Many Chinas? The Economic Diversity of China's Provinces

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CHINA'S ECONOMIC development in recent decades has been impressive by many measures. For 2003, China reported a gross domestic product of 11.7 trillion[1] yuan renminbi (RMB), with annual growth rates frequently in the low double-digit range during the previous 15 years. It is well known, however, that much of this economic growth is generated by a small number of coastal provinces and urban areas. Numerous authors have analyzed China's regional development disparities.[2]

The first part of this note places China's regional development in the world context by calculating GDP estimates for all 31 mainland provinces and comparing these with GDP estimates for other countries worldwide. The exercise takes three steps.

First, I adjust China's regional GDP statistics, published by the country's National Bureau of Statistics, to compensate for overreporting at the province level. I calculate corrected regional estimates for GDP and per capita GDP in yuan RMB for all 31 mainland provinces of China (see Appendix 1).

The second step involves converting the yuan-based GDP estimates into international dollars, based on year-2000 purchasing power parities. This step is necessary because China's currency conversion rate is controlled by the government and does not represent actual purchasing power. For this conversion I use the purchasing-power-parity (PPP)-based national estimate for China's per capita GDP published by the World Bank in its 2005 World Development Indicators.

Finally, I combine both GDP and per capita GDP estimates for the 31 Chinese provinces with rankings of all countries worldwide for which the World Bank has produced PPP-based GDP estimates. This demonstrates the vast range in economic development levels within China.

China's provincial economies in a world context

Taking into account purchasing power, China is already the world's second largest economy, with a GDP in 2003 of almost $6.1 trillion (in 2000 PPP international $)—far larger than the PPP-based GDP of Japan and larger than that of Germany, France, and the United Kingdom combined. In 2003, only the United States had a larger economy, with a GDP of $10.3 trillion (see Table 1). Even without considering purchasing power, China's economic growth will be impressive. Goldman Sachs recently projected that by 2050, China will be the largest economy on the globe—more than four times bigger than the combined economies of Germany, France, and the United Kingdom (Wilson and Purushothaman 2003). According to these projections China's GDP has overtaken the United Kingdom's and will surpass Germany's before 2010; it will be nearly as large as Japan's in 2015 and will surpass the US level around 2045.

Out of China's 31 mainland provinces, just five of them (Guangdong, Jiangsu, Shandong, Zhejiang, and Hebei) contributed a total of more than one-third of China's GDP in 2003; and 15 provinces, or just under half, generated 71 percent of the total GDP.

Table 2 gives the 2003 GDP ranking of all Chinese provinces along with GDP rankings of selected countries worldwide. According to my estimate Guangdong province (no. 16 in the table) had a GDP of $612,183 million (measured in 2000 PPP international $), which was nearly as large as the total GDP of Indonesia (no. 15). Jiangsu and Shandong (nos. 17 and 18) each had a GDP of roughly $560,000 million in international $—the same as the Australian economy (no. 19).

Also consider the economy of Zhejiang (no. 25). Taking into account purchasing power, Zhejiang's economy is about the same size as that of

TABLE 1 GDP, GDP based on purchasing power parities, and per capita GDP: China, Japan, and selected Western countries, 2003

	GDP (2000 US$ trillions)	GDP, PPP (2000 international $ trillions)	GDP per capita, PPP (2000 international $)
China	1.375	6.090	4,726
Japan	4.876	3.370	26,420
Germany	1.888	2.164	26,221
France	1.358	1.563	26,146
United Kingdom	1.527	1.521	25,645
United States	10.343	10.319	35,484

NOTE: The international dollar is a hypothetical unit of currency that represents the actual purchasing power of a local currency in relation to the worth of the US dollar in the United States at a given point in time. Conversions to international dollars are calculated using purchasing power parities.
SOURCE: World Bank (2005).

TABLE 2 GDP in 2003 (at 2000 PPP international $) for China and its 31 mainland provinces (and Hong Kong) and for selected countries (in millions)

		GDP			GDP			GDP
1	United States	10,319,212	38	Ukraine	250,847	70	Morocco	113,909
2	**China**	**6,089,508**	*39*	*Sichuan*	*245,142*	*71*	*Jilin*	*113,336*
3	Japan	3,370,472	*40*	*Hubei*	*242,688*	*72*	*Yunnan*	*110,761*
4	India	2,907,780	*41*	*Fujian*	*235,071*	*73*	*Shanxi*	*110,370*
5	Germany	2,164,293	42	Bangladesh	230,884	*74*	*Tianjin*	*109,969*
6	France	1,562,536				*75*	*Shaanxi*	*107,763*
7	United Kingdom	1,521,499	46	Switzerland	212,137	*76*	*Chongqing*	*101,113*
8	Italy	1,476,865	*47*	*Hunan*	*208,409*	77	Singapore	98,292
9	Brazil	1,299,664	48	Greece	207,972	*78*	*Inner Mongolia*	*96,614*
10	Russia	1,250,618	*49*	*Heilongjiang*	*199,031*			
			50	Vietnam	191,301	80	New Zealand	85,530
15	Indonesia	681,625				*81*	*Xinjiang*	*84,357*
16	*Guangdong*	*612,183*	52	Portugal	178,833			
17	*Jiangsu*	*559,841*	*53*	*Anhui*	*178,471*	*85*	*Guizhou*	*60,927*
18	*Shandong*	*558,722*	*54*	*Hong Kong*	*175,004*			
19	Australia	556,532	*55*	*Beijing*	*164,576*	87	Syria	58,727
			56	Norway	162,346	*88*	*Gansu*	*58,613*
25	*Zhejiang*	*422,099*				89	Bulgaria	57,138
26	Argentina	420,527	*66*	*Jiangxi*	*127,167*			
			67	Israel	126,571	106	Kenya	31,268
28	Philippines	332,712	*68*	*Guangxi*	*122,884*	*107*	*Hainan*	*30,144*
29	*Hebei*	*318,924*						
30	*Henan*	*316,679*				125	Honduras	17,544
31	Pakistan	294,043				*126*	*Qinghai*	*17,531*
						127	*Ningxia*	*17,313*
33	Saudi Arabia	281,486				128	Estonia	17,305
34	*Shanghai*	*280,837*						
35	Belgium	277,740				153	Kyrgyzstan	8,356
36	*Liaoning*	*269,682*				*154*	*Tibet*	*8,289*

