

## China's manufacturing employment and compensation costs: 2002–06

*Both employment and compensation costs in China's manufacturing sector increased rapidly from 2002 to 2006; employment increased more than 10 percent during those 4 years, to 112 million, while compensation costs increased more than 40 percent, to \$0.81 per hour worked*

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In 2006, China passed Mexico to become the United States' second-largest trading partner in manufactured goods, behind only Canada.<sup>1</sup> Because of China's growing importance to the U.S. economy, there has been great interest in statistics about China's manufacturing sector, particularly employment statistics and a comparable compensation costs measure. In response to this interest, the Bureau of Labor Statistics (BLS) sponsored a baseline research project to assess the quality of China's data on manufacturing employment and labor compensation and to develop estimates of hourly compensation costs in China. The data sources and estimation procedures used in that original work have been the basis for updates through 2004 and, in this article, through 2006, when the average hourly compensation costs of China's 112 million manufacturing employees were \$0.81.<sup>2</sup>

The first section of this article reviews the available data sources for China's manufacturing sector. The second section then presents the trend in that nation's manufacturing employment from 1978 to 2006. Next, the article updates previous estimates of China's manufacturing earnings and compensation costs, including the effect of the new floating exchange rate. A brief comparison of the results from China's

First National Economic Census with those from the annual data sources used herein concludes the article.

### Manufacturing sector data sources

The concepts and coverage of China's published statistics on manufacturing employment and wages often do not follow international standards and can be difficult to understand. Some of the difficulty is related to the fact that not all of the data are collected by one agency: data from urban areas are the responsibility of the Ministry of Labor and Social Security, whereas data for other areas—in the form of town and village enterprise (TVE) data<sup>3</sup>—are compiled and reported by the Ministry of Agriculture. This system of data collection is based on an annual reporting system from work units that originally reflected a planned socialist or Marxist economy and emphasized urban data over rural data. Today, analysts have comparatively detailed yearly figures on employment and earnings in urban manufacturing units, and these figures are published in easily accessible statistical volumes.

In contrast, minimal labor-related statistics are published about China's large network of factories and small manufacturing units besides urban units. The fact remains that the

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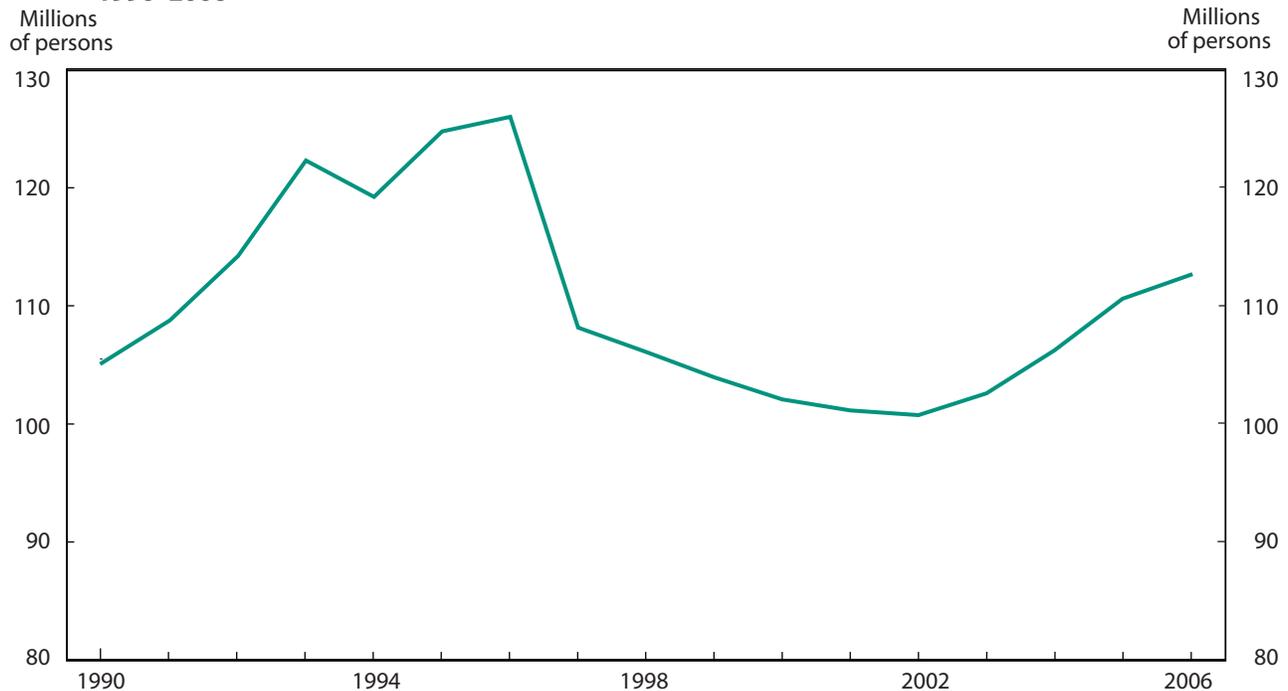
majority of China's manufacturing workers are employed outside of urban enterprises, yet each year only two relevant numbers are published about them: the total number of manufacturing employees in China who work in establishments and groups besides urban manufacturing units and the total annual wage bill for those manufacturing workers.

