

Prospects for diminishing regional disparities

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Introduction

In the three decades since Deng Xiaoping declared that China's economic development would necessarily involve some people becoming rich before others, inequalities have risen steadily across (and within) China's provinces and regions. To some extent, this outcome has been the natural consequence of market forces in a large developing economy in which the numerous historical and geographical advantages of the eastern region ensured that industrialisation would occur there ahead of the rest of the country. Deng's Open Door Policy and, later, the Coastal Development Strategy, compounded these advantages with a range of preferential policies that explicitly promoted the development of the eastern region above all else. Yet Deng insisted that there would be 'no polarisation of rich and poor' in the longer term and that people elsewhere simply needed a little patience, referring to the 'two great situations' in which coastal provinces would be given advantages during the early reform years but would subsequently be expected to subordinate their interests to interior areas (Deng 1987).

In late 1999, Jiang Zemin announced the Western Regional Development Program (WRDP; '*xibu da kai fa*'), declaring that its implementation 'is an important move to carry out Comrade Deng Xiaoping's strategic thinking of "two great situations", eliminate regional disparities gradually, consolidate the unity of ethnic groups, ensure border stability and social stability and promote social progress'. Taken from the 'Overall Plan of Western Regional Development During the Tenth Five-Year Plan Period' (2001–05). A seemingly endless list of policies and projects has been introduced under the WRDP, including policies to promote infrastructure and investment, protect the west's fragile ecology and environment, improve the quality of the workforce, push ahead with enterprise and structural reform, encourage east–west cooperation and accelerate development in specific industrial sectors and key projects such as the West–East Power Transmission Project and West–East Gas Pipeline Project. For further details, see the 'Overall Plan'; Lai (2002); and Golley (2007). The time frame

for achieving the ambitious set of policy goals has been set as the middle of the twenty-first century, by which time the intention is for regional disparities between the western and other regions to be 'diminished considerably'.

In 2002, the newly appointed Hu Jintao endorsed the WRDP as an important component of his drive for a 'harmonious and balanced society'. As if this 'colossal systemic campaign' was not enough—and perhaps partly to ensure that he could lay claim to his own regional policy initiative as had his predecessors—Hu and his team formally launched the 'Revive the North-East' ('*zhen xing dongbei*') scheme in 2004, which they intend to run alongside the WRDP through to 2020. In addition, the 'Rise of the Central Region' ('*zhongbu jue qi*') scheme was officially pronounced in late 2005, although there appears to have been little to follow in terms of substantive or identifiable programs within it (Chung et al. 2009). With every province bar the most developed eastern ones being targeted in one way or another, the Chinese Communist Party appears to be taking the regional issue seriously—on paper at least.

Uneven development is not only an economic issue but an ethical one, particularly for a regime whose legitimacy has long been based on egalitarian principles. Deng Xiaoping might have succeeded in convincing the Chinese people that some would have to get rich before everyone else could, but if the gap between those fortunate some and the rest of the country continues to widen, and if the government fails to do anything about this, 'the moral foundations of the regime will be shaken' (Wang and Hu 1999:201). This, in turn, makes the question of regional imbalance an issue of great political significance.

It is impossible to say with any degree of certainty how China's regional pattern of development will unfold in the next two decades, hinging as it does on the complex interaction of a multitude of uncertain market forces and uncertain policy choices. Instead, this chapter first provides a snapshot of China's regional situation as it stands and reflects on some recent trends in industrial development. It then considers some of the theoretical and empirical reasons for optimism and pessimism regarding the likelihood that the Chinese leadership will achieve just one of its regional policy goals—that of stimulating industrial development in China's vast interior, and in the west in particular. While the chapter provides some indication that the process of industrial relocation from the east westwards has already begun in some sectors, the balance of evidence presented here suggests that by 2030, in the absence of significant policy adaptation, disparities between the western and other regions are likely to have 'diminished marginally' at best.

Regional snapshot

At present, China comprises 31 ‘provincial units’, or provinces, centrally administered municipalities (CAMs) and autonomous regions (Figure 7.1). The four centrally administered municipalities are Beijing, Tianjin, Shanghai and Chongqing. The five (designated ethnic) autonomous regions are Guangxi (Zhuang), Inner Mongolia, Ningxia (Hui), Tibet and Xinjiang (Uighur). The term ‘province’ will be used generically to denote all of these. There are also two special administrative regions—Hong Kong and Macau—which will be excluded from the analysis. While many alternative regional breakdowns are possible, the discussion here focuses mainly on the three macro-regions: east, centre and west. The east comprises the coastal provinces of Liaoning, Beijing, Tianjin, Hebei, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong and Hainan. The centre comprises Heilongjiang, Jilin, Shanxi, Henan, Anhui, Hubei, Jiangxi and Hunan, while the west comprises Xinjiang, Gansu, Ningxia, Shaanxi, Qinghai, Sichuan, Guizhou, Yunnan, Tibet, Inner Mongolia and Guangxi. Inner Mongolia and Guangxi were reclassified into the ‘west’ at the start of the WRDP in late 1999. All of the calculations below are based on this new classification. Alternatively, there is some reference to ‘the coast’—equivalent to the east—and ‘the interior’, comprising the west and the centre.

Figure 7.1 Map of China



Table 7.1 provides a snapshot of some key indicators for the east, centre and west in 2007. The east outperforms the other two regions in all the indicators seen here (and virtually any other indicator one might choose). The ranking from east to centre to west is also consistent, with the west home to the least urbanised, least educated, poorest people with the lowest life expectancy. It is also the region most dominated by state ownership of industry, producing a miniscule share of national exports and with a tiny share of foreign direct investment (FDI)—three indicators that reveal it to be the least reformed of China's regions.

