

# China's Unbalanced Economic Growth

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*This paper summarizes empirical findings and results from the author's most recent research publication in Chinese: *China's Unbalanced Economic Growth*. It studies China's economic growth with a special emphasis on its regional disparities. It provides an analysis of China's overall economic landscape as well as an empirical study of China's unbalanced regional development. Based on its quantitative findings and results, the author predicts the emergence of ten Chinese metropolitan economies in the early twenty-first century and recommends a regional development strategy as well as implementation policies for China's future development. The major empirical findings, results and conclusions of this research are outlined in three sections: the first describes China's economic future—the emergence of ten regional metropolitan economies, the second reports the empirical findings of China's national and regional economic disparities and discusses policy implications, and the third investigates China's future economic growth and discusses its growth limitations.*

China possesses one fifth of the world's population. It also has a vast territory of some 9.60 million square kilometers that is larger than that of the USA by an area about 6.3 times Taiwan's size. For the past 25 years (1978–2003), China has accomplished miraculous economic growth at an average annual rate of over 9%.<sup>1</sup> The Chinese economy is now the sixth largest in the world while its people's average income (US\$911 in 2002) is still relatively low. At the dawn of this century, when globalization impels the world towards a maturing knowledge economy, China's impact on the world's political economy has become one of the most prominent issues in international affairs. China's influence on the world is complex and multifaceted. It involves not only international business and economics but also global politics and regional security. As a result, the world

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1. The statistics used in this paper are based on China's official figures. Many studies have questioned these statistical data. For example, the World Bank's 1997 report, *China 2020: Development Challenges in the New Century*, indicated that there had been as much as a 1–1.5% over-estimate in China's official growth rate due to those price indicators adopted.

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has become more and more concerned with China's future economic growth as well as its social and political stability. There are various views concerning the future of China's political economy, one being potential political and social instability possibly resulting from its growing income inequality and unbalanced regional development.

This paper concisely summarizes empirical findings and results from the author's most recent research publication in Chinese: *China's Unbalanced Economic Growth* [Taipei: Himalaya Foundation, 2004 and Beijing: Social Sciences Academic Press (China), June 2005].<sup>2</sup> The research studies China's economic growth with a special emphasis on its regional disparities. It follows on from the author's earlier book entitled: *China's Regional Economic Development* (Taipei: Linking Publishing Company, 2001) and provides an analysis of China's overall economic landscape as well as an empirical study of China's unbalanced regional development. Based on its quantitative findings and results, this research predicts the emergence of ten Chinese metropolitan economies in the early twenty-first century. It also recommends a regional development strategy as well as implementation policies for China's future development. The following three sections outline this research's major empirical findings, results and conclusions. Section I describes China's economic future—the emergence of ten regional metropolitan economies. Section II reports at some length the empirical findings of China's national and regional economic disparities as well as many policy issues implied by these new results. Section III investigates China's future economic growth and discusses its growth limitations. This paper uses four charts and tables and 12 graphs to minimize its text presentation of the complicated and substantial empirical findings and results from the research.

### 1. China's regional economic agglomeration

A sustainable growing economy is a necessity for China's future stability. The sustainability of growth depends essentially on China's continued commitments to institutional reform and economic liberalization. A relaxation of government intervention in economic activities has impelled and will continue to impel China into decentralizing its central government authority over economic planning and control. To date, this may have resulted in unbalanced regional economic growth and will probably further stimulate the emergence of regional economies. This research presents ample quantitative evidence and arguments to support the prediction that in the first two decades of the new century, there will most likely be ten metropolitan economies with relatively independent industrial and market structures emerging in Greater China (the adjacent areas of Hong Kong, Macao, Taiwan and the Chinese Mainland). China's future economic growth will be characterized and powered by these fast growing and highly urbanized metropolitan economies. The emergence of these regional economies with independent local metropolises as their centers is broadly in line with the predictions of the new

2. Interested readers are referred to the Appendix for a structural overview of this book.

theory of economic geography due to, for example, Krugman, Fujita *et al.* and Scott.<sup>3</sup>

### 1.1. The emergence of ten regional metropolitan economies

China possesses a huge population (near 1.3 billion) with numerous nationalities on a vast territory of complex geography and topography. The 55 Chinese minorities alone constituted a population of 104.5 million in 2000, that is larger than most of the countries in the world.<sup>4</sup> China's enormous societal and physical differences imply that it would be impractical, if not impossible, to develop a homogeneous economic market embracing its entire territory.

