

Labor costs of manufacturing employees in China: an update to 2003–04

While total hourly compensation costs for manufacturing workers increased more rapidly in China than in the United States between 2002 and 2004, hourly compensation per employee in China continued to be 3 percent of the level in the United States

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China's manufacturing industry is increasingly active in world trade: China's share of total world manufactures exports was 8 percent in 2004, about the same share as Japan in that year, and up from 2 percent in 1990.¹ In terms of employment, China's manufacturing industry is the largest in the world, employing more manufacturing workers than the Group of Seven (G7) industrial countries combined.² With the emergence of Chinese products on the international market, there has been increasing interest in the statistics of China's manufacturing industry, particularly for hourly compensation costs (total labor costs to employers). This article updates the 2002 compensation estimates for total Chinese manufacturing, first published in an August 2005 article in the *Monthly Labor Review*, with data for 2003 and 2004.³

While hourly compensation costs in China's manufacturing sector increased rapidly between 2002 and 2004, average hourly compensation in China continued to be a small fraction of that found in many of China's largest trade partners. For example, the average hourly manufacturing compensation estimate for China in 2004 was \$0.67, about 3 percent of the average hourly compensation costs of production workers in the United States for the same year.⁴ (See chart 1.) This percentage is virtually unchanged from the 2002 estimate. In 2004, employees in China's urban areas continued to be compensated at a higher rate than those employed in town and village en-

terprises (TVES),⁵ \$1.19 versus \$0.45. (See table 1.) The gap in labor costs between the two areas increased slightly from 2002 to 2004.

The hourly compensation cost measures presented in this article are estimates of employers' costs to hire an hour of labor; they are not estimates of worker income. It should also be noted that the changes over time in hourly compensation costs are changes in employers' costs at official exchange rates and not changes in workers' real income. Total hourly compensation, because it takes account of employer payments into funds for the benefit of workers (in China, payments to pension, medical, and housing funds, and additional employee welfare costs are not included in earnings), is a broader concept than either total direct earnings or spendable earnings.

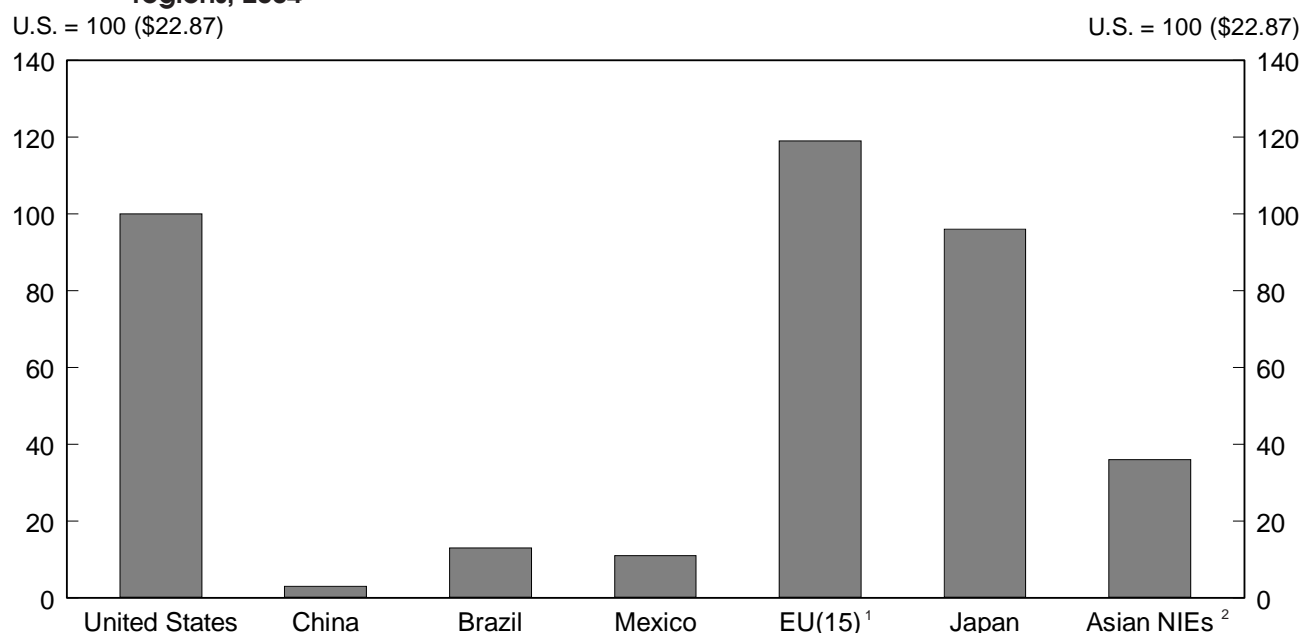
Besides updating the hourly compensation costs comparisons published last year, this article also provides updates to 2004 of China's statistics on manufacturing urban real earnings and earnings for urban manufacturing subsectors that also were included in the previous article.