Estimates of total employment and average hourly compensation costs for China's manufacturing sector are constructed by combining the ample urban data with the less plentiful compiled and published figures on TVE manufacturing. Important gaps in the TVE data are filled by estimating nonwage components of labor compensation as well as hours worked per year. These national estimates for China cannot be considered as robust as the manufacturing statistics for most developed economies, but the accumulated evidence to date, including China's First National Economic Census (discussed later in the article), supports the general validity of the BLS annual calculations on China's manufacturing employment and labor compensation.

### Yearend manufacturing employment, 1978–2006

Total yearend manufacturing employment in China increased from 1978 to the mid-1990s, peaking at 126.08 million workers in 1996. (See chart 1 and table 1.<sup>4</sup>) In the late 1990s, privatization in China's manufacturing establishments and intense global competition brought increases in labor productivity, accompanied by a drop in manufacturing employment in urban China and a slight decline in TVE manufacturing employment as firms shed excess workers from the era of State-owned enterprises in order to become more cost efficient. In 2002, total yearend manufacturing employment bottomed out at 100.68 million workers. In recent years, with much of the redundant employment of the previous era eliminated and foreign demand for Chinese-manufactured goods growing by 25 percent per year, total employment has shown an upward trend.<sup>5</sup> By the end of 2006, China's manufacturing employment had increased once again, to 112.63 million, nearly 8 times the level of manufacturing employment in the United States (14.16 million).

**Chart 1. Yearend manufacturing employment in urban units and in town and village enterprises, China, 1990–2006**



SOURCE: Table 1. Based on and updated from Judith Banister, "China trend report: How many manufacturing employees are there in China?" The Conference Board, China Center for Economics and Business Monthly Member Briefing, October 2007, p. 4.

**Table 1. Yearend manufacturing employment in China, 1978–2006**

[In millions]

Year	Reported manufacturing employment		Total manufacturing employment in urban units	Town and village enterprises (TVEs)		Manufacturing employment—urban units plus TVEs	
	Total	Rural		Industry	Manufacturing	Total (yearend)	Total (average)
1978.....	53.32	17.34	( <sup>1</sup> )	17.34	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1980.....	58.99	19.42	( <sup>1</sup> )	19.42	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1985.....	74.12	27.41	( <sup>1</sup> )	41.37	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1986.....	80.19	31.39	( <sup>1</sup> )	47.62	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1987.....	83.59	32.97	( <sup>1</sup> )	52.67	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1988.....	86.52	34.13	( <sup>1</sup> )	57.03	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1989.....	85.47	32.56	( <sup>1</sup> )	56.24	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1990.....	86.24	32.29	53.61	55.72	51.50	105.10	( <sup>1</sup> )
1991.....	88.39	32.68	55.01	58.14	53.73	108.75	106.92
1992.....	91.06	34.68	55.67	63.36	58.56	114.23	111.49
1993.....	92.95	36.59	55.27	72.60	67.10	122.37	118.30
1994.....	96.13	38.49	54.92	69.62	64.34	119.26	120.82
1995.....	98.03	39.71	54.93	75.65	69.92	124.85	122.06
1996.....	97.63	40.19	53.44	78.60	72.64	126.08	125.47
1997.....	96.12	40.32	51.30	61.49	56.83	108.13	117.11
1998.....	83.19	39.29	38.26	73.34	67.78	106.04	107.09
1999.....	81.09	39.53	35.54	73.95	68.35	103.89	104.96
2000.....	80.43	41.09	33.01	74.67	69.01	102.02	102.95
2001.....	80.83	42.96	30.70	76.15	70.38	101.08	101.55
2002.....	83.07	45.06	29.81	76.68	70.87	100.68	100.88
2003.....	( <sup>1</sup> )	( <sup>1</sup> )	29.81	( <sup>1</sup> )	72.73	102.54	101.61
2004.....	( <sup>1</sup> )	( <sup>1</sup> )	30.51	( <sup>1</sup> )	75.68	106.19	104.36
2005.....	( <sup>1</sup> )	( <sup>1</sup> )	32.11	( <sup>1</sup> )	78.48	110.59	108.39
2006.....	( <sup>1</sup> )	( <sup>1</sup> )	33.52	( <sup>1</sup> )	79.11	112.63	111.61

<sup>1</sup> Not available or not included in analysis.

SOURCES: Data for 1978–2002 are taken from Judith Banister, “Manufacturing employment in China,” *Monthly Labor Review*, July 2005, p. 13; China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2007* (Beijing, China Statistics Press, 2007), p. 10; 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), p. 102; 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), p. 108; China Ministry of Agriculture, China TVE Yearbook Editorial Committee, *China Village and Town Enterprise Yearbook, 2006* [in Chinese] (Beijing, China Agriculture Publishing House, 2006), p. 155; China Ministry of Agriculture, compilers, *China Agriculture Statistical Report, 2006* [in Chinese] (Beijing, China Agriculture Press, 2007), p. 157.