In 2000, over 91% of China's passenger transportation utilized its highways with an average travel distance of 49 kilometers.<sup>5</sup> Long-distance travel was mainly by railway (7.1% of the total volume) with an average distance of 431 kilometers and by air (0.5%) with an average distance of 1,444 kilometers. Over 76% of China's cargo was trucked by highways over an average distance of 59 kilometers, whereas 13% of cargo was transported by railways over an average distance of 781 kilometers and 9% was shipped by water over an average distance of 1,939 kilometers. These transportation statistics unambiguously show that even after 25 years of fast growth, at the turn of the new century, inter-regional economic activities represent merely a small fraction of the overall economic activity in China. Thus, the Chinese economy essentially still remains a collection of many regional economies. It seems that China is not only a big country but also a combination of many 'small worlds' constituting a wide spectrum of regional economies.

Moreover, China's inter-regional logistical/transit systems at present are far from adequate to meet the demands of a modern highly integrated economy (similar to that of the USA). This study asserts that due to physical (geographical and topographical) constraints, it is not only costly for China to build a modern inter-regional transit system (to match that of the USA), but it is also nearly a physical impossibility. Thus, the optimal economic structure for China has been and will most likely continue to be, a network of relatively independent regional economies that are politically administered by a central/federal government.<sup>6</sup>

Considering China's history, geographic-economic characteristics, and current status of regional development, this study suggests that by 2020 there will likely have been ten (regional) metropolitan economies emerging in Greater

3. Allen J. Scott, *Global City-Regions: Trends, Theory, Policy* (Oxford: Oxford University Press, 2001); Masahisa Fujita, Paul Krugman and Anthony J. Venables, *The Spatial Economy: Cities, Regions, and International Trade* (Cambridge: MIT Press, 1999); and Paul Krugman, *Geography and Trade* (London: MIT Press, 1991).

4. In 2001, among the 280+ countries in the world, there were only ten possessing populations over 100 million. They are (in descending order of their population sizes): China, India, the USA, Indonesia, Brazil, Russia, Pakistan, Bangladesh, Nigeria, and Japan.

5. All the transportation statistics cited in this section are from Table 4-1 of C. W. Kenneth Keng, *China's Unbalanced Economic Growth* (Taipei: Himalaya Foundation, 2004), which provides detailed analyses of these data. Original data were from *China Statistical Yearbook 2001* (Beijing: China Statistics Press, September 2001), Tables 15-6, 15-7, 15-8, 15-9, 15-10, and 15-11.

6. See also C. W. Kenneth Keng, 'China's future economic regionalization', *Journal of Contemporary China* 10(29), (2001), pp. 587-612.

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China (the area of the Chinese Mainland, Hong Kong and Macau, plus Taiwan).<sup>7</sup> They are:

- *six Coastal regions*: Liaoning (with Dalian and Shenyang as its core metropolises), Capital (Beijing, Tianjin, Tangshan and Shijiazhuang), Shandong Peninsula (Jinan and Qindao), Greater Shanghai (Shanghai, Hangzhou, Suzhou and Ningbo), Taiwan–Fujian (Taipei, Kaoshiung, Xiamen and Fuzhou), and Pearl River Delta (Hong Kong, Macao, Guangzhou, Shenzhen and Zuhai);
- *four Inland regions*: Jilin–Heilongjiang (Changchun and Harbin), Yangtze River Downstream (Nanjing, Yangzhou and Hefei), South-Central (Wuhan, Changsha and Nanchang), and Sichuan (Chongqing and Chengdu).