Sources and methods

The sources and methods used to update the compensation costs estimates in this report are the same as in the August 2005 article. Employment and earnings data for the various categories of workers come from the annual yearend statistical reporting system. In China, each enterprise is re-

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Chart 1. Average hourly compensation costs of manufacturing workers, selected economies and regions, 2004



¹ EU(15) refers to European Union member countries prior to the expansion to 25 countries on May 1, 2004.

² Asian NIEs refer to Newly Industrialized Economies of Hong Kong SAR, Korea, Singapore, and Taiwan.

SOURCES: Bureau of Labor Statistics, "International comparisons of hourly compensation costs for production workers in manufacturing, 2004," November 18, 2005. Available on the Internet at <http://www.bls.gov/fls/home.htm>. For China, data are from this article and are not from the BLS series. The data for China refer to all employees rather than production workers.

Table 1. Estimated labor compensation costs of manufacturing employees in China, 2003 and 2004

Category of manufacturing workers	Average number of employees (in millions)	Average earnings per employee (in yuan)	Annual compensation per employee		Monthly compensation per employee		Hourly compensation per employee	
			yuan	U.S. dollars	yuan	U.S. dollars	yuan	U.S. dollars
2003								
Total for manufacturing urban units and TVEs ¹	101.57	8,989	11,409	\$1,378	951	\$115	5.17	\$0.62
Manufacturing urban units	² 29.77	12,671	19,488	2,354	1,624	196	8.87	1.07
Onpost urban manufacturing staff and workers	28.98	12,496	19,219	2,321	1,602	193	8.74	1.06
Other urban manufacturing employment	² .79	19,030	29,268	3,535	2,439	295	13.32	1.61
Manufacturing TVEs ¹	² 71.80	7,462	8,059	973	672	81	3.63	.44
2004								
Total for manufacturing urban units and TVEs ¹	104.49	9,635	12,298	1,485	1,025	124	5.51	.67
Manufacturing urban units	² 30.29	14,251	21,918	2,647	1,827	221	9.86	1.19
Onpost urban manufacturing staff and workers	29.40	14,033	21,583	2,607	1,799	217	9.71	1.17
Other urban manufacturing employment	² .89	21,473	33,025	3,989	2,752	332	14.86	1.80
Manufacturing TVEs ¹	² 74.20	7,751	8,371	1,011	698	84	3.73	.45

¹ TVEs refer to town and village enterprises.

² Derived from other numbers reported in the table or in the sources.

NOTES: Total labor compensation for urban workers is 1.538 times earnings, and for TVE workers is 1.08 times earnings. U.S. dollars calculated at prevailing commercial exchange rate: 8.28 yuan = US \$1. Hourly compensation is calculated assuming that urban manufacturing employees performed 2,198 and 2,222 actual hours of work per year in 2003 and 2004, respectively. TVE workers are assumed to have performed 2,219 and 2,243 hours per year in 2003 and 2004, respectively.