Table 7.1 Regional snapshot, 2007

Indicator	East	Centre	West
Population (million)	474.8	461.5	363.0
Share of national population (%)	36.5	35.5	27.9
Urban proportion of population (%)	55.0	43.3	37.0
Percentage of population aged 6+ with:			
Primary schooling or less	35.8	36.7	49.0
Senior secondary schooling or higher	23.0	20.3	15.6
Life expectancy (in 2000)	74.3	71.6	68.4
Per capita GDP (RMB)	30 131	15 939	12 229
Regional share of industrial output produced by (%):			
State-owned and shareholding enterprises	20.3	44.6	53.0
Private enterprises	23.7	23.7	19.5
Hong Kong, Macau, Taiwan and foreign-funded enterprises	41.1	14.5	10.0
Share of national exports produced in (%)	88.2	8.0	3.8
Share of foreign direct investment going to (%)	77.2	14.5	6.1
Share of national total budgetary revenue (%)	59.6	23.1	17.3
Share of national total budgetary expenditure (%)	44.2	30.1	25.7

Sources: Author's calculations and National Bureau of Statistics (NBS) 2008, *China Industrial Economic Statistical Yearbook 2008*, China Statistics Press, Beijing.

Of course, there are significant differences in performance within regions, as demonstrated for per capita gross domestic product (GDP) in Table 7.2. In 2007, the per capita GDP of Shanghai, the richest province, was nearly 10 times that of the poorest province, Guizhou. Inner Mongolia, only recently reclassified into the west, had more than twice the per capita GDP of Anhui and Jiangxi in the centre—just one illustration of the non-linear association between regions and income levels. It is worth noting here that while all of the western provinces with the exception of Tibet had below-average rates of per capita GDP growth during the period 1994–2007 (and indeed during the first three decades of reform), with the exception of Xinjiang and Yunnan, they all performed above average

during the period 2000–07. Moreover, the increase in the west’s aggregate per capita GDP growth—from 11.3 per cent to 15 per cent—is larger than the increase for the other two regions, although on average this resulted in virtually equivalent growth rates for all three regions in the latter period, rather than the west outperforming the others. It is impossible to say whether this boost to growth rates has been caused by the shift in regional policy or other factors, but it does seem to suggest that something has changed for the region in aggregate. Whether this change will translate into sustainable differences in growth rates over the longer term remains to be seen.

Table 7.2 Per capita GDP levels and growth rates

Region	Per capita GDP (RMB) 2007	Average annual growth rates (current prices)			
		1994–2000	Rank	2000–07	Rank
East					
Beijing	58 204	13.9	7	14.6	19
Tianjin	46 122	14.1	4	14.4	22
Hebei	19 877	14.3	3	14.6	18
Liaoning	25 729	10.7	24	12.6	24
Shanghai	66 367	14.7	2	9.8	31
Jiangsu	33 928	12.6	13	16.3	8
Zhejiang	37 411	13.9	6	15.7	12
Fujian	25 908	13.6	8	12.2	28
Shandong	27 807	13.5	10	16.5	6
Guangdong	33 151	12.4	14	14.5	20
Hainan	14 555	6.1	30	11.3	30
Centre					
Shanxi	16 945	10.5	25	18.6	2
Jilin	19 383	10.8	23	16.0	10
Heilongjiang	18 478	11.6	18	11.6	29
Anhui	12 045	11.6	19	13.8	23
Jiangxi	12 633	12.6	12	14.7	16
Henan	16 012	14.0	5	16.7	5
Hubei	16 206	13.6	9	12.3	27
Hunan	14 492	13.1	11	14.4	21
West					
Guangxi	12 555	7.7	29	16.5	7
Inner Mongolia	25 393	11.8	16	23.3	1
Chongqing	14 660	-	-	16.1	9
Sichuan	12 893	11.3	20	15.2	14
Guizhou	6915	9.4	28	14.6	17

Yunnan	10 540	10.9	22	12.4	26
Tibet	12 109	14.9	-	15.0	15
Shaanxi	14 607	11.7	17	18.1	3
Gansu	10 346	12.2	15	15.2	13
Qinghai	14 257	9.8	27	15.9	11
Ningxia	14 649	10.3	26	17.1	4
Xinjiang	16 999	11.2	21	12.5	25
Average	18 934	12.3		13.4	

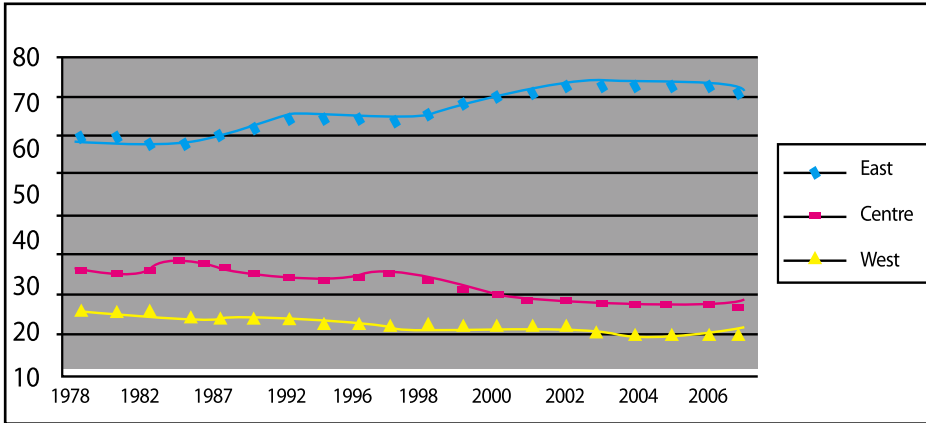
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Sources: Author's calculations and National Bureau of Statistics (NBS) various years, *China Industrial Economic Statistical Yearbook*, China Statistics Press, Beijing