SOURCE: World Bank (2005) and own calculations based on National Bureau of Statistics, *China Statistical Yearbook, 2004*.

Argentina (no. 26). Provinces that are hardly known outside of China, such as Hebei and Henan (nos. 29 and 30), have economic weights similar to the Philippines or Pakistan (nos. 28 and 31). On the other hand, the Chinese provinces of Qinghai and Ningxia (nos. 126 and 127) only generated a GDP in 2003 comparable to that of Honduras or Estonia (nos. 125 and 128). Tibet's economy (no. 154) was about the same size as that of Kyrgyzstan (no. 153).

The absolute level of GDP per province of course varies greatly with the population size of the province. To compensate for the different population sizes of China's provinces, I also calculated per capita GDP estimates, based on national-level purchasing power parities (for details see next section and Appendix 1). These estimates allow rough comparison of living standards in China's provinces with those of other countries worldwide.

Figure 1 displays the per capita GDP of all 158 countries for which the World Bank has recently published estimates, as well as the per capita GDP estimates for the 31 mainland provinces of China and Hong Kong.

China's highest per capita GDP, in Shanghai (about $24,260 $PPP in 2003), is comparable to the levels of Sweden ($25,271 $PPP) and Singapore ($23,127 $PPP). China's lowest per capita GDP was calculated for the province of Guizhou, with only $1,871 $PPP per person in 2003. This is about the same level as in Cambodia ($1,963 $PPP) and Sudan ($1,805 $PPP).