SOURCES: Judith Banister, "Manufacturing earnings and compensation in China," *Monthly Labor Review*, August 2005, p. 25. Data for 2003 are

from China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2004* (Beijing: China Statistics Press, 2004), pp. 179, 183, 272, and 278; China Ministry of Agriculture, China TVE Yearbook Editorial Committee, editors, *China Village and Town Enterprise Yearbook 2004* [In Chinese] (Beijing: China Agriculture Publishing House, 2004), pp. 102 and 104. Data for 2004 are from China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2005* (Beijing: China Statistics Press, 2005), pp. 103, 191, 195, 284, 290. China, Ministry of Agriculture, China TVE Yearbook Editorial Committee, editors, *China Village and Town Enterprise Yearbook 2005*. [In Chinese] (Beijing: China Agriculture Publishing House, 2005), pp. 108 and 110.

The Bureau of Labor Statistics (BLS) has been a leader in compiling international comparisons of hourly compensation of manufacturing workers, currently covering 32 countries. Despite its large and growing importance in world manufacturing, China has not been included in the comparisons because of difficulties in obtaining and interpreting that country's data and because of concerns about the quality of the data, as described in detail in the *Monthly Labor Review* articles by Judith Banister cited in this report. BLS does not plan to include China in its regular comparisons of hourly compensation costs at this time. Because of the widespread interest in expanded country coverage, BLS is considering providing data on China, along with data on some other countries, the quality of whose data is problematic, but in a separate format with appropriate annotations. BLS will continue to monitor China's data, and as better data become available, China could be moved into the regular comparisons series.

Division of Foreign Labor Statistics, Bureau of Labor Statistics

quired to report employment and earnings data based on the entity's "labor situation" during the previous year and at the previous yearend. Urban, or city, data are the responsibility of the Ministry of Labor and Social Security, while rural and town data are produced by the Ministry of Agriculture. The employment and earnings figures from these two sources are combined to construct an estimate of labor costs in China's manufacturing industry.⁶

For the original 2002 estimate of hourly compensation costs, an urban annual hours worked figure was derived from the Ministry of Labor's labor force survey. First, a weekly hours worked estimate was calculated by averaging two published figures which referenced a week in both the spring and autumn of 2002. Then, the weekly figure was adjusted to an annual basis using an estimate of the average number of weeks worked during the year by urban manufacturing employees. For 2003 and 2004, hours data for the spring reference period were not published. Therefore, for this update, the estimates of hours worked by urban employees are based on changes in the number of hours worked in the autumn reference periods. Because there are no published data to update the estimate of hours worked by TVE manufacturing employees, the percentage changes used for urban areas have been applied to the 2002 TVE annual hours worked estimate.

In order to estimate total compensation costs for China's manufacturing employees, additional employer payments for social benefits such as workers' compensation, unemployment insurance, and old-age pension funds must be added to the published earnings figures. China's Ministry of Labor conducted a survey of urban establishments with reference to 2002 that collected relevant compensation data for the calculation of social benefits as a percentage of total earnings. The results of this survey were used to construct the original 2002 estimates of China's manufacturing labor costs.

A more recent survey has not been conducted, so the percentage is held constant for the 2003 and 2004 estimates. However, as noted in the original article, there is evidence that the amount of required employer contributions has been increasing over time. Therefore, it is possible that legally required employer contributions to social benefits funds have increased since 2002, and the total compensation costs figures provided in this article are understated.

The estimates of Chinese manufacturing compensation costs presented in this article may not be representative of all workers in manufacturing industries because it is likely that certain groups are not fully captured in the annual administrative data collected and published by China's National Bureau of Statistics, specifically migrant workers and persons employed in small-scale and private establishments and the informal sector.⁷

In this article, data for China are converted into U.S. dollars using commercial market exchange rates. For the entire 2002–04 time period, the Chinese yuan was pegged to the U.S. dollar at 8.28 yuan per dollar. In July 2005, China revalued the yuan, appreciating it by about 2 percent. In addition, instead of being pegged solely to the U.S. dollar, the yuan is now allowed to float within a narrow 0.3 percent band against a basket of foreign currencies in daily trading. Since its revaluation, the yuan has continued to slowly appreciate against the dollar.⁸ After 2004, this appreciation will lead to larger percent increases in compensation costs measured in U.S. dollars than those measured in the national currency.