Liaoning, Capital and Shandong Peninsula along the Bohai Bay area occupy China's north coast. Greater Shanghai is comprised of the vast area of the Yangtze River delta and the Qiantang River delta and covers nearly a quarter of China's coastline. Taiwan–Fujian occupies both sides of the Taiwan Strait. The Pearl River Delta shelters China's southern coast. The other four metropolitan regions are all inland (non-coastal) economies. However, Yangtze River Downstream containing Northwest Jiangsu and Anhui is a near-coastal region where large cargo ships can reach its harbors through the Yangtze River. The remaining three inland regions are: Jilin–Heilongjiang located in northeast China bordering North Korea and Russia, South-Central consisting of three heavily populated provinces: Hunan, Hubei and Jiangxi, and Sichuan located in China's Midwest comprising more than 115 million people.

These ten regional metropolitan economies together comprise approximately 65% of China's population, 75% of China's plains, and produce over 80% of China's GDP. At present, all of these regional economies have built relatively modern intra-regional highway systems and have all developed their own regional markets with either relatively independent industrial structures or are in the process of doing so. The principal mode of inter-regional transportation is frequently congested railways.

The emergence of Chinese metropolitan economies may also be attributed to China's economic decentralization and market deregulation over the last 25 years. When the central authority relaxes its control over regional economic decision-making, market forces will then guide economic activities towards establishing lower-transaction-cost industrial structures and market systems. Resources can then be efficiently utilized by being allocated towards urban centers where infrastructure and business services provide production units with scale economies and comparative

7. This notion of 'Chinese metropolitan economies' is built on the idea first suggested by a Chinese research scholar, Jian Wang of the Economic Research Institute, State Planning Commission in the mid-1990s. What is suggested here are results based on the author's further research. The concept of 'metropolitan economies' also falls under Krugman's 'manufacturing zones' framework. Francis Johnston explicitly suggested three Chinese coastal manufacturing zones in his 1999 article: 'Beyond regional analysis: manufacturing zones, urban employment and spatial inequality in China', *The China Quarterly* no. 157, (1999), pp. 1–21. Interested readers are also referred to the following literature by the author: Keng, 'China's future economic regionalization'; C. W. Kenneth Keng, 'China's economic regions', *Mainland China Studies* 43(6), (2000), pp. 51–79; C. W. Kenneth Keng, 'China's regional economic development', *Mainland China Studies* 43(9), (2000), pp. 47–67; C. W. Kenneth Keng, 'China's future economic development: regionalization', in R. E. Bedeski and J. A. Schofield, eds, *Prospects for Development in the Asia-Pacific Area* (Victoria: Western Geographical Press, 2000), pp. 171–212; and C. W. Kenneth Keng, 'China's economic prospects in the new century', in A. Nathan, Z. H. Hong and S. Smith, eds, *Dilemmas of Economic Reform in Jiang Zemin's China* (Boulder: Lynne Rien, 1999), pp. 171–212.



advantages. As a result, individual regional markets and industrial systems, each with a network of closely affiliated cities and metropolitan areas, will emerge and become relatively independent local cores. This process of regional economic agglomeration is based on the reality that there is a geographical limit of economically optimizing a logistic system for the production and exchange of goods and services. This process of regional agglomeration and urbanization has been evidenced by Japan's successful development experience in the last 50 years where a relatively large population resided in many relatively isolated areas.

## 2. China's income inequality and regional disparities: empirical findings

Following the line of argument described above, this research proceeds with a comprehensive analysis of China's regional economic disparities that includes a study of China's economic regions by applying an explicit quantitative method for analyzing economic disparities among multiple regions. The methodology specifically addresses the distinction between partial and general approaches to the analysis of multiple regional inequalities. The analysis also differentiates between the interwoven disparities among multiple regions by decomposing the overall (national) income inequality into intra-regional and inter-regional inequalities. These methodological improvements represent a new refinement in the analysis of regional inequality.<sup>8</sup>

Many interesting empirical findings concerning the history (1952–2000) and trends in China's economic disparities are generated. In general, China's national income inequality has not been significantly larger than the average of the ten most populous countries in the world; neither has it been significantly greater than the average of 16 adjacent or comparable developing countries. In effect, in the mid-1990s China's income inequality was very close to that of the USA. However, China's regional inequality was more than twice as large as that of the USA or Japan. China's income inequality is caused, to a significant extent, by its relatively large regional disparities. These intriguing empirical results are selectively presented in the following sub-sections.