In 2007 the west had an average annual per capita GDP of RMB12 229—just 40 per cent of the east's RMB30 131. Between 2000 and 2007, the two regions had almost identical average rates of per capita GDP growth (albeit with significant variation across provinces in both regions) of about 15 per cent in current price terms. In order to close the east–west income gap completely by 2050, the west would need to grow substantially faster each year than the east. To illustrate this point, from their respective levels in 2007, eastern and western per capita incomes would be equalised in 2050 if the east grew at 10 per cent per annum throughout the period while the west grew at 12.33 per cent per annum. With these average growth rates, by 2030 the west would still have a per capita income equal only to two-thirds of the east's. Obviously, narrowing the gap more quickly would require a greater divergence in regional growth rates. This begs the key question: is there any reason to expect the west (and the centre) to grow faster than the east during the next two decades, thereby narrowing the per capita income gap between regions?

Recent trends in industrial development

Disparities in industrial development have been a critical component of the rising regional inequalities since 1978. Figure 7.2 illustrates the dominance of the eastern region in producing China's gross value of industrial output (GVIO). From 59.2 per cent of the total in 1978, the east's share rose steadily to a peak of 72.4 per cent in 2005, dropping marginally to 70.4 per cent in 2007. With just 36.4 per cent of the population, this translates into significantly higher per capita industrial output in the east than in the rest of the country. Is it possible that the improvement in the western growth rate of per capita GDP in recent years reflects more rapid growth of industrial output in the west and a consequent change in the regional distribution of industrial output?

Figure 7.2 Regional shares of GVIO (per cent)

Shift-share analysis sheds some light on this question. As explained in an earlier *China Update* (Golley 2003), shift-share analysis decomposes provincial rates of industrial output growth into three components. In particular, let ΔY_{ij} denote the change in output for sector i in region j from the base period to the end period. By definition, this is equal to total output of sector i in region j in the base period, Y_{ij0} , multiplied by the growth rate of sector i in region j over the whole period, R_{ij} (Equation 7.1).

Equation 7.1

$$\Delta Y_{ij} = Y_{ij0} R_{ij}$$

Denoting the national growth rates of total output and of sector i as R_k and R_{ik} respectively, Equation 7.1 can be decomposed into three components (Equation 7.2).

Equation 7.2

$$\Delta Y_{ij} = Y_{ij0} R_k + Y_{ij0} (R_{ik} - R_k) + Y_{ij0} (R_{ij} - R_{ik})$$

The first term on the right-hand side of Equation 7.2 is called the national component of growth, as it shows the growth that would have resulted had sector i in region j exactly matched the national trend (R_k). The second term in Equation 7.2 is the structural component, reflecting the extent to which the change in sector i can be attributed to the region's industry mix; if a region's industrial structure is dominated by industries that are experiencing above-average rates of growth (higher R_{ik}), it will experience faster output growth than the rest of the country. The third term in Equation 7.2 is the location (or residual) component, as it measures the extent to which sector i in region j grew faster or slower than the national growth rate for that sector, thereby

reflecting how the local characteristics of a given province influenced its growth performance. Rearranging Equation 7.2 gives the net relative change (NRC) for sector i in province j , which is the difference between the real change and the national component (Equation 7.3).

Equation 7.3

$$\text{NRC}_{ij} = \Delta Y_{ij} - Y_{ij} R_k = Y_{ij} (R_{ik} - R_k) + Y_{ij} (R_{ij} - R_{ik})$$

The NRC shows whether sector i in region j experienced faster or slower growth of industrial output than the national average, with a positive value reflecting the former. The NRC can therefore be regarded as an index of relative performance, which the right-hand side seeks to explain. It is also possible to calculate an industry-wide NRC for each province (Equation 7.4).

Equation 7.4

$$\text{NRC}_j = \Delta Y_j - Y_j R_k = Y_j (R_k - R_k) + Y_j (R_j - R_k)$$

In Equation 7.4, NRC_j is the NRC for province j , and so on. As Equation 7.4 shows, the industry-wide NRC is accounted for entirely by the province's industry-wide location component, since the structural component becomes zero. Data are drawn from the *China Industrial Economic Statistical Yearbook* (NBS 1995, 2001, 2008) for 30 provinces. Because Chongqing became an independent provincial unit only in 1997, it is included in Sichuan for this analysis so that the two periods can be compared. and 36 industrial sectors, as listed in the tables below, in order to conduct two shift-share analyses for the periods 1994–2000 and 2000–07. A number of interesting points emerge.

Table 7.3 presents the industry-wide NRCs and average annual growth rates for each province and region during the period 2000–07. This demonstrates the first key message contained in shift-share analysis: a positive NRC is equivalent to a provincial growth rate that is above the national average annual rate of growth (of 22.3 per cent in current prices). The east's and the west's growth rates are identical and marginally above the national average compared with the centre's, which is marginally below. Thus, it does not appear to be the case that relatively higher growth rates of industrial output in the west have underpinned the improvement in its rates of economic growth. These regional aggregates obviously obscure provincial-level results and it is worth noting that of the eight provinces in the centre, five provinces recorded positive NRCs, while of the 11 eastern provinces, five recorded negative NRCs. The geographic proximity of these eastern and central provinces provides some indication (although far from pure evidence) that industrial relocation in line with theoretical expectations could already have begun (discussed further below). The results for the western provinces are much less promising, with just three of the 11 provinces recording positive NRCs.