Total hourly compensation in 2003 and 2004

While employees in China's manufacturing sector are compensated at a fraction of the level of production workers in the United States, Chinese compensation costs in current U.S. dollars have been increasing at a faster rate. Between 2002 and 2004, total hourly compensation costs of manufacturing employees in China increased nearly 18 percent, from \$0.57 to \$0.67. (See table 2.) In comparison, total hourly compensation costs for manufacturing production workers in the United States grew about 7 percent over the same period from \$21.40 to \$22.87.⁹

One of the prominent features of compensation in China is the difference in labor costs between urban and rural areas. In 2004, total hourly compensation costs of TVE (rural) manufacturing employees was \$0.45. Urban manufacturing employees were compensated more than 2.6 times this level at \$1.19 per hour. The gap between urban and rural compensation costs has increased since 2002 when employees in urban units were compensated at about 2.3 times the rate of their rural counterparts.

The following two sections update other elements included in the August 2005 article in the *Review*. The first

Table 2. Estimated labor compensation costs of manufacturing employees in China, 2002–04

Category of manufacturing workers	Hourly compensation per employee					
	yuan			U.S. dollars		
	2002	2003	2004	2002	2003	2004
Total for manufacturing urban units and TVEs ¹	4.73	5.17	5.50	\$0.57	\$0.62	\$0.67
Manufacturing urban units	7.87	8.87	9.86	.95	1.07	1.19
Onpost urban manufacturing staff and workers	7.76	8.74	9.71	.94	1.06	1.17
Other urban manufacturing employment	12.17	13.32	14.86	1.47	1.61	1.80
Manufacturing TVEs ¹	3.40	3.63	3.73	.41	.44	.45

¹ TVEs refer to town and village enterprises.
 SOURCES: Table 1 and Judith Banister, "Manufacturing earnings and compensation in China," *Monthly Labor Review*, August 2005, p. 28.

section covers trends in real (price-adjusted) earnings for China's urban manufacturing sector, and the second one presents earnings data for urban manufacturing subsectors. The reader should note that these sections cover only earnings, not total labor compensation costs, and that the data are not converted into U.S. dollars. Total compensation data are not available for China's manufacturing subsectors.

Urban manufacturing earnings over time

In order to compare earnings over time within China, changes in prices should be taken into account. China's Ministry of Labor published indices of average real wages for urban manufacturing workers until 2002. This series has been extended with data through 2004 using China's Consumer Price Index for urban areas to deflate average nominal earnings. (See chart 2 and table 3.) Average annual real earnings have increased every year since 1990, with the 1999–2004 time period showing relatively rapid increases.

Earnings data for urban subsectors

China's Ministry of Labor publishes data on yearend employment and average annual earnings per urban manufacturing employee for 29 manufacturing subsectors. Data on weekly hours worked and employer contributions to social benefit funds are not available for individual subsectors. Absent these data, total hourly compensation costs were not calculated for manufacturing subindustries.

Average annual earnings vary considerably among the many urban subsectors. (See table 4.) Persons employed in tobacco processing, the highest-paying industry, earn nearly four times the amount of their counterparts in the timber and bamboo products and textiles industries. Urban employment

remained nearly constant between 2002 and 2004 in the six industries with average annual earnings below 11,000 yuan in 2004 (timber and bamboo products, textiles, food processing, nonmetallic mineral products, furniture, and leather products). Over the same time period, urban employment grew about 6 percent in the six industries with average annual earnings above 16,000 yuan in 2004 (tobacco processing, petroleum processing, ferrous metal smelting, electronics and telecommunication equipment, transport equipment, and instruments and office machinery).