NOTE: In 2002, manufacturing employment for TVEs was published for the first time and was 92.4 percent of TVE “industry” [*gongye*] employment. The TVE industry employment series goes back to 1978. The proportion of TVE industry employment in prior years that consisted of manufacturing workers is unknown, but for the purposes of constructing a longer time series, TVE manufacturing employment during each of those years is assumed to be 92.4 percent of TVE industry employment that year, on the basis of the published figure for 2002. Manufacturing employment in urban units has been published for the years 1994–2006. Years prior to 1994 are estimated from the trend found in manufacturing urban “staff and workers,” a subgroup that accounts for 99 percent of urban manufacturing staff and workers between 1994 and 1997.

These estimates are far higher than the “official” national totals for manufacturing employment published by China’s National Bureau of Statistics through 2002. (See table 1.) The published yearend total of 83.07 million workers for 2002 included 29.81 million “manufacturing employees in urban units,” 45.06 million “rural” manufacturing employees of registered manufacturing enterprises outside of areas classified as urban, and another 8.21 million informal manufacturing workers outside of established enterprises.<sup>6</sup>

In this article, total manufacturing employment for China as a whole is calculated by combining manufacturing employment in TVEs (rather than “rural employment”) with “manufacturing employment in urban units.” China’s National Bureau of Statistics has never published corresponding wage data for “rural” manufacturing employees, whereas earnings data are published for TVE employees. Also, previous research has shown that about a third of manufacturing employment in nonurban enterprises is likely not covered in the official “rural” series.<sup>7</sup> For these

reasons, TVE data from the Ministry of Agriculture are used instead to represent groups other than urban units.

## Compensation costs of manufacturing employees

The sections that follow update the hourly compensation costs series for China's manufacturing employees developed in previous articles of the *Review*.<sup>8</sup> The estimates are 2005–06 data based on the same statistical sources as the employment data constructed in the previous section. Therefore, they reflect compensation for China's total manufacturing employment—that is, the sum of employment in manufacturing urban units and employment in manufacturing TVEs. Like the employment data just described, earnings data from the Ministry of Labor and Social Security (urban data) and Ministry of Agriculture (TVE data) for various categories of workers are combined to construct an estimate of compensation costs in China's manufacturing industry.<sup>9</sup>

As shown in table 2, the average number of manufacturing employees in China was 108.39 million during 2005 and 111.61 million during 2006. Average yearly earnings (the basic wage in cash and in kind) totaled 10,812 yuan for 2005 and 12,039 yuan in 2006. Table 2 adjusts reported average annual earnings by including estimates for additional components of total labor compensation and translates annual, monthly, and hourly labor compensation into

U.S. dollars at the market exchange rate each year.

## Hours worked in manufacturing

Both the Ministry of Labor and Social Security and the Ministry of Agriculture publish an earnings figure that includes wages, bonuses, and allowances paid to employees in cash or in kind. These numbers are published on an annual basis only. To make meaningful comparisons with other economies, earnings must first be converted to an hourly basis. If hours worked by manufacturing employees in one country are substantially more or less than those worked by similar employees in other countries, then weekly, monthly, or annual earnings do not provide a good basis for comparing earnings for work done.

A description of the methodology used to calculate the original 2002 estimates of hours worked for China can be found in Banister's August 2005 article. For the 2002 estimate of hourly compensation costs in China's manufacturing sector, a figure for urban manufacturing employees' annual hours worked was derived from the Ministry of Labor's labor force survey. In 2002, the Ministry of Labor published two estimates of weekly hours worked for urban areas—one with reference to a week in spring and the other with reference to a week in autumn. These two estimates were averaged and then adjusted to an annual basis by using an estimate of the average number of weeks

**Table 2. Estimated compensation costs of manufacturing employees in China, 2005 and 2006**

Category of manufacturing workers	Average number of employees (millions)	Annual earnings per employee (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
<b>2005</b>								
Total, manufacturing urban units and town and village enterprises (TVEs).....	108.39	10,812	13,785	\$1,682	1,149	\$140	5.94	\$0.73
Manufacturing urban units.....	31.31	15,934	24,506	2,991	2,042	249	10.63	1.30
Manufacturing TVEs .....	77.08	8,732	9,430	1,151	786	96	4.05	.49
<b>2006</b>								
Total, manufacturing urban units and TVEs .....	111.61	12,039	15,456	1,939	1,288	162	6.43	.81
Manufacturing urban units.....	32.81	18,225	28,030	3,516	2,336	293	11.74	1.47
Manufacturing TVEs .....	78.80	9,463	10,220	1,282	852	107	4.24	.53

NOTE: Total compensation costs are 1.538 times earnings for urban workers and 1.080 times earnings for TVE workers. U.S. dollars are calculated at the prevailing market exchange rate: 8.1936 yuan = 1 U.S. dollar in 2005 and 7.9723 yuan = 1 U.S. dollar in 2006.