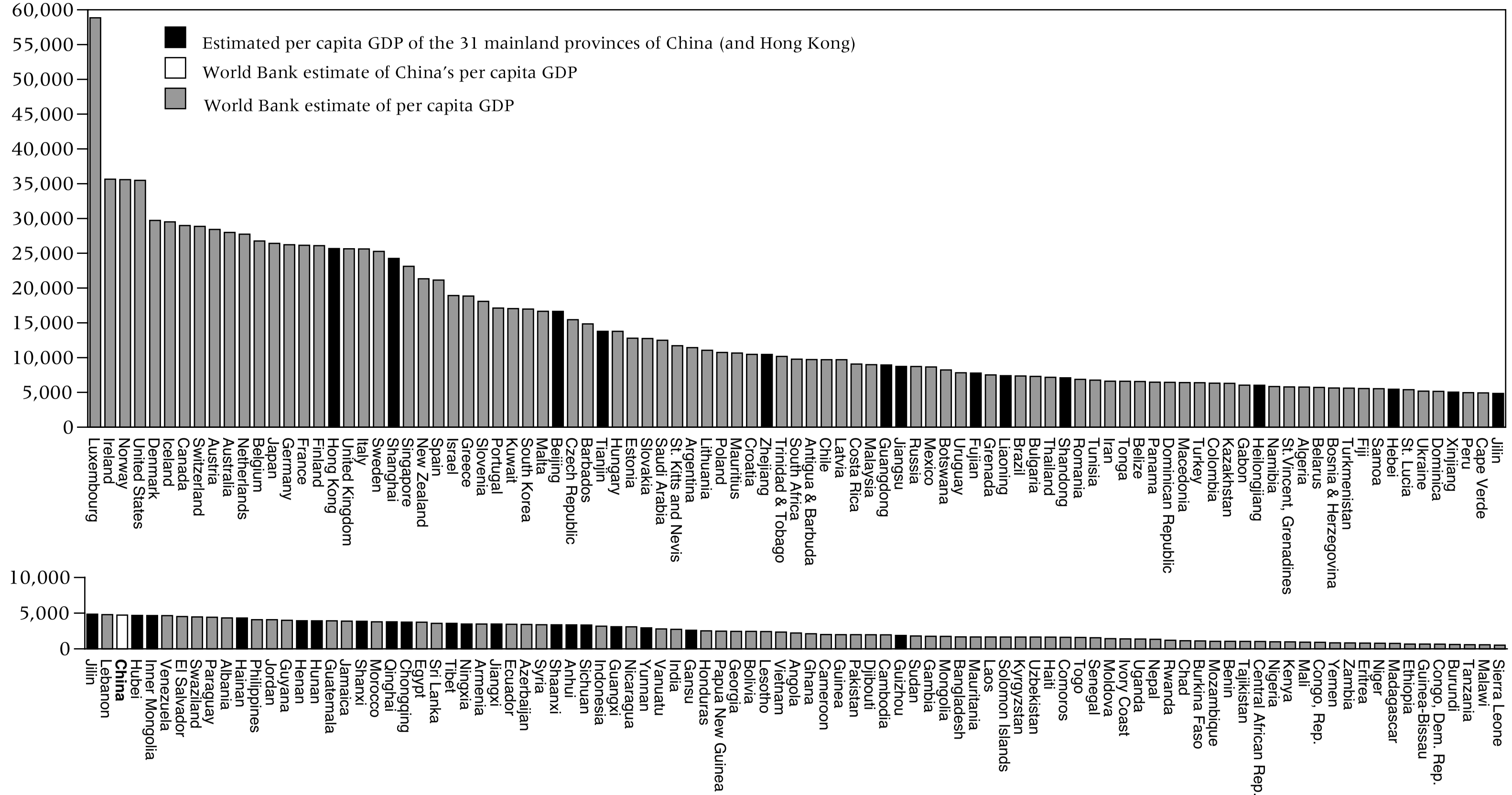
Use of PPP in international comparisons

The estimates of China's PPP-based regional per capita GDP use a relatively straightforward method that can be replicated with official statistics from the *China Statistical Yearbook* (CSY) of 2004 and the World Development Indicators (WDI) published in 2005. The estimates do not take into account purchasing power differences within China: no reliable data were available to do so. Hence, the province-level PPP-based GDP estimates reflect the average national purchasing power parity of China. This may have led to underestimates for provinces with low GDP, because it is highly probable that purchasing power in these provinces is higher than the national average. Correspondingly, estimates for provinces with high GDP might be somewhat overestimated.

Nevertheless, these estimation errors are likely to be smaller than the errors in the official data. It is well known that China's provincial GDP statistics are inaccurate: the sum of the published provincial GDPs is larger than the official national GDP; and the provincial per capita GDPs are all larger than the per capita national GDP. I have tried to compensate for these obvious overreporting errors by downscaling the province-level GDP data (see Appendix 1).

Because they eliminate the differences in price levels between countries, I used purchasing power parities to compare China's provincial levels of development in a world context. This is especially important in the present context in view of the Chinese government's control over the currency exchange rate. For example, per capita GDP in China in 2003 was about $1,067 (in 2000 US$) based on the exchange rate, but about $4,726 (2000 international $) on a PPP basis (all data from World Bank 2005). In other words, converting 100 US dollars to yuan RMB allows the purchase of products in China for the equivalent of about 443 US dollars, because of the undervalued official exchange rate. Hence, it is necessary to use PPP-based GDP to compare actual standards of living.

FIGURE 1 Per capita GDP in 2003 in purchasing-power-parity terms (in 2000 international $) for 31 provinces in China and 158 countries



NOTE: The World Bank 2003 per capita GDP estimate for China (PPP at 2000 international $) of $4,726 was allocated proportionally to the 31 mainland provinces, according to the 2003 regional per capita GDP published by the National Bureau of Statistics.
SOURCE: Based on data from the World Bank (2005) and the *China Statistical Yearbook, 2004*, Table 3-11.

Economic inequality in China and Europe: Which is more diverse?

Economic inequality has traditionally been analyzed by applying various statistical measures of income distribution. The most common approach is to calculate a Gini index based on national-level income data. Figure 2 displays the Gini index for China and for those 94 countries that have recent income data. With a Gini index of 0.447, or, in percentage terms, 44.7, China has a highly uneven income distribution—similar to those of Bolivia and Uruguay. For comparison, the United States has a Gini index of 40.8 and Germany of 28.3. The most uneven income distribution was reported for Guatemala, with a Gini index of 59.9, while the most equal income distribution was reported for Denmark (24.7).