Table 7.3 Industry-wide NRCs and growth rates of industrial output, 2000–07

Region	NRC (RMB100 000)	Average annual growth rate (%)
East	2458.3	22.4
Beijing	–2526.4	18.9
Tianjin	–2250.5	19.4
Hebei	876.4	23.0
Liaoning	–1870.0	20.9
Shanghai	–7043.3	18.3
Jiangsu	3920.7	23.3
Zhejiang	4533.9	24.2
Fujian	349.4	22.7
Shandong	10 426.9	25.6
Guangdong	–3999.8	21.2
Hainan	41.1	22.9
Centre	–2968.0	21.7
Shanxi	2125.3	26.8
Jilin	–1324.8	19.6
Heilongjiang	–5255.8	13.4
Anhui	69.2	22.4
Jiangxi	1783.3	27.1
Henan	3862.7	25.3
Hubei	–4950.8	16.3
Hunan	722.9	23.5
West	509.6	22.4
Guangxi	–121.2	21.9
Inner Mongolia	2436.0	30.0
Sichuan	889.1	23.1
Guizhou	–495.1	19.7
Yunnan	–741.6	20.0
Tibet	–38.5	11.9
Shaanxi	178.5	22.7
Gansu	–674.8	19.5
Qinghai	–106.9	20.5
Ningxia	–65.4	21.4
Xinjiang	–750.2	19.3
National total	0.0	22.3

Sources: Author's calculations and National Bureau of Statistics (NBS) 2001, *China Industrial Economic Statistical Yearbook 2001*, China Statistics Press, Beijing; National Bureau of Statistics (NBS) 2008, *China Industrial Economic Statistical Yearbook 2008*, China Statistics Press, Beijing.

Table 7.4 provides a different slant, by presenting the NRC and location components for the east, centre and west for each of the 36 industrial sectors for the period 2000–07. Note that all regions can record a positive NRC for sectors that are growing above the national average rate of growth of industrial output (that is, those sectors with positive structural components), while the regional sum of location components for each sector must be zero, reflecting as they do the location advantages for a particular region in a particular industry. The number of negative NRCs for the eastern region, 22, indicates that not all industrial sectors are performing above average in the region—and likewise the number of negative location components for the east, 18, indicates that the east is not completely dominating in every sector. The 18 and 15 sectors recording positive location components in the centre and west, respectively, also indicate that the two regions have something positive to offer with regard to these sectors at least. Still, for the other regions to begin making a dent in the east's industrial dominance—accounting as it does for more than 80 per cent of output in 13 sectors and for more than 50 per cent of output in 32 sectors (Table 7.5)—they need to be recording positive NRCs in sectors in which the east is not. For the centre, this was the case for five sectors during the period 2000–07: non-ferrous metal mining and dressing, non-metal mineral mining and dressing, food processing, food manufacturing and special-purpose equipment. In all of these sectors other than non-ferrous metal mining and dressing, the east's share of output far exceeds the centre's, suggesting that it will be a long time before any kind of balanced regional distribution of output is achieved, let alone a concentration of any of these industries in the centre. As for the west, this was also the case for five industries: food processing, food manufacturing, leather and furs, petroleum processing and coking and special-purpose equipment—sectors in which the region produces between 4.5 and 15.7 per cent of total output, with the exception of leather and furs. Notably, none of these sectors is particularly labour intensive but rather dominates the capital-intensive end of the industrial spectrum—a point returned to further below. The share of 'compensation to employees' in total value added for each sector is used as a measure of labour intensity, calculated using China's input–output table for 44 sectors in 2005. These sectors do not perfectly map onto the 36 industrial sectors used here, but the calculations ranging from 0.477 for garments to 0.091 for crude petroleum and natural gas are at least indicative of labour intensity by sector. Nor are any of these potentially promising sectors for the centre and west particularly large in terms of their contribution to national output, with none of them being in the top-10 industrial sectors.

Table 7.4 Regional NRCs and location components by sector, 2000–07

Sector	East		Centre		West	
	NRC	Location	NRC	Location	NRC	Location
Coal mining and dressing	425.7	–660.0	1618.6	94.1	1089.6	565.9
Petroleum and natural gas extraction	–2866.9	–212.7	–3045.2	–614.5	–646.5	827.2
Ferrous metal mining and dressing	812.2	–0.6	264.4	–86.4	264.9	87.0
Non-ferrous metal mining and dressing	–40.7	–164.4	305.4	187.8	98.4	–23.4
Non-metal mineral mining and dressing	–263.3	–71.8	10.8	94.8	–84.9	–23.0
Food processing	–446.5	–337.7	89.1	131.9	181.9	205.8
Food manufacturing	–1142.2	–601.2	120.7	281.8	244.8	319.4
Beverages	–2312.8	–407.3	–589.0	125.3	–334.2	282.0
Tobacco	–566.3	321.8	–857.4	28.1	–1689.2	–349.9
Textiles	–3615.1	896.0	–1527.8	–695.8	–567.5	–200.1
Garments	–3027.1	–19.4	–192.3	28.3	–56.2	–8.9
Leather, furs and down products	–1199.7	–104.1	–91.6	16.7	52.3	87.4
Wood products	96.7	–201.1	221.7	144.9	80.4	56.1
Furniture	657.5	120.2	–16.8	–108.7	26.7	–11.5
Paper making	–728.1	170.6	–213.1	–1.3	–282.9	–169.2
Printing and recording medium production	–504.4	67.9	–128.6	–6.4	–177.1	–61.5
Cultural, educational and sports articles	–829.3	–23.2	–3.4	22.4	–1.9	0.8
Petroleum processing and coking	–2651.8	–533.1	–1479.2	–701.0	956.7	1234.1
Chemical materials	762.4	1096.0	–933.8	–835.6	–320.4	–260.3
Medical and pharmaceutical products	–1222.8	24.6	–448.7	44.0	–422.8	–68.6
Chemical fibres	–1290.7	198.1	–405.4	–169.3	–95.7	–28.7
Rubber	–215.7	100.9	–78.0	–21.4	–109.6	–79.5
Plastic	–747.6	19.0	–83.4	6.8	–70.0	–25.8
Non-metal mineral products	–1208.9	57.1	–284.1	173.8	–477.4	–230.9
Smelting and pressing of non-ferrous metals	8073.5	857.9	2184.7	–120.7	978.7	–737.3
Smelting and pressing of non-ferrous metals	3456.2	–55.0	2621.6	534.5	1604.6	–479.5
Metal products	–415.2	109.6	–103.1	–46.7	–90.6	–62.9
Universal machines	3474.3	367.8	389.2	–130.0	88.1	–237.8
Special-purpose equipment	–261.3	–396.5	117.3	82.2	327.5	314.4

