

China's employment and compensation costs in manufacturing through 2008

Despite large increases in recent years, hourly compensation costs in China's manufacturing sector remained only 4 percent of those in the United States in 2008; that year, hourly compensation costs rose to \$1.36, as China's manufacturing employment continued to increase despite the beginning of the global economic downturn

Judith Banister
and
George Cook

In 2006, China became the United States' second-largest trading partner in manufactured goods behind Canada.¹ Only 4 years later, China surpassed Japan as the second-largest economy in the world.² Because of China's growing importance to the U.S. and global economies, there has been great demand for statistics about China's manufacturing sector, particularly employment statistics and comparable labor-cost measurements. In 2005, the Bureau of Labor Statistics sponsored a baseline research project to assess the quality of China's data on employment and labor compensation in manufacturing. The resulting report contains estimates of compensation costs in China's manufacturing sector for the base year of 2002.³

The data sources and estimation procedures used in that original work have been the basis for updates through 2006 and, in this article, through 2008.⁴ Building on the baseline report and subsequent articles, this article documents and analyzes changes in China's manufacturing employment and hourly labor compensation costs on the basis of official data through 2008 and anecdotal reports from China since then.

The recent global economic crisis, which

escalated rapidly in the second half of 2008, has contributed to jolting shifts in the manufacturing sector in the United States and China as well as many other developed and developing economies. Even so, China's manufacturing employment continued to grow from a total of 97.91 million at the end of 2007 to 99.01 million at yearend 2008. Though manufacturing workers in China are earning more than ever before, average hourly compensation costs were only \$1.36 in 2008. China's hourly compensation costs remain far below those of many of its East Asian neighbors like Japan (\$27.80) and Taiwan (\$8.68), but are roughly on par with those of others like the Philippines (\$1.68).⁵

This article first reviews sources of data on China's manufacturing sector and then presents recent trends in China's employment and labor compensation in manufacturing through 2008. The article updates the previous BLS estimates of hourly earnings and hourly compensation costs in manufacturing and highlights ongoing changes for workers in China's manufacturing sector. Comparisons of China's hourly manufacturing compensation costs with those of other nations around the world, including the United States, India, and a number of

Judith Banister is a senior consultant with Javelin Investments. She is the former head of the International Programs Center at the U.S. Census Bureau. Dr. Banister may be reached by email at judith_banister@yahoo.com. George Cook is an economist formerly in the Division of International Labor Comparisons, Bureau of Labor Statistics.

East Asian economies, also are included.

Available data sources

China's published statistics on employment and wages in manufacturing do not meet international standards. No source of frequently published, official data provides nationwide employment and labor compensation statistics on Chinese manufacturing. To obtain reliable, annually updated, national employment and earnings numbers, data must be drawn from two sources. Data for formal, urban enterprises are collected and reported by the Ministry of Human Resources and Social Security (formerly called the Ministry of Labor and Social Security), while data for other manufacturing units—that is, town and village enterprise (TVE) data⁶—are compiled and reported by the Ministry of Agriculture. TVEs were originally established in China's Maoist Communist period to give rural peasants and town dwellers jobs outside subsistence agriculture without any need for them to migrate to large cities. The primary purpose was rural industrialization in China, to prevent overurbanization of the population and massive urban slums. Because of this policy, almost two-thirds of China's manufacturing workers are now employed in TVEs, while just over one-third work in urban units.

The published annual data on China's employment and wages in manufacturing are based on an annual reporting system from work units that originally reflected a planned Marxist economy and that emphasized urban data over rural data. In the decades from 1949 to the economic reforms beginning in 1978, essentially all industries in China's cities were state owned and state run, and the government focused on documenting industrialization and progress in the cities. During that time, rural China was organized into collectives that owned and ran the TVEs; few data were collected from the collectives in the countryside. Today, there continue to be comparatively detailed yearly figures on employment and earnings in urban manufacturing units that are published in easily accessible statistical volumes.