SOURCES: Employment data are from table 1. Earnings data for 2005 are from China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2006* (Beijing,

China Statistics Press, 2006), p. 185; and China Ministry of Agriculture, China TVE Yearbook Editorial Committee, editors, *China Village and Town Enterprise Yearbook 2006* [in Chinese] (Beijing, China Agriculture Publishing House, 2006), p. 156. Earnings data for 2006 are from China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2007* (Beijing, China Statistics Press, 2007), p. 203; and China Ministry of Agriculture, compilers, *China Agriculture Statistical Report 2006* [in Chinese] (Beijing, China Agriculture Press, 2007), p. 158.

worked per year by urban manufacturing employees. For 2003 and beyond, data on hours worked for the spring reference period have not been published. The estimates of hours worked by urban employees for these years are based on percent changes in the number of hours worked in the autumn reference period relative to the same reference period in the previous year. These percent changes are then applied to the previous year's estimate of annual hours worked to derive an estimate of annual hours worked from 2003 through 2006.

The published data on weekly hours worked in urban China showed a sharp increase from the 2003–04 period to 2005–06, not only in manufacturing, which exhibited a sudden 9-percent increase, but in most other economic sectors as well. Such a large jump in hours worked is unusual compared with the rest of the series for China, as well as from an international perspective. Discussions with China's National Bureau of Statistics revealed that the 2005 figures on hours worked in China's urban economy did not come from the annual labor force survey, which is the source for all the other years. Rather, the 2005 data came from China's 1-percent sample population survey, which occurs at the midpoints between the decennial censuses and is modeled on the questionnaires and definitions used in the decennial censuses of 1990 and 2000.

The decennial censuses and the related interim surveys use a broad definition of "urban" that includes all of China's towns (*zhen*) which have been established as urban places. In contrast, China's reported annual data on the urban economy and the annual labor force surveys use a narrow definition of "urban" that excludes most of China's urban towns. It is not surprising that the broader definition results in a higher number of weekly hours worked, because manufacturing operations in China's towns are likely less regulated than those in cities and, therefore, that employees in towns are required to work more hours per week, on average, than those in cities.

Given that the 1-percent sample survey covers a significantly larger "urban" population than the administrative data encompass, the 2005 data on hours worked are not comparable with the rest of the series and are not used in the compensation estimates calculated in this article. Instead, urban weekly hours worked for the 2005 autumn reference period are estimated, using the average of the 2004 and 2006 autumn labor force survey data.

Because there are no published data to update the estimate of hours worked by TVE manufacturing employees, the percent changes used for urban areas are applied to the estimated TVE annual hours worked in 2002 for each of the subsequent years. From 2003, for the purposes of

this article, data on hours worked for both urban and TVE employees have been estimated on the basis of changes in the number of hours worked in the autumn reference period relative to the same reference period in the previous year from China's labor force survey (after adjusting the published figure for 2005). These percent changes are then applied to the estimate of the previous year's annual hours worked to derive an estimate of annual hours worked for the year in question.

### **Estimating nonwage compensation costs**

In order to estimate total compensation costs for China's manufacturing employees, additional employer payments for social benefits such as workers' compensation, unemployment insurance, medical insurance, and old-age pension funds must be added to the published earnings figures. On the one hand, the relevant compensation data for calculating social benefits as a percentage of total earnings for urban establishments are from a survey of such establishments that China's Ministry of Labor conducted with reference to 2002. On the other hand, social benefits as a percentage of total earnings for TVE employees were based on a survey of large manufacturing enterprises in Nanjing Municipality for the years 1994–2001, as well as on assumptions about the level of benefits in large and small establishments, and between enterprises located in suburban areas and in rural areas.<sup>10</sup> The results of these surveys were used to construct the original 2002 estimates of China's manufacturing compensation costs.

The Ministry of Labor has not published any data from a more recent survey. Without such data, the ratio of employer expenditures for social benefits to direct earnings is held constant for the 2003–06 estimates at the 2002 levels.