Transportation equipment	2335.0	1360.8	-939.8	-1423.1	285.4	62.3
Electrical equipment and machinery	901.0	-1.4	120.6	9.7	47.3	-8.3
Electronic and telecommunications equipment	4950.3	1907.1	-603.1	-750.2	-967.5	-1157.0
Instruments and meters	228.6	66.1	11.9	-1.4	-53.7	-64.6
Electric power, steam and hot water	2344.2	-332.5	1212.9	103.5	1010.6	229.0
Production and supply of gas	35.3	-93.2	-2.8	-33.8	146.3	127.0
Production and supply of tap water	-538.1	27.5	-230.3	-33.7	-109.0	6.2

Sources: Author's calculations and National Bureau of Statistics (NBS) 2001, *China Industrial Economic Statistical Yearbook 2001*, China Statistics Press, Beijing; National Bureau of Statistics (NBS) 2008, *China Industrial Economic Statistical Yearbook 2008*, China Statistics Press, Beijing.

Finally, Table 7.6 provides a comparison of provincial-level results for the two different periods: 1994–2000 and 2000–07. Rather than presenting the detailed numerical results for each province and sector, the table shows for each province the number of sectors that had a positive NRC (whether driven largely by structure or location) and the number of sectors in which location made a positive contribution to growth. While it is difficult to make regional generalisations given provincial-level variations in performance, it certainly appears that the eastern provinces have generally recorded fewer positive NRCs and positive location contributions to growth in the 2000s compared with the 1990s. Guangdong stands out, with the number of sectors with positive NRCs falling from 22 to 12 while the number of sectors with positive location components fell from 29 to 13. It is not alone, however, with Beijing, Tianjin, Hebei, Shanghai, Zhejiang and Hainan also recording fewer positive NRCs and location components. Liaoning is the most dramatic outlier of this trend, with the number of sectors benefiting from locating there increasing from just three in 1994–2000 to 22 in 2000–07. (Note that Liaoning is one of the three provinces included in the north-east, which has had its own regional policy since 2003.) In sum, this provides some evidence that the glory days of the eastern region's industrial dominance could be coming to an end—particularly when contrasted with the results presented in Golley (2003).

Table 7.5 Regional shares of industrial output, 2007 (per cent)

Sector	East	Centre	West
Coal mining and dressing	27.5	49.7	22.9
Petroleum and natural gas extraction	37.9	29.7	32.4
Ferrous metal mining and dressing	60.6	22.1	17.4
Non-ferrous metal mining and dressing	26.9	40.6	32.5
Non-metal mineral mining and dressing	51.5	31.9	16.7
Food processing	60.1	25.1	14.8
Food manufacturing	59.8	25.4	14.9
Beverages	50.9	24.5	24.6
Tobacco	37.1	29.2	33.8
Textiles	83.8	10.9	5.4
Garments	91.6	7.1	1.3
Leather, furs and down products	86.4	9.1	4.5
Wood products	68.9	23.4	7.7
Furniture	85.5	9.3	5.3
Paper making	76.1	17.3	6.6
Printing and recording medium production	73.9	14.8	11.4
Cultural, educational and sports articles	95.5	4.2	0.4
Petroleum processing and coking	63.8	20.6	15.7
Chemical materials	71.9	16.8	11.2
Medical and pharmaceutical products	59.9	24.2	15.8
Chemical fibres	87.9	9.1	3.0
Rubber	81.4	13.4	5.2
Plastic	85.3	10.1	4.6
Non-metal mineral products	64.6	24.4	11.0
Smelting and pressing of ferrous metals	66.8	20.2	13.1
Smelting and pressing of non-ferrous metals	45.4	30.1	24.5
Metal products	87.1	8.9	4.0
Universal machines	80.6	12.4	7.0
Special-purpose equipment	70.0	19.9	10.1
Transportation equipment	63.0	23.5	13.5
Electrical equipment and machinery	84.4	10.4	5.2
Electronic and telecommunications equipment	94.9	2.4	2.7
Instruments and meters	88.5	7.1	4.3
Electric power, steam and hot water	57.3	24.7	18.0
Production and supply of gas	62.4	13.9	23.7
Production and supply of tap water	68.6	17.4	14.1
Total industrial output	70.4	18.1	11.5

Sources: Author's calculations and National Bureau of Statistics (NBS) 2008, *China Industrial Economic Statistical Yearbook 2008*, China Statistics Press, Beijing.