In contrast, only a small number of labor-related statistics are published describing China's large network of factories and small manufacturing units besides urban units. The majority of China's manufacturing workers are employed in TVEs, yet each year only two official relevant figures are published about them: the total number of manufacturing employees who work in TVEs and the total annual wage bill for those manufacturing workers.⁷

Estimates for total employment and average hourly

compensation costs for China's manufacturing sector are constructed by combining the ample urban data with the less plentiful figures on TVE manufacturing. Important gaps in the TVE data are filled by estimating nonwage components of labor compensation as well as the number of 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 supports the general validity of the BLS calculations on China's employment and labor compensation in manufacturing.⁸

Total yearend manufacturing employment

Total yearend manufacturing employment in China is derived by adding manufacturing employment in urban units to manufacturing employment in TVEs (table 1). These figures are far higher than the official data on total manufacturing employment, which were last published in 2002. The official published yearend total of 83.07 million workers for 2002 comprised 29.81 million manufacturing employees in urban units, 45.06 million manufacturing employees of registered manufacturing enterprises outside of areas classified as urban (the more formal component of TVE manufacturing), and another 8.21 million informal manufacturing workers said to be located in urban areas but operating outside of established enterprises.⁹ The sum of manufacturing employment from urban units (29.81 million) and TVEs (70.87 million) was 100.67 million at yearend 2002, more than 17 million higher than the official reported number (table 1).

In this article, total manufacturing employment for China is calculated by combining TVE (rather than "rural") manufacturing employment with manufacturing employment in urban units. This procedure is necessary in order to calculate annual updates for China's nationwide employment and labor compensation in manufacturing. The reasons that the procedure is necessary are twofold. First, though yearly data are published on employment and wages in urban manufacturing units, China's National Bureau of Statistics stopped publishing a number for "rural" manufacturing employment after 2002, as mentioned earlier. Second, China's official sources have never published corresponding wage data for "rural" manufacturing employees, whereas annual earnings data are published for TVE employees. For these reasons, TVE data from the Ministry of Agriculture are used to represent groups other than urban units.

Readers will note a sudden discontinuity in table 1 in the series for the total yearend manufacturing employment

Table 1. Yearend manufacturing employment in China, 1978–2008

[In millions]

| Year | Reported total manufacturing employment | “Rural” manufacturing employment | Manufacturing employment in urban units | Town and village enterprises (TVEs) employment | | Urban units +TVE manufacturing employment | |
|-----------|---|----------------------------------|---|--|---------------|---|---------|
| | | | | “Industry” ¹ | Manufacturing | Yearend | Average |
| 1978..... | 53.32 | 17.34 | — | 17.34 | — | — | — |
| 1979..... | — | — | — | 18.14 | — | — | — |
| 1980..... | 58.99 | 19.42 | — | 19.42 | — | — | — |
| 1981..... | — | — | — | 19.81 | — | — | — |
| 1982..... | — | — | — | 20.73 | — | — | — |
| 1983..... | — | — | — | 21.68 | — | — | — |
| 1984..... | — | — | — | 36.56 | — | — | — |
| 1985..... | 74.12 | 27.41 | — | 41.37 | — | — | — |
| 1986..... | 80.19 | 31.39 | — | 47.62 | — | — | — |
| 1987..... | 83.59 | 32.97 | — | 52.67 | — | — | — |
| 1988..... | 86.52 | 34.13 | — | 57.03 | — | — | — |
| 1989..... | 85.47 | 32.56 | — | 56.24 | — | — | — |
| 1990..... | 86.24 | 32.29 | 53.61 | 55.72 | 51.50 | 105.10 | — |
| 1991..... | 88.39 | 32.68 | 55.01 | 58.14 | 53.73 | 108.74 | 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 | 120.81 |
| 1995..... | 98.03 | 39.71 | 54.93 | 75.65 | 69.92 | 124.85 | 122.05 |
| 1996..... | 97.63 | 40.19 | 53.44 | 78.60 | 72.65 | 126.09 | 125.47 |
| 1997..... | 96.12 | 40.32 | 51.30 | 61.49 | 56.84 | 108.13 | 117.11 |
| 1998..... | 83.19 | 39.29 | 38.26 | 73.34 | 67.79 | 106.05 | 102.03 |
| 1999..... | 81.09 | 39.53 | 35.54 | 73.95 | 68.35 | 103.90 | 104.97 |
| 2000..... | 80.43 | 41.09 | 33.01 | 74.67 | 69.01 | 102.02 | 102.96 |
| 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 | 100.67 | 100.88 |
| 2003..... | — | — | 29.80 | 78.56 | 72.73 | 102.54 | 101.61 |
| 2004..... | — | — | 30.51 | 81.61 | 75.68 | 106.19 | 104.36 |
| 2005..... | — | — | 32.11 | 84.52 | 78.48 | 110.59 | 108.39 |
| 2006..... | — | — | 33.52 | 85.03 | 79.11 | 112.63 | 111.61 |
| 2007..... | — | — | 34.65 | 68.37 | 63.26 | 97.91 | 96.65 |
| 2008..... | — | — | 34.34 | 69.85 | 64.67 | 99.01 | 98.46 |