Future developments

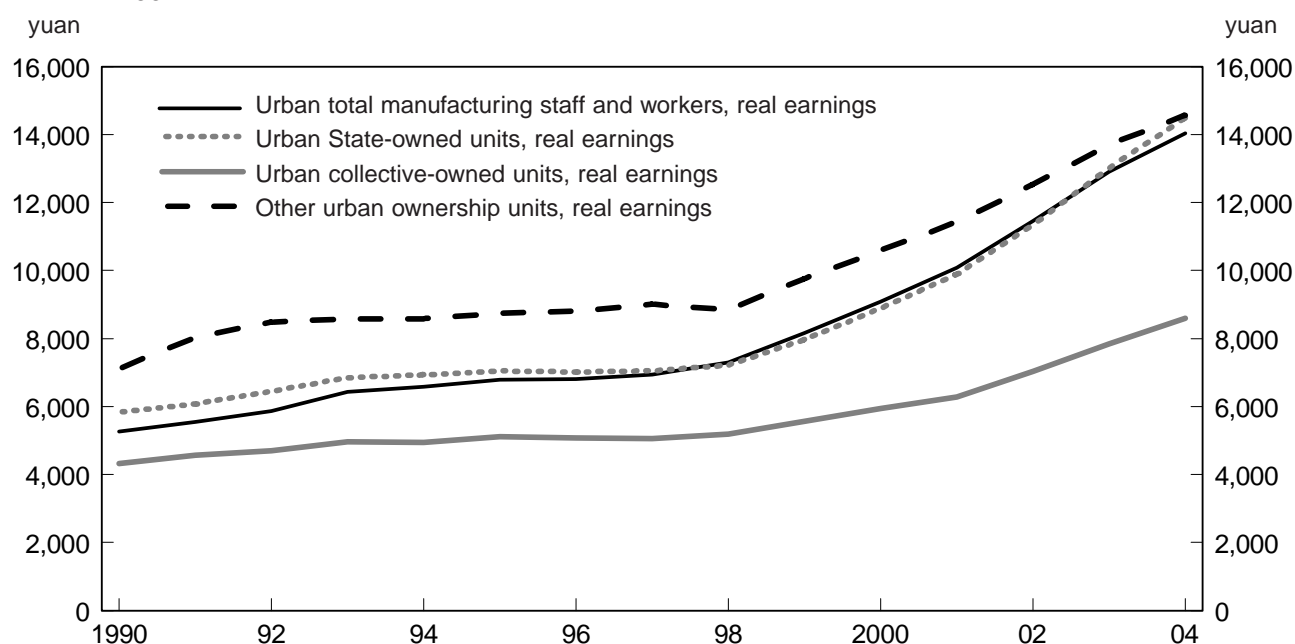
In 2005, China's National Bureau of Statistics conducted the First National Economic Census. The Census reportedly collected data on groups previously excluded from published estimates, including earnings of those employed in individual and household manufacturing establishments. In addition, the Census questionnaire included questions on employer payments to labor and unemployment insurance, old age and medical insurance, and welfare funds. Using data from the Census, BLS may be able to prepare more precise estimates of hourly compensation costs in China's manufacturing sector in the future.

Notes

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¹ *International Trade Statistics 2005*, World Trade Organization, on the Internet at http://www.wto.org/english/res_e/statis_e/its2005_e/its05_bysector_e.pdf.

Chart 2. Average annual real earnings of urban manufacturing staff and workers in China, 1990–2004



SOURCE: China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers. *China Labor Statistical Yearbook 2005* (Beijing: China Statistics Press, 2005), p.56.