### 2.1. China's national income inequality: international comparisons

A country's (national) income inequality is defined as the average of the income difference between every pair of individuals in that country. In statistical terms, this

8. Interested readers are referred to Keng, *China's Unbalanced Economic Growth*, ch. 7: 'A methodology of regional inequality analysis' for details. There are numerous published works sharing the topic of regional (or spatial) inequality in China. However, few of them specifically provide a clear definition and analytical methodology of the regional equality. Branko Milanovic in his 2004 paper 'Half a world: regional inequality in five great federations' (available at [www.worldbank.org/research/inequality](http://www.worldbank.org/research/inequality)) discussed and provided various concepts and definitions of regional inequality; and M. Francis Johnston in his 1999 paper in *The China Quarterly* discussed to some extent two approaches: the RAF (regional analysis framework) and the MZF (manufacturing zone framework). However, neither of them explicitly considered the regionalization (the way of partitioning a country into regions) of China. To the best of the author's knowledge, most of the studies in China's regional inequality are promising in choosing eligible inequality measures but somehow fall short in qualifying China's regionalization. The author is inclined to advocate that a scientific definition of the regional inequality should include at least two essential constituents: how the regions are defined and how the inequality is measured. See also A. F. Shorrocks and Guanghua Wan, 'Spatial decomposition of inequality', WIDER Discussion Paper No. 200401 (2004).

is termed the *mean difference income* for that country. One half of the ratio of the mean difference income to the average income is called the *Gini Coefficient*—the most popular measure of income inequality over a country's entire population. In 2000, China had a Gini Coefficient of 43.8%, a GDP per capita of US\$856, and a mean difference income of US\$750. This means that China had an income inequality that was 87.6% as large as its average income (on a per-person basis). The World Bank recently predicted that by 2020 China's Gini Coefficient would have risen to 47.4%.<sup>9</sup> That implies that China's income inequality will increase to 94.4% of its average income in 2020.

Table 1 and Fig. 1 present the results of a general international comparison of China's income inequality with those of another 30 selected countries of interest using data published by the World Bank. They show that China's income inequality as represented by its Gini Coefficient is insignificantly different from the average of those relevant 30 countries.

At the end of the twentieth century, there were ten countries with populations greater than 100 million (the Populous 10). The average Gini Coefficient for these ten most populous countries around the mid-1990s was 38.8% with a standard deviation of 10.3%. China's income inequality was smaller than that of Brazil, India and Nigeria, slightly larger than that of the USA, not too distant from that of Indonesia, and significantly larger than that of India, Pakistan, Bangladesh and Japan. However, China's income inequality was not significantly different from the average of the Populous 10.

Compared with the USA, China had a Gini Coefficient of 41.5% in 1995 while the USA's was 40.1% in 1994, but China had a smaller income gap between rich and poor than the USA did. The top 20% of the Chinese population collectively earned 8.6 times the amount earned by the bottom 20% while in the case of the USA the figure was 9.2 times (i.e. the 20% Kuznets ratio was 8.6 for China in 1995 and 9.2 for the USA in 1994). Furthermore, China and the USA had 10% Kuznets ratios of 14.0 and 19.0, respectively. That means, the USA had much larger income gaps between its rich and poor subpopulations than China did. However, the majority of Americans (i.e. the middle 60% of the population) had a more even income distribution (i.e. with a smaller income inequality) than their counterpart in China. As a result, China had a marginally larger national income inequality than the USA.

This study also compares China's income inequality with the Economic Giant 7 countries (i.e. USA, Japan, Germany, France, UK, Canada and Italy) as well as the other 16 adjacent Asian countries. It finds that while China's Gini Coefficient is larger than the average of the Giant 7 it is not significantly different from the average of those 16 Asian neighboring countries. These empirical comparisons suggest that although China's income inequality has been rising, it has not distinguished itself significantly (in a statistical sense) from the average of a large number of adjacent or comparable countries.