¹ This is a translation of the Chinese “gongye,” which refers to manufacturing, mining, and the production and supply of electricity, gas, and water.

NOTE: Dashes indicate data not available. There is a long time series for TVE “industry” (manufacturing, mining, and utilities) data, but separate reporting of the manufacturing component of TVE industry began only in 2002. For the purpose of constructing a longer time series, TVE manufacturing employment during each of the years 1990–2001 is assumed to be 92.4 percent of TVE industry employment as calculated with the published figures for 2002. Manufacturing employment in urban units has been published for 1994–2008. Figures for years before 1994 are estimated by using the trend found among urban “staff and workers” in manufacturing, a subgroup that accounts for 99 percent of urban manufacturing employees between 1994 and 1997. There is a break in the series for TVE manufacturing and “industry” employment in 1997, 1998, and 2007, and there is therefore also a break in the series for manufacturing employment in urban units and

TVEs (yearend and average) for the same years. There is a break in the series for urban units manufacturing employment in 1998, and therefore also in the series for manufacturing employment in urban units and TVEs (yearend and average) for the same year.

SOURCES: Data for 1978–2006 are taken from Erin Lett and Judith Banister, “China’s manufacturing employment and compensation costs: 2002–06,” *Monthly Labor Review*, April 2009, p.32; China National Bureau of Statistics and China Ministry of Human Resources and Social Security, compilers, *China Labor Statistical Yearbook 2009* (Beijing, China Statistics Press, 2009), p. 12; China Ministry of Agriculture, *China Agriculture Yearbook, 2008* [in Chinese] (Beijing, China Agriculture Press, 2008), p. 232; China Ministry of Agriculture and China TVE Yearbook Editorial Committee, editors, *China Village and Town Enterprise Yearbook, 2009* [in Chinese] (Beijing, China Agriculture Publishing House, 2009), p. 99.

(comprising urban units and TVEs). The yearend total was increasing from 2002 through 2006, likely representing a real trend of rising manufacturing employment in China. Then, the total number dropped by about 15 million from 2006 to 2007. Table 1 shows that there was no apparent

disruption in urban units’ employment figures and that the entire decline came from TVE employment. The employment and earnings tables for TVEs in the *China Labor Statistical Yearbook 2008* include a footnote indicating that official statistical organizations decided to drop self-

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employed workers from the TVE manufacturing employment series for 2007 and subsequent years.¹⁰ Because of the change, the TVE employment series showed a drop of 16 million from yearend 2006 (79.11 million) to yearend 2007 (63.26 million). This numerical change is not part of a real trend but instead constitutes a break in the series. Breaks in series are not unfamiliar in Chinese manufacturing employment data; similar breaks can be seen in TVE data from 1996 to 1998 and in data on urban units from 1997 and 1998.¹¹ Despite the statistical breaks, it is still clear that the actual trend for the whole decade from 1999 to 2008 is that TVE manufacturing employment increased every year from yearend 1998 to 2006 and that the rising trend continued (after the most recent change

in statistical concepts) from yearend 2007 to yearend 2008 (table 1).