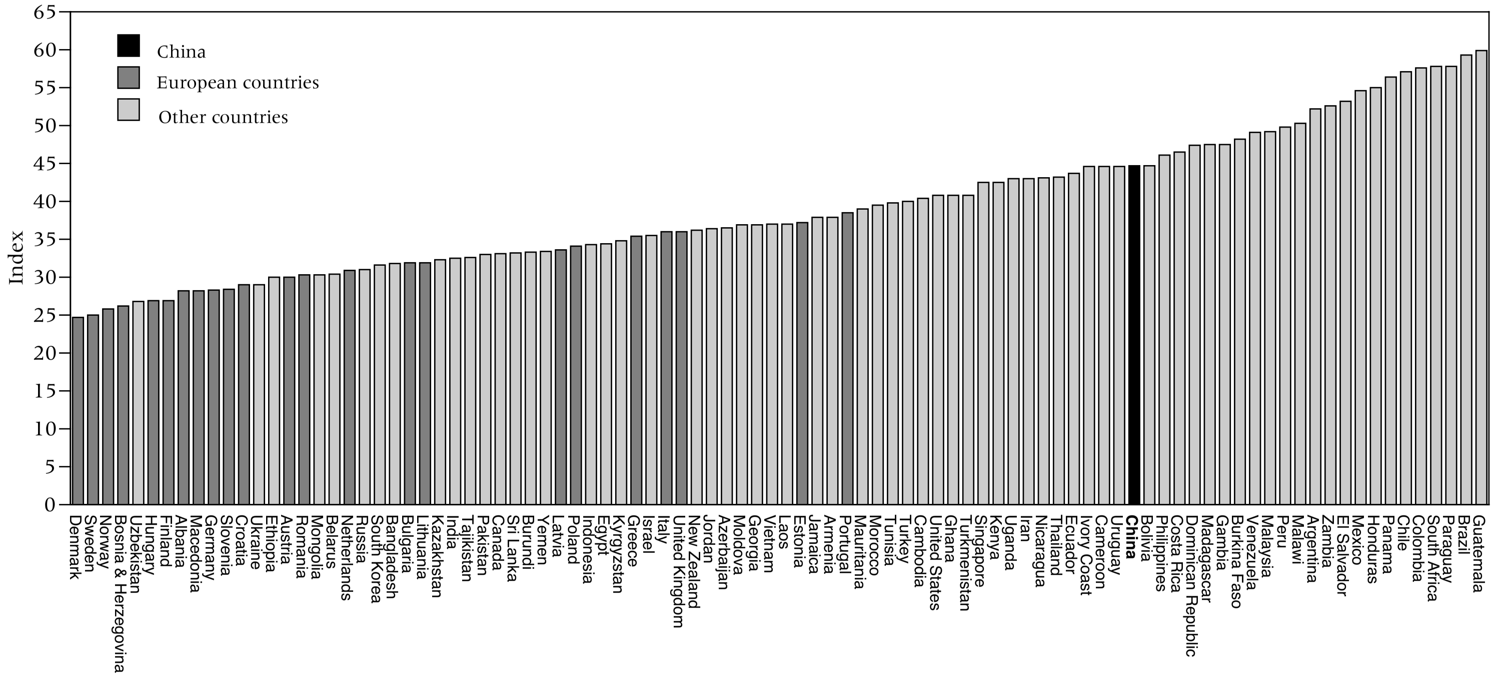
While these statistics may be informative, they do not address an important aspect of the income distribution, namely the geographical dimension of economic inequality in China. The Gini indexes presented in Figure 2 are calculated on the basis of national-level income data related to percentiles of the population. Data sources and methodologies differ from country to country, but usually the calculations are based on demographic, household, or health surveys with individual or household income by percentiles of the population. However, they do not take into account how income and people are distributed in geographical space. (On this subject see the discussion in Appendix 2.) I now compare China and Europe by calculating three types of economic inequality measures, based on a) the percentage of subregions, b) the percentage of land area, and c) the percentage of population.

I used the 2003 regional GDP of China's 31 mainland provinces and the national GDP of 31 European countries to compare geographical inequality in the economic development of China and Europe.[3] I drew Lorenz curves and calculated associated Gini indexes based on three dimensions: a) the percentage of regional GDP generated by the corresponding percentage of geographical units (provinces or countries); b) the percentage of GDP generated by the percentage of land area; and c) the percentage of GDP generated by the percentage of population (see Figures 3 through 5).

Figure 3 shows, by way of example, that 70 percent of China's provinces produced only a little more than 40 percent of the country's overall GDP; and 30 percent of the provinces contributed only 10 percent. Surprisingly, this regional inequality is even more extreme in Europe: 70 percent of the 31 European countries contributed only 20 percent to Europe's overall GDP in 2003; and 30 percent of the countries made a minuscule contribution of less than 3 percent to the continent's GDP.

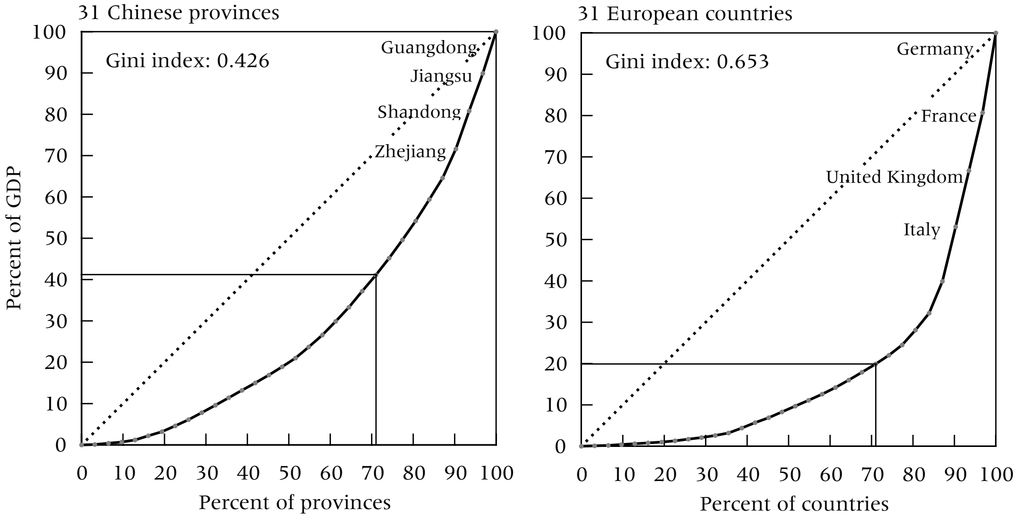
Of course, Europe's many "mini-nations," such as Albania, Estonia, and Latvia contribute only modestly to Europe's overall GDP. Relating land area and economic product, Figure 4 indicates a lesser degree of geographic

FIGURE 2 Gini indexes (percent) for income distribution: China and 94 countries worldwide, 1997–2004



NOTE: The Gini indexes refer to expenditure shares by percentiles of population, ranked by per capita expenditure. These indexes represent national-level income inequality; they do not take into account geographical differences in income.
SOURCE: Compiled from World Bank (2005).