9. World Bank, 'China: promoting growth with equity', Report no. 24169-CHA (Washington, DC: The World Bank, 3 September 2003).

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Table 1. Income inequality and relevant statistics: 30 selected countries

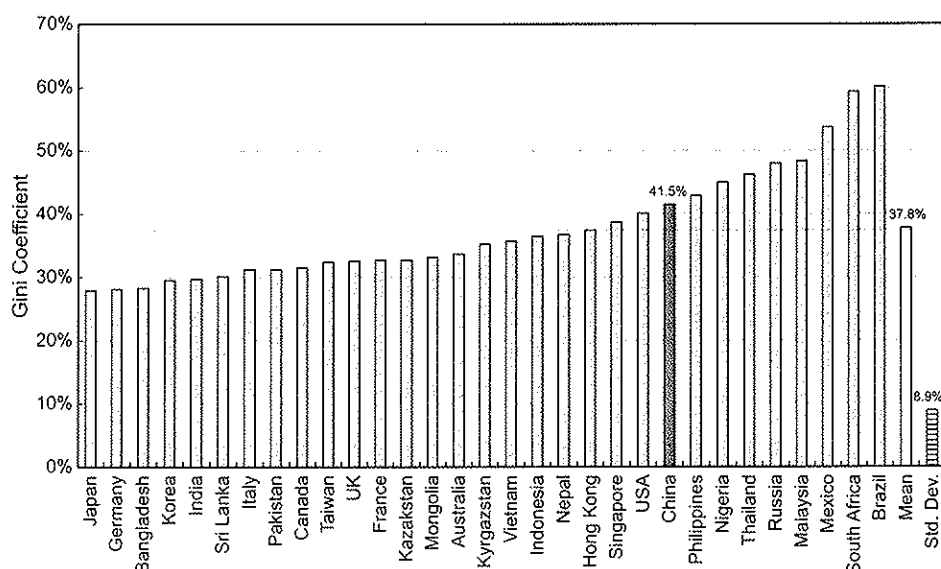
Country	Area (1,000 km <sup>2</sup> )	Population density (people/km <sup>2</sup> )	Population (million)	PPP GNP per capita (US\$)	Gini index	Kuznets 20% high/low income ratio	Kuznets 10% high/low income ratio	Data year
Japan	378	334	126	\$24,400	27.9%	4.7	n/a	1994
Germany	357	235	82	\$21,170	28.1%	4.1	6.1	1989
Bangladesh	144	935	124	\$1,090	28.3%	4.0	5.8	1992
Korea	99	461	46	\$13,430	29.5%	5.3	n/a	1996
India	3,288	318	962	\$1,660	29.7%	4.3	6.1	1994
Sri Lanka	66	283	19	\$2,460	30.1%	4.4	6.6	1990
Italy	301	196	58	\$20,100	31.2%	5.1	8.2	1991
Pakistan	796	163	128	\$1,580	31.2%	4.3	6.8	1996
Canada	9,971	3	30	\$21,750	31.5%	5.2	8.5	1994
Taiwan	37	611	22.3	\$14,216	32.4%	5.5	n/a	1998
UK	245	243	59	\$20,710	32.6%	5.6	10.3	1986
France	552	106	59	\$22,210	32.7%	5.6	10.0	1989
Kazakhstan	2,717	6	16	\$3,530	32.7%	5.4	8.0	1993
Mongolia	1,567	2	3	\$1,490	33.2%	5.6	8.4	1995
Australia	7,741	2	19	\$19,510	33.7%	5.8	n/a	1989
Kyrgyzstan	199	24	5	\$2,180	35.3%	6.3	9.7	1993
Vietnam	332	232	77	\$1,590	35.7%	5.6	8.3	1993
Indonesia	1,905	109	200	\$3,390	36.5%	5.6	8.4	1996
Nepal	147	152	22	\$1,090	36.7%	5.9	9.3	1996
Hong Kong	1	6,733	6.7	\$24,350	37.4%	9.0	n/a	1996
Singapore	1	4,991	3	\$29,230	38.7%	8.5	n/a	1996
USA	9,364	29	268	\$29,080	40.1%	9.4	19.0	1994
China	9,597	130	1,227	\$3,070	41.5%	8.6	14.0	1995