From yearend 2007 to yearend 2008, China's total manufacturing employment (no longer including self-employed manufacturing workers) increased by 1.1 million, from 97.91 million to 99.01 million, but the rise in manufacturing employment was all in TVEs. Urban manufacturing units registered a drop in employment of 311,000 over the same period (tables 1 and 2).

Table 2 shows annual employment in urban manufacturing units from 2002 through yearend 2008 by subsector. From 2003 through 2007, total manufacturing employment in urban units rose every year. A few urban manufacturing subsectors had declining employment numbers

Table 2. Urban manufacturing employment in China, by subsector, 2002–08

| Urban manufacturing subsector | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|--|------------|------------|------------|------------|------------|------------|------------|
| Total manufacturing employment in urban units... | 29,807,492 | 29,804,919 | 30,508,231 | 32,108,988 | 33,516,145 | 34,653,607 | 34,342,617 |
| Food processing..... | 977,439 | 949,907 | 981,935 | 1,085,463 | 1,129,293 | 1,160,754 | 1,151,151 |
| Food product manufacturing..... | 621,757 | 657,164 | 673,822 | 712,837 | 747,609 | 775,192 | 768,145 |
| Beverage manufacturing..... | 740,250 | 749,406 | 710,610 | 711,048 | 730,770 | 753,938 | 771,152 |
| Tobacco processing..... | 233,485 | 222,476 | 200,184 | 184,255 | 177,911 | 189,851 | 200,844 |
| Textiles..... | 2,841,565 | 2,718,148 | 2,654,621 | 2,802,744 | 2,849,154 | 2,648,527 | 2,528,889 |
| Garments and other fiber products..... | 1,336,191 | 1,390,683 | 1,671,406 | 1,776,319 | 1,984,645 | 2,045,114 | 2,061,718 |
| Leather, fur, down, and related products..... | 578,590 | 635,176 | 703,199 | 872,254 | 953,419 | 991,024 | 931,680 |
| Timber processing, and bamboo, cane, palm, and straw products..... | 267,666 | 294,322 | 312,231 | 328,389 | 349,580 | 352,468 | 304,296 |
| Furniture manufacturing..... | 180,484 | 189,110 | 231,098 | 296,728 | 327,124 | 367,141 | 332,783 |
| Papermaking and paper products..... | 592,400 | 574,859 | 561,654 | 589,588 | 602,266 | 607,156 | 611,053 |
| Printing and record medium reproduction..... | 493,497 | 477,071 | 454,347 | 427,607 | 420,109 | 416,352 | 410,422 |
| Stationery and educational and sporting goods..... | 294,636 | 332,826 | 353,672 | 392,394 | 444,470 | 473,133 | 436,533 |
| Petroleum processing and coking products..... | 565,505 | 525,522 | 507,916 | 552,062 | 554,829 | 624,946 | 604,204 |
| Chemical raw materials and products..... | 2,213,256 | 2,172,951 | 2,117,999 | 2,130,712 | 2,129,860 | 2,159,162 | 2,155,118 |
| Medical and pharmaceutical products..... | 844,857 | 891,993 | 896,412 | 930,402 | 926,623 | 925,652 | 959,865 |
| Chemical fibers manufacturing..... | 263,378 | 204,733 | 207,241 | 207,405 | 213,091 | 222,331 | 211,078 |
| Rubber products..... | 377,633 | 375,154 | 387,495 | 383,041 | 400,682 | 431,887 | 438,408 |
| Plastic products..... | 606,800 | 629,700 | 664,683 | 728,828 | 776,708 | 819,606 | 789,435 |
| Nonmetal mineral products..... | 2,116,034 | 2,092,946 | 2,095,421 | 2,141,121 | 2,111,943 | 2,050,602 | 1,936,335 |
| Smelting and pressing of ferrous metals..... | 1,900,648 | 1,900,466 | 1,845,205 | 1,872,455 | 1,877,029 | 1,933,406 | 1,894,175 |
| Smelting and pressing of nonferrous metals..... | 755,646 | 790,666 | 789,552 | 792,309 | 811,151 | 885,374 | 921,110 |
| Metal products..... | 897,455 | 809,559 | 854,134 | 951,703 | 1,001,597 | 1,083,064 | 1,066,083 |
| Ordinary machinery manufacturing..... | 1,921,315 | 1,884,852 | 1,900,869 | 1,934,990 | 1,969,987 | 2,091,054 | 2,046,922 |
| Special purpose equipment manufacturing..... | 1,400,594 | 1,661,521 | 1,627,336 | 1,627,277 | 1,712,683 | 1,732,787 | 1,772,950 |
| Transportation equipment manufacturing..... | 2,319,421 | 2,316,516 | 2,314,390 | 2,429,167 | 2,570,589 | 2,631,544 | 2,745,303 |
| Electrical equipment and machinery..... | 1,441,399 | 1,414,331 | 1,568,808 | 1,668,224 | 1,789,185 | 1,903,513 | 1,977,827 |
| Electronics and telecommunications..... | 1,623,783 | 1,825,847 | 2,054,772 | 2,376,539 | 2,660,945 | 3,042,747 | 3,046,676 |
| Machinery for cultural activity and office work..... | 464,762 | 553,854 | 581,439 | 585,202 | 641,771 | 681,405 | 653,913 |
| Other manufacturing..... | 601,416 | 536,188 | 563,466 | 593,960 | 632,775 | 632,535 | 588,349 |