Table 7.6 Shift-share analysis of provincial industrial growth

Region	Positive NRC		Positive location	
	1994–2000	2000–07	1994–2000	2000–07
East				
Beijing	12	7	11	8
Tianjin	18	6	22	8
Hebei	18	10	20	9
Liaoning	8	16	3	22
Shanghai	19	5	14	5
Jiangsu	16	15	16	19
Zhejiang	24	22	27	26
Fujian	21	21	22	22
Shandong	16	26	15	27
Guangdong	22	12	29	13
Hainan	18	8	18	6
Centre				
Shanxi	6	13	7	13
Jilin	11	11	9	13
Heilongjiang	11	4	5	5
Anhui	9	15	5	12
Jiangxi	5	26	4	27
Henan	18	25	22	30
Hubei	18	2	17	2
Hunan	11	21	7	21
West				
Guangxi	6	13	2	15
Inner Mongolia	9	21	6	26
Sichuan	11	21	8	27
Guizhou	13	10	13	10
Yunnan	11	11	9	11
Tibet	12	2	12	4
Shaanxi	9	12	8	14
Gansu	13	7	12	9
Qinghai	10	14	11	17
Ningxia	15	12	16	15
Xinjiang	13	13	13	13

Sources: Author's calculations and National Bureau of Statistics (NBS) 2001, *China Industrial Economic Statistical Yearbook 2001*, China Statistics Press, Beijing; National Bureau of Statistics (NBS) 2008, *China Industrial Economic Statistical Yearbook 2008*, China Statistics Press, Beijing.

Of the eight provinces in the centre, five increased the number of sectors with positive NRCs and positive location contributions—most markedly in Jiangxi (up from 5 to 25 and from 4 to 27, respectively). These are the same five provinces that recorded positive NRCs at the industry-wide level. The results for the west are mixed. Curiously, the two biggest improvements over time in terms of the number of sectors with above-average rates of growth are Guangxi and Inner Mongolia—the two provinces redefined as western only in the early 2000s—although in the case of Guangxi this was not enough to ensure a positive NRC at the industry-wide level. Sichuan (including Chongqing) also appears to be on the move, and to a lesser extent Qinghai and Shaanxi, while Tibet, Gansu, Guizhou and Ningxia all performed worse on both counts. Based on these results, there is little to suggest that the WRDP is providing the impetus for industrial development in the region to date. Of course, this does not imply that it cannot provide the impetus in the future.

Reasons for optimism

There are numerous reasons—theoretical and real—why Chinese regional inequalities could diminish in the course of the next two decades. According to neoclassical growth theory, the high rates of investment growth underpinning the east's rapid growth of industrial output reduce the marginal productivity of capital there and result in firms directing their investment elsewhere in China, where the relative rates of return to investment will be higher. Models of 'new' economic geography, while underpinned by different mechanisms, tend to predict likewise that firms will eventually relocate to less-developed regions in order to take advantage of lower costs there (as long as transport costs between regions fall below a certain critical level and there is some labour immobility between regions) (Krugman 1991; Puga and Venables 1996). These models are based on the more traditional arguments of Hirschman (1958) and Myrdal (1957), who describe respectively how development in the most industrialised centres will ultimately trickle down or spread to less-developed peripheral areas. The 'flying geese' model developed by Akamatsu (1962) similarly describes a process of industrial transfer among countries (or regions), which has subsequently been used to describe the transfer of labour-intensive industries out of Japan (the lead goose) to South Korea, Taiwan, Singapore and Hong Kong and later to the Association of South-East Asian Nations (ASEAN) economies and coastal China (the following geese). Dynamic changes in each region's comparative advantage generated in the presence of substantial inter-regional diversity create the incentives for relocation with the result that, in the long run at least, all the geese industrialise! Finally, the Lewis model applied to a regional context also predicts a long-term equalisation of incomes between

regions. In particular, consider that one region (the coast) is home to the modern 'capitalist' or industrial sector that draws in perfectly (or highly) elastic labour from the other region (the interior), which specialises largely in the subsistence sector. Once this surplus labour is exhausted (or prevented from free movement because of impediments in the labour market), the model predicts that wages and per capita income will rise throughout the economy (Lewis 1952). In essence, all of these theories predict an equalisation of regional incomes in the long run. Deng Xiaoping appeared to be well versed in most, if not all, of these theories when he adopted the Open Door Policy and asked the non-coastal provinces to have a little bit of patience.

Cai and Wang (2006) and Cai et al. (2009) provide some evidence to support the claim that the agglomeration of industry along China's coastline will soon reach its peak—if it has not already done so. In their 2006 *China Update* chapter, they point out that the emergence of a shortage of rural migrant workers and the consequent rapid rise in rural wages in the eastern provinces signal the end of China's unlimited labour surplus. This suggests the potential, although by no means a guarantee, that firms will begin looking to alternative locations for production within Chinese borders—namely, in the centre and west. In their 2009 *China Update* chapter, Cai et al. take this idea a step further and assert that China is likely to sustain its labour-intensive industries for the next few decades as rising costs along the coast lead to industrial upgrading there and industrial relocation into the interior. In particular, they draw on labour productivity and wage data of 310 000 manufacturing firms between 2000 and 2007 to argue that the reduction in labour costs in the centre and west relative to the east will enable 'flying geese within Chinese borders'.

Linked to Cai et al.'s (2009) argument that labour-intensive industries will soon relocate westward is the notion that China has already reached its 'Lewisian turning point'—signalled by the end of the rural surplus that has played such a critical role in the industrialisation of the eastern region. Garnaut and Huang (2006) examine the supply and demand for skilled and unskilled labour across China's regions and sectors and conclude that:

The dynamic coastal regions will graduate surprisingly quickly from labour-intensive activities and re-specialise in capital or technology-intensive sectors of the production process. Rising opportunity costs of labour in the countryside and wages in towns would be helpful in containing the increase in income inequality—a source of growing tension and concern. (Garnaut and Huang 2006:32)

If their argument is correct—and to the extent that labour is also able to migrate across provinces—the rise in wages in coastal areas would likewise increase the opportunity cost of labour elsewhere, while migrants to the east could benefit

from the higher wages, hence underpinning an improvement in the regional income distribution as well. Combined with Cai et al.'s depiction of increasing cost advantages in the centre and west, and more recent evidence that China has already reached its turning point (in Garnaut and Cai and Wang's chapters in this volume) the future for China's regional development looks bright.