FIGURE 3 Percentage of regional and national GDP generated by the corresponding percentage of geographical units, 2003



disparities of economic production in Europe than in China. In China 60 percent of the land area contributed only 10 percent to the GDP, while in Europe the same proportion of land area contributed about 30 percent of the overall GDP. And 90 percent of China's land area generated only 45 percent of the overall GDP, while in Europe the same fraction of land area was responsible for about 80 percent of the GDP. This clearly indicates that

FIGURE 4 Percentage of regional and national GDP generated by the corresponding percentage of land area, 2003

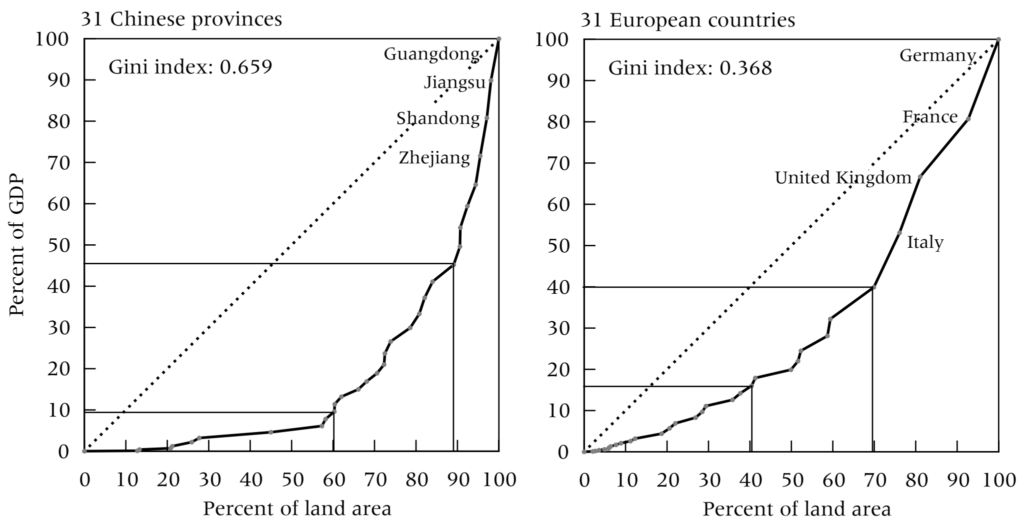
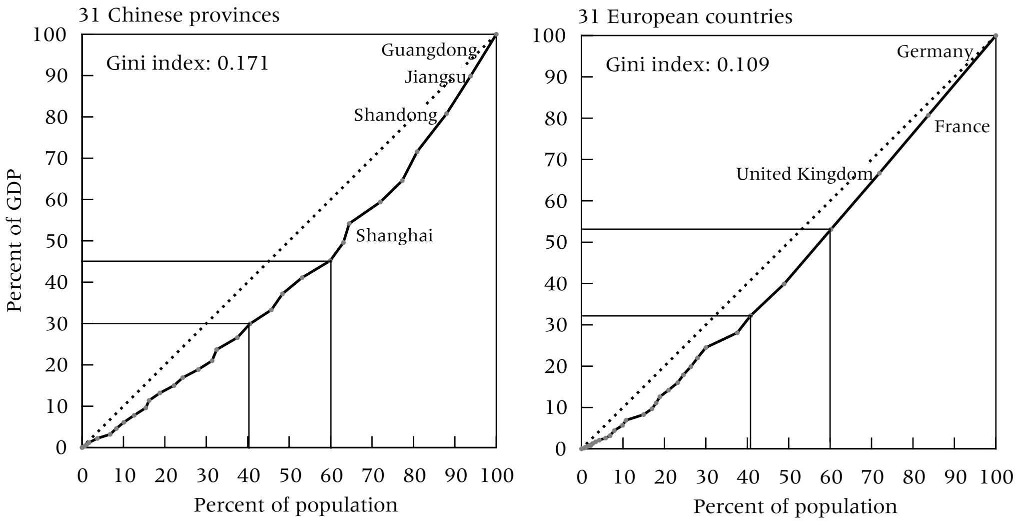


FIGURE 5 Percentage of regional and national GDP generated by the corresponding percentage of population, 2003



Europe's economy is geographically more homogeneous than China's, at least in a calculation that takes countries as units in the former and provinces in the latter. China has much larger economically unproductive areas (such as the provinces encompassing the Taklimakan and Gobi deserts in the west and northwest) than Europe. The oil, gas, and coal resources in these vast desert areas of China are transformed into economic wealth in refineries and industries in other parts of the country.