NOTE: The data in this table refer only to urban manufacturing employment. The subsectors listed here do not sum to the total manufacturing in urban units, but the difference between total manufacturing employment and the sum of manufacturing employment in the listed industries is less than 2 percent in all years.

SOURCES: Data for all years were collected by the China National Bureau of Statistics and China Ministry of Human Resources and Social Security. Data for 2002 through 2004 are from Erin Lett and Judith Banister, "Labor

costs of manufacturing employees in China: an update to 2003–04," *Monthly Labor Review*, November 2006, p 45. Data for 2005 are from *China Labor Statistical Yearbook 2006* (Beijing, China Statistics Press, 2006), pp. 185–200. Data for 2006 are from *China Labor Statistical Yearbook 2007* (Beijing, China Statistics Press, 2007), pp. 203–218. Data for 2007 are from *China Labor Statistical Yearbook 2008* (Beijing, China Statistics Press, 2008), pp. 179–194. Data for 2008 are from *China Labor Statistical Yearbook 2009* (Beijing, China Statistics Press, 2009), pp. 193–208.

in several or all of those years (for example, printing and record medium production, and tobacco processing), but most urban manufacturing subsectors were hiring steadily throughout much of the period from 2002 to 2007. Then the global economic downturn caused shrinking markets for Chinese exports in the United States and Europe,¹² resulting in a decline in employment in the urban Chinese manufacturing sector in 2008. The largest reductions in urban manufacturing employment from 2007 to the end of 2008 were in textiles; nonmetal mineral products; leather, fur, and down products; timber and bamboo processing; ordinary machinery manufacturing; and smelting and pressing of ferrous metals (table 2). Some of China's manufacturing subsectors appeared to be unaffected by the global downturn; in 2008, several industries within urban manufacturing added employees—for example, medical and pharmaceutical products, beverage manufacturing, tobacco processing (which previously had been reducing employment), garments and other fiber product manufacturing, smelting and pressing of nonferrous metals, special purpose equipment manufacturing, transportation equipment manufacturing, and electrical equipment and machinery manufacturing. These more resilient sectors may be those with a strong domestic Chinese market. This is demonstrated in the sales values of China's domestic trade (wholesale and retail) in pharmaceuticals, beverages, tobacco, garments, vehicles, and household electrical appliances, which rose steeply from 2007 to 2008 (after adjustments for price changes for these goods in Chinese yuan).¹³