Regional policies have the potential to make a positive contribution to the realisation of this outcome. As Lai (2002) notes, the Western Development Strategy was introduced not only to try to reduce regional inequality and discontent, but in order to support necessary state-owned enterprise (SOE) reforms in the wake of World Trade Organisation (WTO) entry and to encourage the opening up of the west more generally. To the extent that these efforts succeed, in combination with extensive improvements in infrastructure within the west and between regions, the region is likely to become an increasingly attractive place for firms to locate production. The Revive the North-East policy can equally—to the extent that it succeeds in promoting much needed enterprise reforms—make the north-eastern region increasingly attractive, while the central provinces could benefit naturally from their proximity to the east, as the shift-share analysis above indicated is happening to some extent already. Policies to ensure that surplus labour can migrate to the most productive areas, combined with substantial efforts to raise education levels and labour quality in the centre and west, are also crucial. Of course, it is highly unlikely that all of these regions will industrialise and grow equally rapidly simultaneously, but success in any of them will play a positive role in bringing regional disparities down.

Finally, another reason for optimism is that industrial development is clearly not the only thing that matters for regional development. Western China is home to a large share of China's mineral and energy resources, which are key inputs into many of the industrial sectors concentrated in eastern China and the rest of the world. To the extent that the West is able to capture the rents associated with these resources, it could support higher than average per capita incomes with lower than average industrial output (as in Western Australia today).

Reasons for pessimism

For each of the theories above that predict income convergence in the long run, and for each piece of evidence suggesting that this long run might not be all that far off, there are contradictory theories and evidence.

There is a vast literature on the sources of China's rapid growth, in which the key debate has been over whether growth has been primarily extensive—fuelled by rapid labour and capital accumulation—or intensive, based on productivity

increases deriving from technological advances, innovation and diffusion, and human capital growth. See, for example, Jefferson et al. (1996) and Borensztein and Ostry (1996), who were among the early authors to claim that total factor productivity growth was the key determinant of China's rapid economic growth—in contrast with others, such as Wu (2003) and Chow and Lin (2002), who argued that capital investment was the dominant factor. To the extent that growth is driven by capital investment, standard growth theory predicts conditional convergence across regions as investors eventually seek higher returns in places where capital stocks are low. Yet Chi (2008) shows that this idea is overly simplistic, given the role of human capital stock, and presents clear theoretical and empirical reasons why regional inequality is likely to worsen in the foreseeable future. In particular, he shows that when technological change is skill biased, rather than factor neutral, as assumed in standard growth theory, provinces with higher stocks of human capital will continue to attract higher levels of physical capital investment. This skill–capital complementarity implies that, contrary to the neoclassical prediction of capital flowing west, it will continue to flow east. Chi's evidence demonstrates that tertiary-level education is the most important determinant of this skill–capital link and, furthermore, provincial government expenditure on education has done little to increase tertiary-level stocks in the central and western provinces (while having some impact on reducing the percentage of primary-level attainment and raising secondary-level attainment). Essentially, the conclusion is that, until interior provinces can raise their human capital stock significantly, capital flows will continue to support more rapid growth in the east, with regional inequalities rising accordingly.

To the extent that China's growth is instead driven by productivity increases, regional differences in total factor productivity (TFP) could offer some promise for regional equalisation of incomes. Cai et al. (2009) calculated that TFP accounted for between 18 and 28 per cent of industrial output growth between 2000 and 2007, with higher contributions found in the north-east, centre and west. The highest TFP was recorded for the central region—offering some hope for catch-up there—while the TFP of the east and the west was very similar. This is encouraging in the sense that the west does not appear to be substantially behind the east in productivity terms, but offers little hope for catch-up unless the west's TFP can be raised even higher.

Krugman's (1991) depiction of the spatial pattern of industrial development in a market economy implies that the process of industrial agglomeration followed by dispersal is likely to occur first for the most cost-sensitive, labour-intensive, 'footloose' industries that are not tied to location-specific raw materials, because these are the industries for which relocation first becomes profitable in the face of rising wages in the industrial core and improving transport linkages

between regions. If the shift-share analysis for 2000–07 had indicated that these were the types of industries starting to perform well in the centre and west—particularly industries that rank highly in terms of industrial output shares, such as electronic and telecommunication equipment, at 9.8 per cent of total industrial output, and one of the most labour-intensive sectors—there would be some cause for optimism that this process had started in China. Instead, as discussed above, the few sectors that were performing well in these regions were generally non-footloose (the mining and dressing sectors) and capital intensive. In turn, this could relate to the central government’s clearly stated preferential policies for certain ‘priority’ sectors in the western region, which could contradict the forces of the market and prove unsustainable in the longer term. This is an issue that remains open for further investigation—for which there is no space to expand on here. See Golley (2007:Ch. 8) for further details.

In reference to the theories mentioned above, another reason for pessimism, with regard to industrial relocation providing the key to regional income equalisation in the long run, is that theory and reality are rarely one and the same. It is neither likely, nor indeed desirable, that China’s industrial output will ever be evenly distributed across its vast and diverse landscape. In reality, as observed in the United States, Australia and Italy, to name a few, certain regions will always remain relatively poor, providing sources of out-migration for better-developed regions in the rest of the country, and possibly the rest of the world.