Figure 5 displays the relationship between population and GDP in China and Europe. When population density is taken into account, China and Europe are remarkably similar in the distribution of economic production. Some 40 percent of the population contributed about 30 percent to the overall GDP in both China and Europe. At the "midrange" of economic production, however, the distribution is a little "flatter" in Europe than in China. For instance, 60 percent of the population contributed some 53 percent of the overall GDP in Europe, while in China 60 percent of the population contributed only 45 percent to the overall GDP.

Conclusions

The above discussion has identified huge provincial disparities in China's economic development. While the most advanced Chinese provinces and urban areas belong to the same economic league as some of the most advanced Western countries, backward provinces in the central and western parts of the country remain at the economic level of poor African and Asian nations. China's provinces encompass the full scope of income differences that exist between developed and developing countries. Some observers have argued that this new, and apparently still growing, diversity in living standards within China could have wide-ranging deleterious consequences for the country's political stability (e.g., Lin 2003).

Nevertheless, China's economic diversity, defined in a geographic sense, is not much different from the situation found in Europe. Europe's economic production is concentrated in a small number of countries, while large geographic areas and large sections of the population contribute only modestly to the overall GDP. The geographic and demographic concentration of economic production seems to be common to Europe and China.

This note has looked only at economic disparities in producing income between provinces in China. The country's development is also characterized by huge provincial disparities in education, availability of infrastructure (Démurger 2001) and natural resources, health, and numerous other dimensions.[4] These call for additional assessments.

Appendix 1

Data and estimates on aggregate and per capita GDP, by province, ranked by per capita GDP, China, 2003

	GDP			GDP per capita	
	CSY 100 million yuan RMB (1)	CSY 100 million yuan RMB corrected (2)	WDI Millions of 2000 PPP international $ (3)	CSY yuan RMB per person per year (4)	WDI PPP 2000 international $ per person per year (5)
China	**135,539**	**117,252**	**6,089,508**	**9,101**	**4,726**
Shanghai	6,251	5,407	280,837	46,718	24,260
Beijing	3,663	3,169	164,576	32,061	16,649
Tianjin	2,448	2,117	109,969	26,532	13,778
Zhejiang	9,395	8,127	422,099	20,147	10,462
Guangdong	13,626	11,787	612,183	17,213	8,938
Jiangsu	12,461	10,780	559,841	16,809	8,729
Fujian	5,232	4,526	235,071	14,979	7,778
Liaoning	6,003	5,193	269,682	14,258	7,404
Shandong	12,436	10,758	558,722	13,661	7,094
Heilongjiang	4,430	3,832	199,031	11,615	6,032
Hebei	7,099	6,141	318,924	10,513	5,459
Xinjiang	1,878	1,624	84,357	9,700	5,037
Jilin	2,523	2,182	113,336	9,338	4,849
Hubei	5,402	4,673	242,688	9,011	4,679
Inner Mongolia	2,150	1,860	96,614	8,975	4,660
Hainan	671	580	30,144	8,316	4,318
Henan	7,049	6,098	316,679	7,570	3,931
Hunan	4,639	4,013	208,409	7,554	3,923
Shanxi	2,457	2,125	110,370	7,435	3,861
Qinghai	390	338	17,531	7,277	3,779
Chongqing	2,251	1,947	101,113	7,209	3,744
Tibet	185	160	8,289	6,871	3,568
Ningxia	385	333	17,313	6,691	3,475
Jiangxi	2,830	2,449	127,167	6,678	3,468
Shaanxi	2,399	2,075	107,763	6,480	3,365
Anhui	3,972	3,436	178,471	6,455	3,352
Sichuan	5,456	4,720	245,142	6,418	3,333
Guangxi	2,735	2,366	122,884	5,969	3,100
Yunnan	2,465	2,133	110,761	5,662	2,940
Gansu	1,305	1,129	58,613	5,022	2,608
Guizhou	1,356	1,173	60,927	3,603	1,871

NOTES: CSY = China Statistical Yearbook; WDI = World Development Indicators
SOURCES:
(1) Regional GDP from *CSY, 2004*, Table 3-10, column for 2003. Provisional national total = sum of regional GDPs. Apparently, provinces have overreported GDP, because the sum of the regional GDPs is larger than the official national GDP.
(2) National total GDP from *CSY, 2004*, Table 3-1; corrected regional GDP (in 100 million yuan) based on the official total GDP.
(3) National total GDP from World Development Indicators (WDI), 2005 (in millions of 2000 PPP international $). Regional GDP was estimated according to the following formula: GDP(tot)WDI / GDP(tot)CSY * RegGDP(corr)CSY.
(4) National average per capita GDP from *CSY, 2004*, Table 3-1. Regional per capita GDP from *CSY, 2004*, Table 3-11.
(5) National average per capita GDP from WDI, 2005 (at 2000 PPP international $). Regional GDP was estimated according to the following formula: PC – GDP(tot)WDI / PC – GDP(tot)CSY * PC – RegGDPCSY.