Calculating compensation costs

Manufacturing employment is of course an important factor in understanding China's international trade competitiveness, but it is critical to couple this information with labor costs. The following sections update previous articles from the *Monthly Labor Review* with hourly compensation data from 2007 and 2008. The estimates are based on the same statistical sources as the employment data constructed in the previous section and therefore reflect compensation for China's total manufacturing employment—that is, the sum of employment in manufacturing urban units and employment in manufacturing TVEs. As with the employment data described earlier, both the Ministry of Human Resources and Social Security (urban units) and the Ministry of Agriculture (TVEs) publish an annual earnings figure that includes wages, bonuses, and allowances paid to employees in cash or in kind. Aggregate earnings data for urban units and TVEs

are combined to construct an estimate of *direct* labor costs in China's manufacturing sector.¹⁴

Direct labor costs are combined with nonwage compensation costs to attain total annual compensation costs for manufacturing workers in both TVEs and urban units. Annual compensation data are then divided by annual hours to create an estimate of hourly compensation. Hourly compensation is a preferred measurement of compensation costs across countries, because hours can vary widely from one country to another and hourly compensation data account for that. The following two sections respectively discuss how estimates for hours worked and nonwage compensation costs are derived.

Hours worked

A detailed description of the methods used to calculate the original 2002 estimates of hours worked for China can be found in Judith Banister's August 2005 *Monthly Labor Review* article.¹⁵ For the 2002 estimate of hourly compensation costs in China's manufacturing sector, the annual number of hours that urban manufacturing employees worked was derived from the Ministry of Labor's labor force survey. In 2002, the Ministry of Labor published two weekly hours-worked estimates for urban areas—one referring to a week in spring and the other referring 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 worked per year by urban manufacturing employees.¹⁶ For 2003 and beyond, hours-worked data 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 annual-hours-worked estimate to derive an estimate of annual hours worked from 2003 through 2008.

The published data on average weekly hours worked in China's urban manufacturing sector at the beginning of November each year show a decrease from 50.4 hours per week in 2006 to 47.9 hours per week in 2008.¹⁷ 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 2002 TVE annual hours worked estimate for each of the subsequent years. For the purposes of this article, from 2003 onward, data on hours worked by 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 urban labor force survey. These percent changes are then applied to the previous year's annual-hours-worked estimate to derive an estimate of annual hours worked for the year in question.¹⁸

Nonwage compensation costs

In order to estimate total compensation costs for China's manufacturing employees, 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. For urban establishments, the relevant data for calculating social benefits as a percentage of total earnings are from a survey that China's Ministry of Labor conducted with reference to 2002. Social benefits as a percentage of total earnings for TVE employees, on the other hand, was based on a survey of large manufacturing enterprises in Nanjing Municipality for the years 1994–2001 as well as assumptions about the level of benefits in large versus small establishments and between enterprises located in suburban areas and those in rural areas. The results of these surveys were used to construct the original 2002 estimates of China's manufacturing compensation costs.¹⁹ The authors have been unable to find published data from any subsequent surveys of urban establishments or busi-

nesses outside the cities in the aforementioned survey that would adequately update the information on labor compensation costs beyond the wage. Therefore, the ratio of employer expenditures for social benefits to direct labor costs is held constant, at the 2002 level, for the 2003–08 estimates.