Table 3. Average annual real earnings and percent change of urban manufacturing staff and workers in China, 1990–2004

(In constant 2004 yuan)

Year	Urban manufacturing staff and workers							
	Total		Urban State-owned units		Urban collective-owned units		Other urban ownership units	
	Average real earnings	Percent change	Average real earnings	Percent change	Average real earnings	Percent change	Average real earnings	Percent change
1990	5,272	7.7	5,835	8.6	4,324	5.2	7,122	4.4
1991	5,541	5.1	6,075	4.1	4,558	5.4	8,041	12.9
1992	5,874	6.0	6,451	6.2	4,708	3.3	8,483	5.5
1993	6,426	9.4	6,851	6.2	4,962	5.4	8,576	1.1
1994	6,574	2.3	6,934	1.2	4,947	-3	8,585	.1
1995	6,791	3.3	7,044	1.6	5,120	3.5	8,739	1.8
1996	6,811	.3	7,016	-4	5,074	-9	8,809	.8
1997	6,947	2.0	7,051	.5	5,059	-3	9,012	2.3
1998	7,301	5.1	7,214	2.3	5,181	2.4	8,850	-1.8
1999	8,163	11.8	7,971	10.5	5,574	7.6	9,761	10.3
2000	9,094	11.4	8,888	11.5	5,942	6.6	10,591	8.5
2001	10,085	10.9	9,892	11.3	6,281	5.7	11,427	7.9
2002	11,466	13.7	11,336	14.6	7,035	12.0	12,536	9.7
2003	12,908	12.6	13,016	14.8	7,850	11.6	13,700	9.3
2004	14,033	8.7	14,486	11.3	8,598	9.5	14,569	6.3

NOTES: This table includes only the reported annual earnings, which have not been adjusted to include other labor compensation costs such as required employer payments to municipal social insurance systems. Published data for real earnings are not available for 2003 and 2004. Annual percent changes for these years have been calculated using China's Consumer Price Index for Urban Areas.

SOURCE: China National Bureau of Statistics and China Ministry of

Labor and Social Security, compilers. *China Labor Statistical Yearbook 2005*, (Beijing: China Statistics Press, 2005), p. 56. China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers. *China Labor Statistical Yearbook 2005*. (Beijing: China Statistics Press, 2005), pp. 46, 49, 52, 55, 56 and China National Bureau of Statistics, compilers, *China Statistical Yearbook 2005*, (Beijing, China Statistics Press, 2005), p. 301.

Table 4. Urban manufacturing employment and earnings by subsector in China, 2002–04

Urban manufacturing subsector	Urban employees (yearend)			Average annual earnings per employee (in yuan)		
	2002	2003	2004	2002	2003	2004
Total manufacturing in urban units	29,807,492	29,804,919	30,508,231	11,152	12,671	14,251
Timber, bamboo, natural fiber, and straw products .	267,666	294,322	312,231	7,339	7,879	8,801
Textile industry	2,841,565	2,718,148	2,654,621	7,268	8,079	9,038
Food processing	977,439	949,907	981,935	7,965	8,727	9,607
Nonmetallic mineral products	2,116,034	2,092,946	2,095,421	8,123	9,173	10,394
Furniture manufacturing	180,484	189,110	231,098	8,881	9,501	10,808
Leather, furs, down, and related products	578,590	635,176	703,199	9,108	9,883	10,964
Papermaking and paper products	592,400	574,859	561,654	8,668	10,067	11,232
Other manufacturing	601,416	536,188	563,466	8,781	10,049	11,334
Garments and other fiber products	1,336,191	1,390,683	1,671,406	9,066	10,090	11,381
Beverage manufacturing	740,250	749,406	710,610	9,619	10,746	12,174
Cultural, educational, and sport products	294,636	332,826	353,672	10,390	11,432	12,183
Food products manufacturing	621,757	657,164	673,822	10,064	11,157	12,360
Metal products	897,455	809,559	854,134	10,075	11,073	12,451
Rubber products	377,633	375,154	387,495	10,055	11,024	12,470
Plastic products	606,800	629,700	664,683	10,131	11,317	12,584
Printing and record medium reproduction	493,497	477,071	454,347	10,863	11,707	13,409
Chemical raw materials and products	2,213,256	2,172,951	2,117,999	10,359	12,129	13,729
Chemical fibers manufacturing	263,378	204,733	207,241	11,404	12,562	13,804
Special purpose equipment manufacturing	1,400,594	1,661,521	1,627,336	10,406	12,040	13,985
Ordinary machinery manufacturing	1,921,315	1,884,852	1,900,869	10,668	12,777	14,549
Electric equipment and machinery	1,441,399	1,414,331	1,568,808	12,405	13,435	14,797
Smelting and pressing of nonferrous metals	755,646	790,666	789,552	12,491	13,661	15,285
Medical and pharmaceutical products	844,857	891,993	896,412	13,207	14,556	15,652
Instruments and stationery machine tools	464,762	553,854	581,439	12,720	15,044	16,543
Transportation equipment manufacturing	2,319,421	2,316,516	2,314,390	14,409	16,313	18,485
Electronics and telecommunications	1,623,783	1,825,847	2,054,772	17,636	18,922	20,428
Smelting and pressing of ferrous metals	1,900,648	1,900,466	1,845,205	15,032	17,989	21,074
Petroleum processing and coking products	565,505	525,522	507,916	17,357	20,733	22,951
Tobacco processing	233,485	222,476	200,184	23,744	27,143	34,688