Appendix 2

Some methodological considerations on measuring income inequality

To clarify the distinction between commonly used indicators of income inequality and spatial indicators of income inequality, consider a "model population" of 100 individuals. To each person I arbitrarily assign a specific income—ranging between US$ 450.00 and US$ 5,187.00.[5] Figure 1a displays the income distribution of this population of 100 people. With this model population the following calculations are made:

Case 1: The Lorenz curve is plotted and a Gini index is calculated, based on cumulated percentages of the population.

Case 2: The 100 people are randomly distributed in a hypothetical geographical space, and a Gini index based on cumulated percentages of the subregions is calculated. This index measures the spatial aspect of inequality.

Case 3: The 100 people are distributed in the hypothetical geographical space, so that people with higher income cluster together in certain subregions, while people with lower income cluster together in other subregions. Again, a Gini index is calculated based on cumulated percentages of the subregions. The three cases are depicted in Figures 1a, 2a, and 3a and the corresponding Figures 1b, 2b, and 3b.

The calculations in Case 1 include the following steps: a) the population is sorted by income (from low to high); b) cumulative percentages for both the income and the population are calculated; c) the cumulative percentages of income are plotted against the cumulative percentages of population in Figure 1b to get a Lorenz curve. This curve indicates what percentage of the model population has access to what percentage of the overall income. In an egalitarian world 10 percent of the people would have 10 percent of the overall income; and 30 percent of the people would have 30 percent of the overall income, etc. Thus, the deviation of the Lorenz curve from the diagonal in Figure 1b is the familiar measure of income inequality (see Figure 2 in the text). The Lorenz curve in Figure 1b and its Gini index of 0.37 indicate a moderately uneven income distribution in our model population of 100 individuals.

In Case 2, the 100 individuals are randomly distributed in a hypothetical geographical space with the dimension of 100 by 100 spatial units—consisting of 100 equal-sized subregions or "provinces" of 10 by 10 spatial units (such as km). The circles' areas represent the income value of each person. For each subregion the total income of all people in this subregion is calculated. Each subregion now has a specific total income level (in our example, each subregion has only one person, but we could have a larger sample, which would then require aggregation of the incomes of all persons in a given subregion). Now the same procedure is applied as in Case 1—but not on the basis of people, but on the basis of subregions. All subregions are sorted according to their total level of income (from the lowest to the highest). Then the percentages of the income per subregion are cumulated, as well as the percentages of subregions. Finally, the cumulative percentages of regional income are plotted against the cumulative percentages of subregions to get

Figure 2b. Figure 2b is analogous to Figure 1b, except on the vertical axis we have now plotted the 100 subregions instead of the 100 individuals of our model population. In other words, if we have a completely evenly distributed population in a (hypothetical) geographical space, we get exactly the same Lorenz curve and Gini index, as in the first case. If the distribution in the physical space is completely even, then the corresponding Lorenz curve and Gini index display just the income distribution within the population. In other words, in Case 2 the spatial distribution of the population adds no new insight on income inequality beyond that shown in Case 1.

In Case 3, our model population of 100 individuals is not randomly distributed in the hypothetical geographical space, but is clustered by income. In Figure 3a the "rich" people are concentrated in a few subregions in the top-right of the model space, while the "poor" people are concentrated in the lower left subregions. However, we still have exactly the same total population and income values as in Cases 1 and 2. The same procedure as in Case 2 is applied to Case 3. The total income of each subregion is calculated; the subregions are sorted from low to high total income, and cumulated percentages of the total are calculated. In Figure 3b these cumulative percentages are plotted against the cumulative percentages of the subregions. Now the distance between the Lorenz curve and the diagonal is significantly greater than in Cases 1 and 2, and the Gini index is 0.59 (as compared to 0.37 as in Case 2). By clustering individuals in our physical space according to income, we have increased economic inequality (with exactly the same model population and individual income values).

This simple modeling exercise highlights the fact that economic inequality has different dimensions. We may see it as the distribution of income among people, or we may see it as the distribution of income among subregions. The first approach is the common concept of economic inequality in relation to the population (regardless of where people live). The other concept takes subregions as units of analysis and studies the distribution of income among these subregions. The first approach focuses on the gap between rich and poor people, the second on the gap between rich and poor regions. Both approaches are useful in describing economic inequality.

FIGURE 1a Income of model population

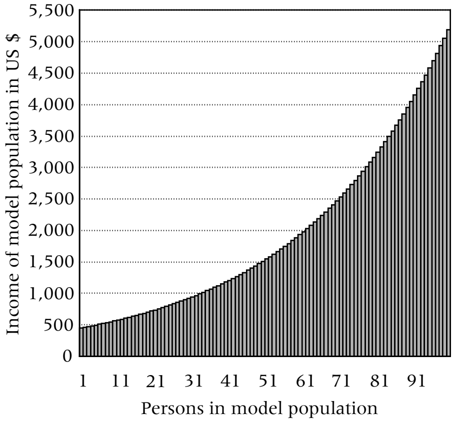


FIGURE 1b Lorenz curve and Gini index for income by model population (corresponding to Figure 1a)