Not everyone supports the claim that China has already exhausted its vast pool of surplus labour. Meng and Bai (2007) examined the wages of unskilled workers from seven factories in Guangdong for the period 2000–04 and concluded that over that period average wage growth was either negative or zero and that ‘with such small wage increases, one could hardly argue that China has reached the Lewisian turning point’ (p. 172). Similarly, while Athukorala et al. (2009) show that wage growth in rapidly growing coastal provinces (Guangdong, Shanghai and Guangxi) has been faster than in labour-sending interior provinces (Sichuan, Gansu and Qinghai), they still conclude that ‘even the official data when analysed at the disaggregate level suggest significant continuing duality and surplus labour conditions in the Chinese labour market’ (p. 199). As they note, apart from the more than 100 million people who have migrated from rural to urban areas in China—and largely in the direction of west to east—industrial reforms have released more than 40 million workers from the state sector available for potential employment in the rapidly growing non-state sector. The continuing rise in the share of the working-age population (projected to continue through to 2015) and increases in labour participation rates provide further sources of urban labour supply growth (Golley and Tyers 2006), as do the hundreds of millions of workers still underemployed in agricultural activities and the conservative

estimate of 7.1 million registered unemployed urban workers countrywide (NBS 2008). There is clearly room for further debate about when the turning point will be reached, and until that point it is unlikely that regional inequalities will begin to fall.

On the policy side, there is perhaps more reason for pessimism than optimism at this stage, despite the large amount of rhetoric among the top levels of the Chinese leadership. Naughton (2004) points out that many of the key projects of the WRDP—most obviously the transnational (east–west) energy projects—are essentially national and not regional goals and are unlikely to be income equalising in any significant way, if at all. He also notes the incentive problems inherent in a centrally directed regional strategy that lead provincial and lower-level leaders to plead poverty and appear needy in order to compete for the limited pool of WRDP funds. Moreover, the mind-set of leaders in the west and north-east is described as conservative and reliant on central government support, which, in combination with ample evidence of corruption and misuse of allocated funding, is a major constraint on regional policy efficacy (Lai 2002; Chung et al. 2009). Golley (2007) describes the WRDP as a ‘developmental state’ approach to regional policy, in which the central government seems to be controlling development through state ownership and decree rather than by adopting policies that are likely to succeed in stimulating self-sustaining growth in the region. As one illustration of this policy approach, a white paper released in 2003 states that large numbers of university graduates, scientists, technicians and highly trained professionals have been ‘assigned’ to Xinjiang (‘White paper on “the important role of Xinjiang Production Construction Corps”’, *Xinhua News*, 26 May, viewed 6 September 2003, <<http://news.xinhuanet.com/english>>). If this is how a State Council member can claim that the ‘phenomenon of the peacock flying to the southeast will be replaced by the phenomenon of the peacock flying west’ (Goodman 2004:327), it has little to do with the market and a lot to do with the State. It also contradicts what for Naughton (2004) is the single factor most likely to reduce poverty in western China and hence reduce regional inequalities: out migration. And yet extensive out migration—while offering a solution for the migrants and simultaneously relieving certain areas that are not either economically or ecologically viable—also brings with it the threat of brain drain, making it even more difficult for backward areas to develop industrial capacity in the longer term. Moreover, a continual source of migrants to the east will help to keep wages down there, prolonging the decisions of industrial firms to look elsewhere for lower costs. Combine this with the depiction of recent trends in industrial development presented above and the numerous historical and geographical disadvantages of the west—and to a lesser extent the centre as well—and there seems to be a multitude of reasons why the central government will struggle to achieve its regional policy goals in the next two decades.

Conclusions

China has entered its fourth decade as a developing, market economy with significant and rising regional inequalities. This chapter has investigated the possibility that relatively rapid industrial development in the less-developed centre and west could offer one of the keys to reducing these inequalities in the next two decades.

An optimistic response to this is, yes, it is possible. The shift-share analysis for the period 2000–07 indicated that the glory days of the east's industrial dominance could be coming to an end, with the region no longer performing above the average across the broad spectrum of industrial sectors. Combine this evidence with claims that China is close to exhausting its labour surplus and it is possible that rising costs in the east will provide the impetus for industrial upgrading there coupled with the incentives for firms to relocate towards the centre and west. A serious and committed pro-west (or at least non-pro-east) regional policy with substantial funding well spent on infrastructure and education could play a positive role in triggering self-sustaining industrial development outside the eastern region. Rising incomes in the east could provide a crucial source of demand for non-eastern products, with the east possibly becoming for western China what the industrialised world has been for the eastern region during its own industrial take-off. The chances that all of this translates into western growth rates being sustained at 2 percentage points or more above the east—and thus achieving the regional policy objective of 'considerably diminishing' regional disparities—are miniscule. That is not to say, however, that some dent will not be made, particularly when other non-industrial factors are taken into account, such as the potential for out-migration and resource rents to raise the per capita incomes of those who remain in the western region.

Taken to its extreme, the pessimistic response would be no, it is impossible. Even if rising costs in labour-intensive manufacturing in the east led to industrial upgrading there, industrial relocation could occur not inwards to the rest of China but rather would occur outwards to competitor nations such as India and Vietnam. Western China would then be characterised by substantial pockets of poverty and underdevelopment—although surely with a few industrialised cities in the mix. A lack of domestic integration could make the east increasingly integrated into the global economy, while the west became increasingly isolated from the rest of the world and the east. This outcome would pose a serious threat to the legitimacy of the Chinese Communist Party—and yet they could fail to effectively implement policies that reverse the situation.

It is unwise—because it is impossible—to look backward in order to try to project future outcomes with any kind of precision or certainty, short of asserting that

the real path of Chinese regional industrial development during the next two decades will lie somewhere in between these two extremes. To go out on slightly more of a limb, the balance of evidence presented here, in combination with my research on this topic during the past decade or so, suggests that the next two decades will witness limited improvements in the distribution of regional per capita incomes underpinned partially by limited redistribution of industry towards some but not all of China's non-coastal provinces. To be categorical, there is no doubt that regional inequalities in some form or other will continue to plague China's policymakers until the long run is reached—and that time is a very long way off indeed.

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