NOTES: These data refer only to urban manufacturing employment and earnings. The subsectors listed here refer to 29.47 million, 29.78 million, and 30.49 million of China's urban manufacturing workers in 2002, 2003, and 2004, respectively. Rural manufacturing workers in each subsector undoubtedly have lower earnings than shown here. These earnings figures do not include required employer social insurance payments or other nonwage labor costs.

SOURCE: Data for 2002 are from China National Bureau of Statistics

and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2003*, (Beijing, China Statistics Press, 2003), pp. 179 and 218–25. Data for 2003 are from China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2004*, (Beijing, China Statistics Press, 2004), pp. 187–210. Data from 2004 are from China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2005*, (Beijing, China Statistics Press, 2005), pp. 199–264.

² Chinese data are from China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2005* (Beijing, China Statistics Press, 2005). G7 data are from *Comparative Civilian Labor Force Statistics, 10 Countries, 1960–2005* (Bureau of Labor Statistics, April 5, 2006); on the Internet at <http://www.bls.gov/fls/lfcompendium.pdf>.

³ For the original hourly compensation estimate for 2002 and a detailed explanation of the methods used, see Judith Banister, “Manufacturing Employment and Compensation in China,” on the Internet at <http://www.bls.gov/fls/chinareport.pdf> or two *Monthly Labor Review* articles based on this report: Judith Banister, “Manufacturing employment in China,” *Monthly Labor Review*, July 2005, pp. 11–29 on the Internet at <http://www.bls.gov/opub/mlr/2005/07/art2full.pdf> and Judith Banister, “Manufacturing earnings and compensation in China,” *Monthly Labor Review*, August 2005, pp. 22–40 on the Internet at <http://www.bls.gov/opub/mlr/2005/08/art3full.pdf>.

⁴ China's compensation data are for all employees while compensation data for other countries in this report only refer to production workers. Because nonproduction workers in manufacturing often are compensated at higher rates than their production worker counterparts, the inclusion of nonproduction workers in China's data may affect comparability with other

countries.

⁵ Town and village enterprise (TVE) data published by the Ministry of Agriculture are used in this article to represent employment and earnings in rural establishments. For a detailed explanation of why TVE data are used, see Banister, “Manufacturing employment in China,” pp. 11–29.

⁶ See Banister, “Manufacturing earnings and compensation in China,” pp. 22–40, for a more detailed explanation of the sources and methods used in constructing estimates of compensation costs and for the limitations of published data from China.

⁷ See Banister, “Manufacturing employment in China,” pp. 11–29 and Banister, “Manufacturing earnings and compensation in China,” pp. 22–40 for more detailed explanations of the undercoverage of these groups in China's administrative data.

⁸ Federal Reserve historical exchange rate data for China is on the Internet at http://www.federalreserve.gov/RELEASES/H10/hist/dat00_ch.txt.

⁹ See “International comparisons of hourly compensation costs for production workers in manufacturing, 1975–2004,” (Bureau of Labor Statistics, November 18, 2005), on the Internet at <http://www.bls.gov/fls/home.htm>.