### **Total hourly compensation costs in 2002–06**

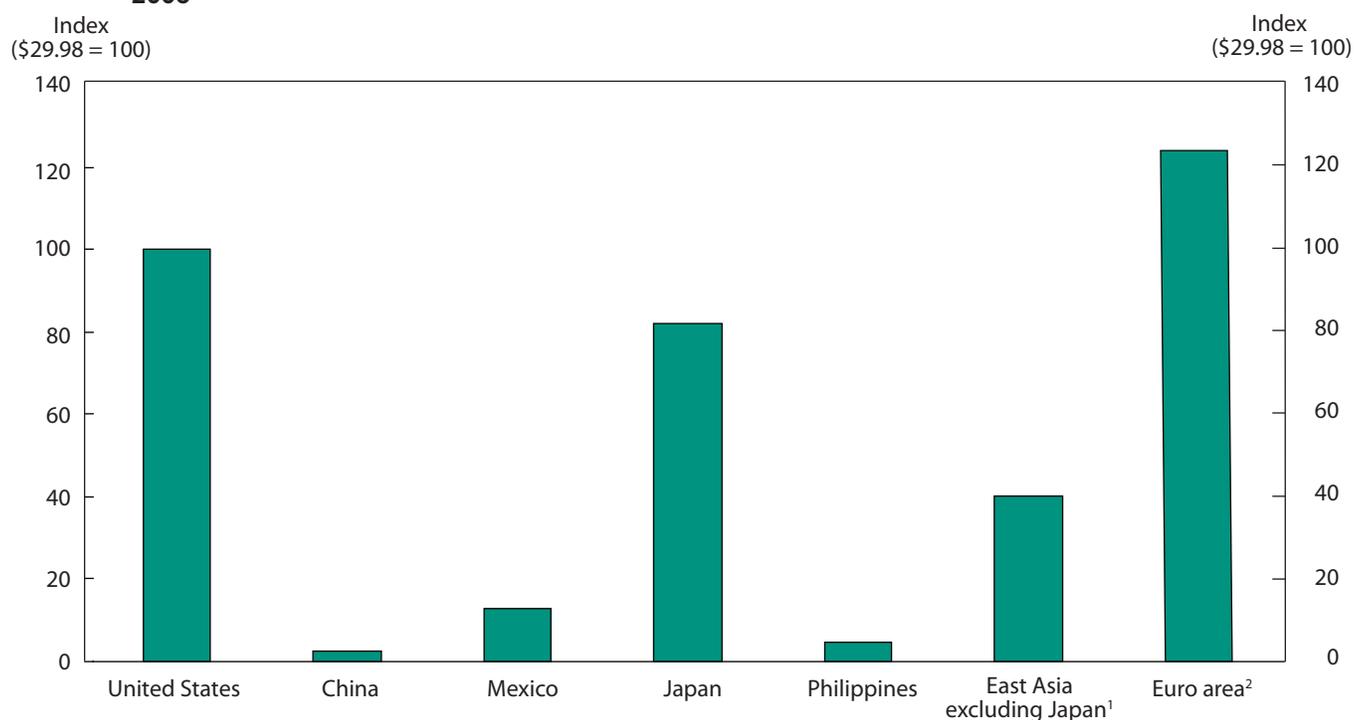
Although hourly compensation costs in China's manufacturing sector increased relatively rapidly compared with those of other economies between 2002 and 2006,<sup>11</sup> average hourly compensation in China continues to be a small fraction of that found in the United States and other developed Western economies. (See table 3 and chart 2.) Average hourly compensation costs for China's manufacturing sector in 2006 were \$0.81, 2.7 percent of the average hourly compensation costs of manufacturing employees in the United States for the same year.<sup>12</sup> Because hourly compensation costs in China have grown at an annual rate 3 times that of the United States during

**Table 3. Estimated compensation costs of manufacturing employees (hourly compensation per employee) in China, 2002–06**

Category of manufacturing workers	Yuan				
	2002	2003	2004	2005	2006
Total, manufacturing urban units and town and village enterprises (TVES).....	4.73	5.17	5.50	5.94	6.43
Manufacturing urban units.....	7.87	8.87	9.86	10.63	11.74
Manufacturing TVES.....	3.40	3.63	3.73	4.05	4.24
	U.S. dollars				
	2002	2003	2004	2005	2006
Total, manufacturing urban units and TVES.....	\$0.57	\$0.62	\$0.67	\$0.73	\$0.81
Manufacturing urban units.....	.95	1.07	1.19	1.30	1.47
Manufacturing TVES.....	.41	.44	.45	.49	.53

SOURCES: Table 2; and Erin Lett and Judith Banister, "Labor costs of manufacturing employees in China: an update to 2003–04," *Monthly Labor Review*, November 2006, p. 43.

**Chart 2. Average hourly compensation costs of manufacturing employees, selected economies and regions, 2006**



<sup>1</sup> "East Asia excluding Japan" comprises the Republic of Korea, the Philippines, Singapore, and Taiwan.

<sup>2</sup> "Euro area" refers to European Union member countries that had adopted the euro as the common currency as of January 1, 2009.

SOURCES: U.S. Bureau of Labor Statistics, "International comparisons of hourly compensation costs in manufacturing, 2007" (Bureau of Labor Statistics, Mar. 26, 2009), on the Internet at [www.bls.gov/news.release/pdf/ichcc.pdf](http://www.bls.gov/news.release/pdf/ichcc.pdf). The data in this chart refer to the all-employees series rather than the production worker series. For China, data are from this article and are not from the BLS series.

the 5 years covered in this series (9 percent and 3 percent, respectively), this percentage has edged higher, starting from 2.1 percent of U.S. compensation costs in 2002 and increasing slightly each year. Note that all comparisons of China's data with data from the United States or other

countries refer to the new BLS international comparisons series of hourly compensation costs for *all employees* in manufacturing; previous articles used the production workers series for comparisons. The all-employees series is used because it is more comparable with the worker cov-

erage of the Chinese data, which includes both manual and nonmanual workers.

