell's index values were the ratios of the population of the largest city—Shanghai—to the total population of the 10 largest cities, including Shanghai itself. I have followed Arriaga's (1975) procedure by comparing the population of the largest city with the total population of the next 10 cities (ranked two to 11). However, both measures yielded almost identical values for China. The index value based on 10 cities was 0.17 for 1981 instead of 0.19 (see Table 2), for example.
 12. The index value for cities containing agricultural production is presented as the primary measure in order to be consistent with the indexes of industrial and infra-structural dominance.
 13. On Figure 1, line 1 (closest to the coast) marks the western limits of China's originally developed area. Line 2 (the one in the middle) defines the expansion during China's first Five-year Plan (1953–57). Line 3 (the furthest west) demarcates the spread of development during the second Five-year Plan (1958–62) (Hsieh, 1973, p. 105).
 14. The inclusion of data on the 33 cities into China's national statistical yearbook (published in 1985) indicates their importance. The criteria for inclusion, however, may reflect selection bias and the Chinese government's intention to show things were better in these cities than in others. For reasons that are not clear, the yearbooks published in 1986 and 1987 included truncated data on *only* 18 cities (four SEZ Cities and 14 Open Coastal Cities). In 1988 China compiled an urban statistical yearbook (SSB, 1988) on all cities.
 15. The 'floating' population includes visitors for business or tourist purposes, people visiting relatives, 'temporary' construction workers, peasant traders selling on the urban free markets, people seeking advanced medical care and shoppers. According to the 1982 census, the 'floating' population could be counted as urban residents if they remained in an urban place for one year or longer. The 'floating' population in some cities equalled 10–20 per cent of their official resident population (Banister, 1986, p. 10).
 16. With extreme values on many indicators, Shenzhen is an outlier in the total sample and among the four SEZ Cities. This is due largely to the somewhat unique process by which Shenzhen, with favoured state support and the heaviest foreign investment, exploded from a small agricultural border town into the most developed of the SEZ Cities and one of the most dynamic coastal cities. Thus Shenzhen is singled out as a special case in Tables 4, 5 and 6.
 17. The Open Coastal Cities were allowed to set up within their formal boundaries Economic–Technological Development Zones (ETDZs), which offer a 15 per cent EIT (as do the SEZ Cities) to foreign and domestic investors who locate in the zones.
 18. China has had a complex wage system spatially. In 1951 all urban government agencies and some enterprises (mostly commercial establishments) were classified into 11 wage zones. The 11th zone had the highest average wage and the first zone the lowest, with a differential of approximately 3 per cent between each zone. Enterprises in the manufacturing and transportation sectors fell into a different hierarchy of wage zones. With the wage adjustment in 1963, the first and second zones were eliminated and raised to zone 3, and some of the cities in zone 3 were upgraded to zone 4. In 1979 zones 3 and 4 were elevated to 4 and 5, with zones 5 and above unchanged. In 1985 zone 4 was raised to zone 5. In 1986 zone 5 prior to the 1985 adjustment became zone 6. Today the majority of the cities belong to zone 6 and above. With regard to the 33 cities, Lanzhou is in zone 11, and Guangzhou (Canton) belongs to zone 10. Shanghai, Zhangjiang, Shantou and Xiamen fall into zone 8, and Fuzhou, Shenzhen and Zhuhai belong to zone 7, with the remaining 23 cities in zone 6 (see Appendix Table A1).
 19. At the time of writing, the Eastern Economic Region includes *nine* instead of *eight* coastal provinces and the three central government municipalities. In 1988 Hainan Island, formerly part of Guangdong Province, was simultaneously elevated to provincial status and designated as China's fifth SEZ.

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Appendix

Table A1. The name, administrative level and geographic location of the 33 Chinese cities

City identification	Name	Level	Province	Region	Wage zone
<i>Inland cities (N=15)</i>					
1	Beijing (Peking) ^a	National capital	—	North	6
2	Shenyang (Mukden)	Provincial capital	Liaoning	North-east	6
3	Wuhan	Provincial capital	Hubei	Central-South	6
4	Harbin	Provincial capital	Heilongjiang	North-east	6
5	Chongqing (Chungking)	Region level	Sichuan	South-west	6
6	Nanjing (Nanking)	Provincial capital	Jiangsu	East	6
7	Xi'an (Sian)	Provincial capital	Shaanxi	North-west	8
8	Chengdu	Provincial capital	Sichuan	South-west	6
9	Changchun	Provincial capital	Jilin	North-west	6
10	Taiyuan	Provincial capital	Shanxi	North	6
11	Lanzhou	Provincial capital	Gansu	North-west	11
12	Jinan	Provincial capital	Shandong	East	6
13	Fushun	Region level	Liaoning	North-east	6
14	Anshan	Region level	Liaoning	North-east	6
15	Kunming	Provincial capital	Yunnan	South-west	6
<i>Coastal cities (N=18)</i>					
16	Shanghai ^a	Central government Municipality	—	East	8
17	Tianjin (Tientsin) ^a	Central government Municipality	—	North	6
18	Guangzhou (Canton)	Provincial capital	Guangdong	Central-South	10
19	Dalian	Region level	Liaoning	North-east	6
20	Qingdao (Tsingtao)	Region level	Shandong	East	6
21	Qinhuangdao	Region level	Hebei	North	6
22	Yantai	Region level	Shandong	East	6
23	Lianyungang	Region level	Jiangsu	East	6
24	Nantong	Region level	Jiangsu	East	6
25	Ningbo	Region level	Zhejiang	East	6
26	Wenzhou	Region level	Zhejiang	East	6
27	Fuzhou (Foochow)	Region level	Fujian	East	7
28	Zhanjiang	Region level	Guangdong	Central-South	8
29	Beihai	Region level	Guangxi	Central-South	6
30	Shenzhen ^b	Region level	Guangdong	Central-South	7
31	Zhuhai ^b	Region level	Guangdong	Central-South	7
32	Shantou (Swatow) ^b	Region level	Guangdong	Central-South	8
33	Xiamen (Amoy) ^b	Region level	Fujian	East	8

^aHas provincial status.^bSEZ City.