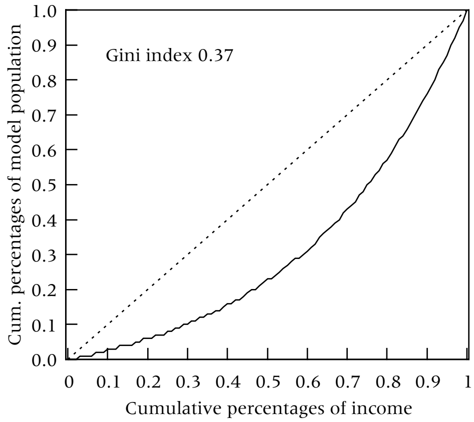
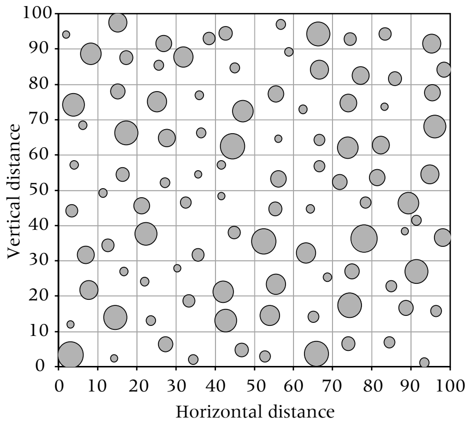


FIGURE 2a Model population distributed in geographic space (100 subregions)



NOTE: Size of circle indicates level of income. Figure shows the distribution of people in a hypothetical geographic space of 100 by 100 spatial units that consists of 100 equal-sized subregions of 10 by 10 spatial units.

FIGURE 2b Lorenz curve and Gini index for income by subregion (corresponding to Figure 2a)

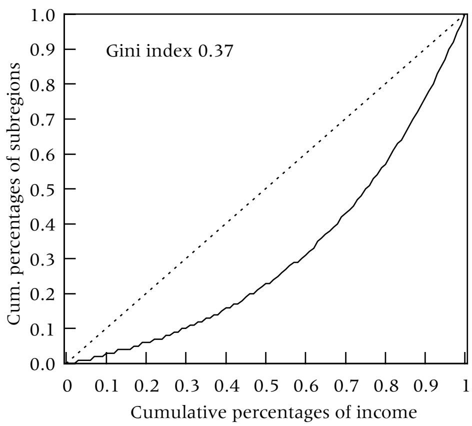
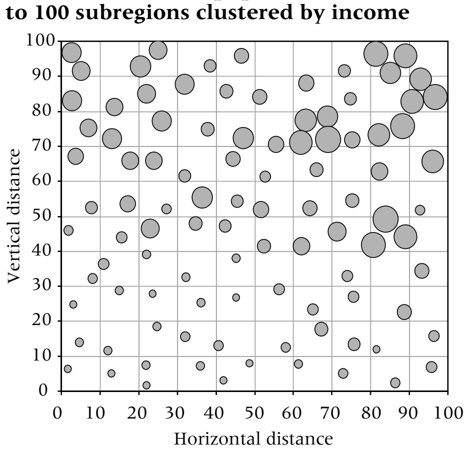
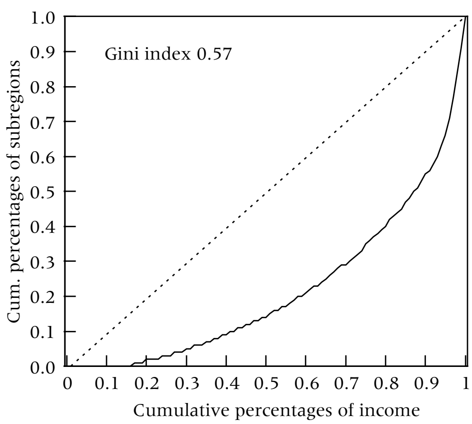


FIGURE 3a Model population distributed to 100 subregions clustered by income



NOTE: See note to Figure 2a.

FIGURE 3b Lorenz curve and Gini index for model population in 100 subregions clustered by income (corresponding to Figure 3a)



Notes

1 There is sometimes confusion about naming conventions. I use the following terms: million = 1,000,000; billion = 1,000,000,000; trillion = 1,000,000,000,000. (For the latter two numbers some countries use the words milliard and billion, respectively).

2 See, e.g., Aziz and Duenwald 2001; Démurger et al. 2002; Fleisher and Chen 1997; Heilig 2005; Heilig et al. 2006; Jian et al. 1996; Kanbur and Zhang 2005; Zhao 1996.

3 In the calculations for the left-hand panels of Figures 3 through 5, I used the following 31 provinces of Mainland China: Anhui, Beijing, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Inner Mongolia, Jiangsu, Jiangxi, Jilin, Liaoning, Ningxia, Qinghai, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, Tianjin, Tibet, Xinjiang, Yunnan, Zhejiang.

In the calculations for the right-hand panels of these figures, I used the following 31 European countries: Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom.

4 Colleagues and I have developed a tool, called the Regional Analysis and Planning System (RAPS), that should help decisionmakers and planners to better understand these discrepancies (Heilig 2004). It is available on CD-ROM on the IIASA web site at: «www.iiasa.ac.at/Research/SRD» or directly from the author.

5 To generate a hypothetical income distribution, person number 1 was assigned an arbitrary income of US$ 450; person 2 was assigned an income of US$ 450 * 1.025 = US$ 461.25; and so forth. Person number 100 was thus assigned an income of US$ 5,187.00.

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