### Urban and TVE compensation costs

The difference between urban and TVE hourly compensation costs continues to be one of the central features of Chinese compensation. In 2002, the first year in the series, total hourly compensation costs for manufacturing employees in urban units was 2.3 times that of their TVE counterparts (\$0.95 and \$0.41, respectively; see table 3). Between 2002 and 2006, compensation costs, in yuan, for employees in urban manufacturing units grew 12 percent annually, on average. In contrast, compensation costs for TVE manufacturing employees grew about half that amount each year, namely, 7 percent. As a result, compensation costs for urban manufacturing enterprise employees were about 2.8 times the level of all other manufacturing workers in 2006 (\$1.47 and \$0.53, respectively; see chart 3). Because more than two-thirds of China’s manufacturing employees are categorized as TVE workers, total manufacturing compensation in China more closely reflects

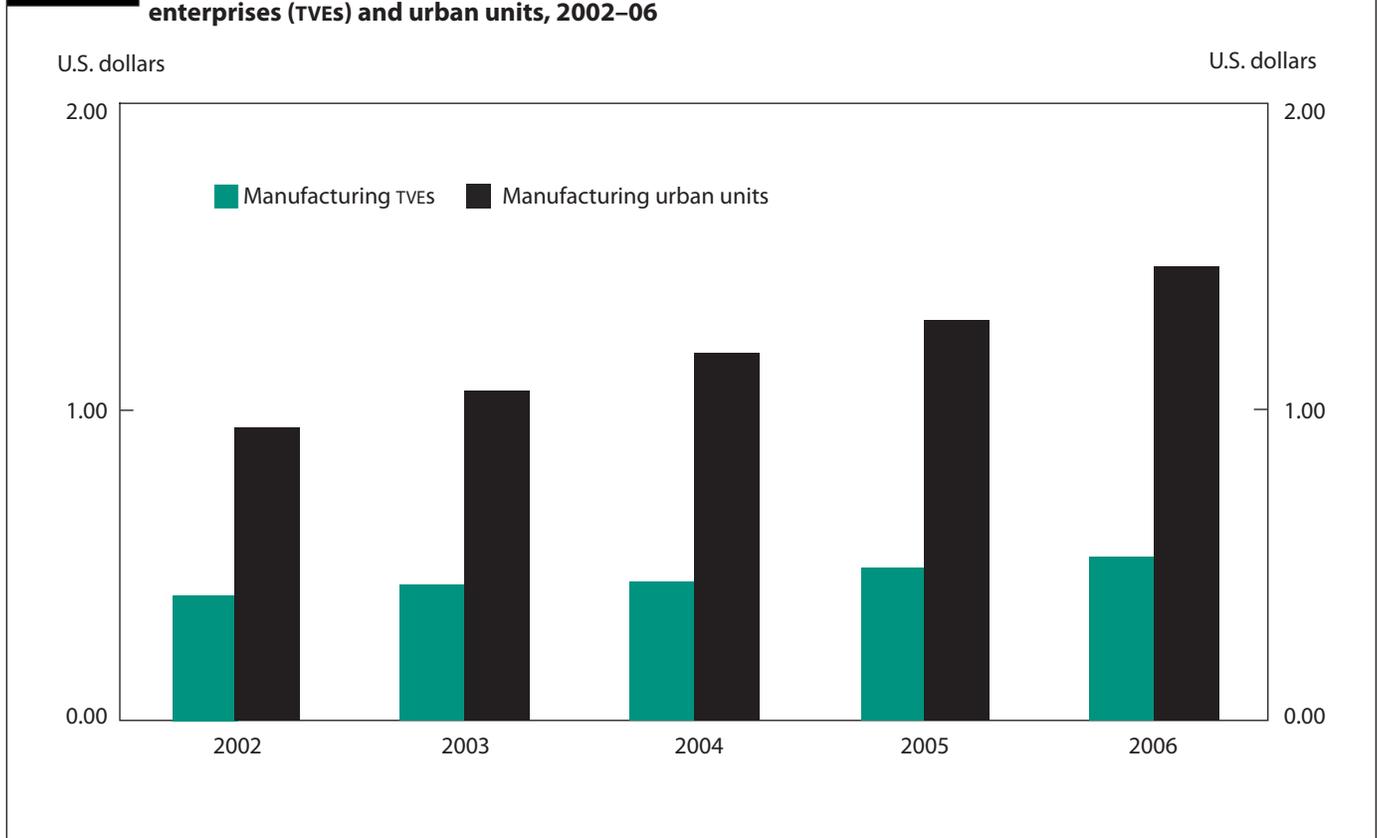
the compensation costs of TVE workers than it does urban unit compensation costs.

### The exchange rate effect

Compared on a national currency basis, compensation costs across countries show underlying wage and benefit trends within each country. However, changes in currency exchange rates often have a large impact on compensation costs on a U.S. dollar basis. For 2002–04, the first 3 years of the series for hourly compensation costs for manufacturing employees, the Chinese yuan was pegged to the U.S. dollar at 8.28 yuan per U.S. dollar. Thus, all changes in compensation costs in U.S. dollars for these years of the series simply reflect changes in compensation costs measured in yuan.