Country	Area (1,000 km <sup>2</sup> )	Population density (people/km <sup>2</sup> )	Population (million)	PPP GNP per capita (US\$)	Gini index	Kuznets 20% high/low income ratio	Kuznets 10% high/low income ratio	Data year
Philippines	300	241	74	\$3,670	42.9%	8.4	14.0	1994
Nigeria	924	126	118	\$860	45.0%	12.3	24.2	1993
Thailand	513	117	61	\$6,490	46.2%	9.4	14.8	1992
Russia	17,075	9	147	\$4,280	48.0%	12.5	26.7	1996
Malaysia	330	64	22	\$7,730	48.4%	11.7	19.9	1989
Mexico	1,958	49	94	\$8,110	53.7%	16.2	30.6	1995
South Africa	1,221	33	41	\$7,190	59.3%	22.3	41.7	1994
Brazil	8,547	19	164	\$6,350	60.1%	25.7	59.9	1995
Mean				\$10,580	37.75%	8.1%	15.4%	
Std. Dev.				\$9,623	8.87%	5.2%	12.9%	

Source: C. W. Kenneth Keng, *China's Unbalanced Economic Growth* (Taipei: Himalaya Foundation, June 2004), ch. 8, Tables 8-1, 8-2, and 8-3. Original data source: 1999 *World Development Indicators* (Washington, DC: World Bank, 1999).



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**Figure 1.** International comparison of national income inequality: China and 30 selected countries. Source: C. W. Kenneth Keng, *China's Unbalanced Economic Growth* (Taipei: Himalaya Foundation, June 2004), Graphs 8-2 and 8-3.

### 2.2. China's regional economic disparities: international comparisons

China's national income inequality may not have deviated very far from the world's average, but its regional economic inequality is distinctively greater than its closest neighbor Japan as well as the USA which has a comparable size of territory with a relatively large population. This fact alone unambiguously indicates that regional differentiation contributes more to China's income inequality than it does to that of Japan or the USA.<sup>10</sup>

Using the administrative regions at the provincial level as the basic unit of analysis, *region*, China's overall regional economic disparity (ORD) can be defined as the mean difference income between the 465 pairs of provinces accrued from China's 31 provinces.<sup>11</sup> The *Regional Gini Coefficient*, measuring the overall regional inequality, can then be computed (estimated) as one half of the ratio of the ORD to the national GDP per capita. In the same manner, we may calculate the regional Gini Coefficients of Japan's 47 prefectures and the USA's 51 states (50 states plus Washington, DC). As demonstrated in Fig. 2, China's regional disparities historically have all been significantly greater than those for Japan or the USA. On average, China's provincial disparity is 1.5 times greater than that of Japan's 47 prefectures, and 3.0 times greater than that of the USA's 51 states.

10. Milanovic, 'Half a world', studied the overall regional inequalities of five populous countries: Brazil, China, India, Indonesia and the USA, and found similar results as ours: in 2000, China's regional Gini was 24.4% and that of the USA was 8.3%. The rest were: Brazil (28.0%), Indonesia (19.9%) and India (18.7%).

11. The number of pairs generated by N provinces can be calculated by the formula:  $N(N-1)/2$ . China has 31 provinces; therefore there are 465 differences between any pair of those provinces.