In July 2005, the People’s Bank of China announced that the value of the yuan would be increased by about 2 percent, to 8.11 yuan per U.S. dollar.<sup>13</sup> In addition, the yuan was allowed to float within a narrow 0.3-percent band against a basket of foreign currencies in daily trading. (The band was widened to 0.5 percent in May 2007.<sup>14</sup>) Within

**Chart 3. Average hourly compensation costs of manufacturing employees in China, town and village enterprises (TVEs) and urban units, 2002–06**



this new exchange rate regime, the yuan has gradually appreciated against the U.S. dollar, rising from an annual average of 8.28 yuan per dollar in 2004 to 8.19 yuan per dollar in 2005 and then to 7.97 yuan per dollar in 2006.<sup>15</sup> Because of these changes, 2005 and 2006 hourly compensation costs for China reported in U.S. dollars reflect not only the increase in national currency compensation costs, but also the appreciation of the yuan. This results in a larger annual increase in Chinese hourly compensation costs when measured in U.S. dollars than when measured in yuan (11 percent and 8 percent, respectively, between 2005 and 2006).

### China's First National Economic Census

This section presents figures from China's First National Economic Census, with data referring to 2004, to support the validity of the annual estimates of employment and hourly compensation costs that are based on China's regular annual reports used in this and previous articles. Total 2004 employment in Chinese manufacturing, from the Economic Census, was calculated by summing average employment in manufacturing enterprises that were operational in 2004 (80.81 million) with self-employed and household employment (24.62 million), for a total of 105.43 million employees in the manufacturing sector.<sup>16</sup> This figure is fairly consistent with that year's average manufacturing employment figure obtained from annually reported data and used by BLS to estimate hourly compensation costs in China's manufacturing sector (104.36 million employees).<sup>17</sup>

Likewise, hourly compensation costs for 2004, as calculated with data from the Economic Census, are similar to those based on annual data.<sup>18</sup> On the basis of the Economic Census, 2004 hourly compensation costs in China's manufacturing sector were 5.96 yuan, or \$0.72, which was 2.5 percent of U.S. hourly compensation costs in manufacturing.<sup>19</sup> Data from China's annual reporting systems resulted in an estimate for China's 2004 hourly manufacturing compensation costs of 5.50 yuan, or \$0.67, equivalent to 2.3 percent of the U.S. figure for that year. The small difference in these estimates came about

because manufacturing enterprises in China reported slightly higher numbers for the average earnings or base wage of their employees in the Economic Census forms than in their regular annual reporting forms for the same year.

China's National Bureau of Statistics plans to conduct a second Economic Census with data referencing the 2008 calendar year. By the time data are published from this census, much more information about the coverage of those data and the coverage of the data from the annual sources may have been published as well. BLS would like to make fuller use of Economic Census data for refining its annual updates of China's manufacturing employment and hourly compensation.

### China's manufacturing in the global economy

China has far more manufacturing employees than any other country. It supplies the world with labor-intensive manufactured products and is gradually engaging in more skill-intensive and capital-intensive production. Manufacturing compensation costs for employers are rising rapidly, especially when measured in U.S. dollars, but remain a small fraction of hourly compensation costs for manufacturing employees in developed and newly industrialized Asian economies. China continues to be highly competitive in global manufacturing of low- and middle-range industrial commodities, such as cheap consumer goods, standardized equipment and computer hardware, and household durable goods, but is still not so competitive in manufactures based on cutting-edge technology.

The global economic downturn that began in late 2008 likely will affect the Chinese manufacturing sector by decreasing the market for China's export products. In addition, compensation costs measured in U.S. dollars will be affected by the strengthening yuan, which continued to appreciate against the dollar during 2007 and 2008. How these two events and others will play out in relation to Chinese manufacturing employment and hourly compensation costs is not yet clear, but that the two sets of phenomena will be intertwined is certain. □

### Notes

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<sup>1</sup> "Top Trading Partners—Surplus, Deficit, Total Trade" (U.S. Census Bureau,

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Foreign Trade Division, January 2009), on the Internet at [www.census.gov/foreign-trade/top](http://www.census.gov/foreign-trade/top) (visited Mar. 17, 2009).

<sup>2</sup> The currency denoted by the dollar sign (\$) is U.S. dollars. For the original detailed report on 2002 manufacturing employment and labor compensation, see Judith Banister, “Manufacturing Employment and Compensation in China,” on the Internet at [www.bls.gov/ilc/chinareport.pdf](http://www.bls.gov/ilc/chinareport.pdf) (visited Mar. 17, 2009), or the following two *Monthly Labor Review* articles based on that report: Judith Banister, “Manufacturing employment in China,” *Monthly Labor Review*, July 2005, pp. 11–29, on the Internet at [www.bls.gov/opub/mlr/2005/07/art2full.pdf](http://www.bls.gov/opub/mlr/2005/07/art2full.pdf) (visited Mar. 17, 2009); and Judith Banister, “Manufacturing earnings and compensation in China,” *Monthly Labor Review*, August 2005, pp. 22–40, on the Internet at [www.bls.gov/opub/mlr/2005/08/art3full.pdf](http://www.bls.gov/opub/mlr/2005/08/art3full.pdf) (visited Mar. 17, 2009). These works were updated through 2004 in Erin Lett and Judith Banister, “Labor costs of manufacturing employees in China: an update to 2003–04,” *Monthly Labor Review*, November 2006, pp. 40–45, on the Internet at [www.bls.gov/opub/mlr/2006/11/art4full.pdf](http://www.bls.gov/opub/mlr/2006/11/art4full.pdf) (visited Mar. 17, 2009).

<sup>3</sup> For a discussion of TVEs, see Banister, “Manufacturing Employment and Compensation in China.”

<sup>4</sup> The partial, incomplete data in table 1 under “Reported manufacturing employment” show the rising trend from 1978 to 1990. Subsequent manufacturing employment trends are derived from the nearly complete series for 1990–2006 under “Manufacturing employment, Urban units plus TVEs.”

<sup>5</sup> World Trade Organization, “Trade Profiles: China,” on the Internet at [stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Language=E&Country=CN](http://stat.wto.org/CountryProfile/WSDBCountryPFView.aspx?Language=E&Country=CN) (visited Mar. 17, 2009).

<sup>6</sup> Banister, “Manufacturing employment in China.”

<sup>7</sup> *Ibid.*

<sup>8</sup> For the original estimates of hourly compensation costs and a detailed explanation of the methods used, see Banister, “Manufacturing earnings and compensation in China.” For the data on hourly compensation costs, updated to 2003–04, see Lett and Banister, “Labor costs of manufacturing employees in China.”

<sup>9</sup> See Banister, “Manufacturing earnings and compensation in China,” for a more detailed explanation of the limitations of published data from China.

<sup>10</sup> See Banister, “Manufacturing earnings and compensation in China,” for more information about these sources.

<sup>11</sup> “International comparisons of hourly compensation costs in manufacturing, 2006” (Bureau of Labor Statistics, Jan. 25, 2008), on the Internet at [www.bls.gov/news.release/pdf/ichcc.pdf](http://www.bls.gov/news.release/pdf/ichcc.pdf) (visited Mar. 17, 2009).

<sup>12</sup> All estimates of compensation costs and the associated percent changes in this article are calculated with the use of nominal currency—that is, current dollars or current yuan.

<sup>13</sup> People’s Bank of China, “Public Announcement of the People’s Bank of China on Reforming the RMB Exchange Rate Regime,” July 21, 2005, on the Internet at [www.pbc.gov.cn/english/detail.asp?col=6400&ID=542](http://www.pbc.gov.cn/english/detail.asp?col=6400&ID=542) (visited Mar. 17, 2009).

<sup>14</sup> People’s Bank of China, “Public Announcement of the People’s Bank of China on Enlarging the Floating Band of the RMB Trading Prices against the U.S. Dollar in the Inter-bank Spot Foreign Exchange Market,” May 18, 2007, on the Internet at [www.pbc.gov.cn/english/detail.asp?col=6400&ID=837](http://www.pbc.gov.cn/english/detail.asp?col=6400&ID=837) (visited Mar. 17, 2009).

<sup>15</sup> Board of Governors of the Federal Reserve System, “Foreign Exchange Rates (Annual),” Jan. 2, 2008, on the Internet at [www.federalreserve.gov/releases/g5a](http://www.federalreserve.gov/releases/g5a) (visited Mar. 17, 2009).

<sup>16</sup> China’s National Bureau of Statistics published Economic Census self-employed and household data only for “industry,” which includes mining and quarrying; manufacturing; and the production and distribution of electricity, gas, and water. A “manufacturing-only” employment estimate was obtained by multiplying the ratio of self-employed and household manufacturing employment to self-employed and household industry employment for 2003 from the Yearbook of Industry and Commerce by industry employment from the Economic Census.

<sup>17</sup> Note that the status of the self-employed and family businesses in the annual data (that is, to what extent they are included) is unclear.

<sup>18</sup> The analysis in this section of the article is from Judith Banister, “Manufacturing in China Today: Employment and Labor Compensation,” The Conference Board Economics Program Working Paper Series EPWP #07–01, 2007, on the Internet at [www.conference-board.org/economics/workingpapers.cfm](http://www.conference-board.org/economics/workingpapers.cfm) (visited Mar. 17, 2009).

<sup>19</sup> The estimate of U.S. hourly compensation costs, \$28.98 in 2004, does not include the unincorporated self-employed or unpaid family workers. No data are available to determine what percentage of “self-employed and household employment” from China’s Economic Census these two groups constitute. To present some idea of the maximum size of the effect these two groups may have, the comparable figure for the 80.81 million enterprise employees in Chinese manufacturing was 6.87 yuan, or \$0.83, about 2.9 percent of U.S. compensation costs in 2004.