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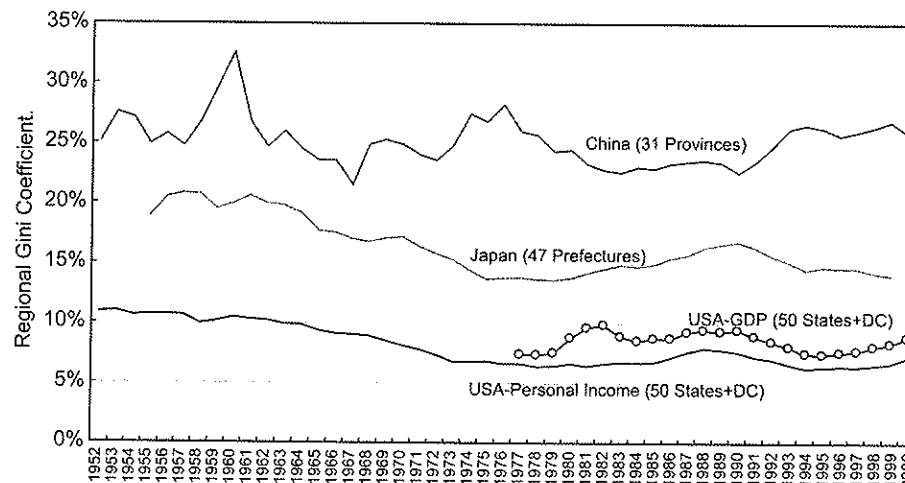


Figure 2. International comparison of regional disparities: China, Japan and the USA.

Source: C. W. Kenneth Keng, *China's Unbalanced Economic Growth* (Taipei: Himalaya Foundation, June 2004), Graph 9-1.

### 2.3. China's national income inequality and regional disparities

If China's national population is partitioned into 31 mutually exclusive and jointly exhaustive provincial populations,<sup>12</sup> this study shows that China's national income inequality can be decomposed into three additive inequalities: the *overall intra-provincial disparity* that is the sum of 31 intra-provincial mean difference income and the *overall inter-provincial disparity* (or, for simplicity, the *Overall Regional Disparity*) that is the mean difference income of the 465 pairs of provinces accrued from China's 31 provinces as well as an interactive (residual) term.<sup>13</sup>

Our empirical study found that in 2000, the overall regional disparity (i.e. the inequality between provinces) accounted for at least 59% of China's national income inequality, while the overall intra-provincial inequality (the sum of inequalities

12. Here we use mathematical terminology to precisely define the relation between the national population,  $P$  and provincial populations,  $P_i$  where  $i = 1, 2, \dots, 31$ . If  $P$  is partitioned into 31 sub-populations (provincial populations), say  $P_i$ , where  $i = 1, 2, \dots, 31$ , these sub-populations are mutually exclusive if  $P_i \cap P_j = \emptyset$  for all  $i \neq j$ , and jointly exhaustive if  $\bigcup P_i = P$  for all  $i$ .

13. In general, the national income inequality (as measured by the Gini Coefficient) can be additively decomposed into the intra-provincial and the inter-provincial inequalities when the data of the individual level is used. When provincial-level aggregate data is used certain statistical discrepancies occur. In that case, the national income inequality can be decomposed into three additive terms: the intra-provincial, the inter-provincial and the interactive terms. The interactive term captures those discrepancies (residuals) due to replacements of individual data points in provinces by their corresponding provincial means. This interactive term may consist of both intra-provincial and inter-provincial residuals. Due to the unavailability of individual income data to this study, there is no way to compute the residual term exactly. However, the Lambert and Aronson Theorem [refer to Peter J. Lambert and J. Richard Aronson, 'Inequality decomposition analysis and the Gini Coefficient revisited', *Economic Journal* 103, (1993), pp. 1221-1227] indicates that the residual term is positive. As a result, the inter-provincial inequality of US\$443 is best interpreted as the *lower estimate* of the inter-provincial inequality. By the same token, the intra-provincial inequality of US\$307 should be interpreted as the *upper estimate* of the intra-provincial income inequality given there exists a positive but unknown residual term. Interested readers may also refer to D. Mookherjee and A. F. Shorrocks, 'A decomposition analysis of the trend in UK income inequality', *Economic Journal* 92, (1982), pp. 886-902; and Shorrocks and Wan, 'Spatial decomposition of inequality'; as well as to the huge volume of literatures referenced by the papers cited above.