Results

Table 3 shows average annual earnings, adjusted by adding estimates for additional components of total labor cost, such as required social insurance payments. The table also displays annual, monthly, and hourly compensation figures in both yuan and U.S. dollars, calculated at the market exchange rate for each year. Employment in Chinese manufacturing averaged 96.65 million during 2007, rising to an average of 98.46 million during 2008. Average yearly earnings (the basic wage in cash and in kind) totaled 14,382 yuan for 2007 and 16,367 yuan in 2008 (table 3).

The earnings data for TVEs (table 4), like the employment data discussed earlier, include a break in series caused by the exclusion of the self-employed after 2006. Because of this break, earnings data from before 2007 for total manufacturing and TVEs are not directly comparable to data from 2007 and beyond.²⁰ This recent statistical change improves the quality of TVE data by creating data that are more comparable with data for Chinese urban

Table 3. Estimated compensation costs of manufacturing employees in China, 2007–08

| Category of manufacturing | Average number of employees (in millions) | Annual 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 |
| 2007 | | | | | | | | |
| Urban units and TVEs (town and village enterprises)..... | 96.65 | 14,382 | 18,948 | 2,491 | 1,579 | 208 | 8.06 | 1.06 |
| Urban units..... | 34.08 | 21,144 | 32,519 | 4,276 | 2,710 | 356 | 13.89 | 1.83 |
| TVEs..... | 62.56 | 10,698 | 11,554 | 1,519 | 963 | 127 | 4.89 | 0.64 |
| 2008 | | | | | | | | |
| Urban units and TVEs..... | 98.46 | 16,367 | 21,593 | 3,108 | 1,799 | 259 | 9.48 | 1.36 |
| Urban units..... | 34.50 | 24,404 | 37,533 | 5,402 | 3,128 | 450 | 16.53 | 2.38 |
| TVEs..... | 63.96 | 12,033 | 12,995 | 1,870 | 1,083 | 156 | 5.67 | 0.82 |

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: 7.6058 yuan = 1 U.S. dollar in 2007 and 6.9477 yuan = 1 U.S. dollar in 2008.

SOURCES: Employment data are from table 1 of this article. Earnings data for 2007 are from China National Bureau of Statistics and China Ministry of Human Resources and Social Security, compilers, *China Labor Statistical Yearbook 2008* (Beijing, China Statistics Press, 2008), p. 179; and China

Ministry of Agriculture, China TVE Yearbook Editorial Committee, eds., *China Agricultural Yearbook 2008* [in Chinese] (Beijing, China Agriculture Press, 2008), p. 233. Earnings data for 2008 are from China National Bureau of Statistics and China Ministry of Human Resources and Social Security, compilers, *China Labor Statistical Yearbook 2009* (Beijing, China Statistics Press, 2009), p. 193; and China Ministry of Agriculture, compiler, *China Village and Town Enterprise Yearbook 2009* [in Chinese] (Beijing, China Agriculture Publishing House, 2009), p. 100.

Table 4. Estimated hourly compensation costs of manufacturing employees in China, 2002–08

| Category of manufacturing | Hourly compensation per employee | | | | | | |
|---|-------------------------------------|------|------|-------|-------|-------|-------|
| | yuan | | | | | | |
| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Total for urban units and TVEs ¹ | 4.74 | 5.17 | 5.50 | 5.95 | 6.44 | 8.06 | 9.48 |
| Urban units..... | 7.87 | 8.86 | 9.86 | 10.63 | 11.73 | 13.89 | 16.53 |
| TVEs ¹ | 3.40 | 3.63 | 3.73 | 4.05 | 4.24 | 4.89 | 5.67 |
| | U.S. dollars | | | | | | |
| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| | Total for urban units and TVEs..... | 0.57 | 0.62 | 0.66 | 0.73 | 0.81 | 1.06 |
| Urban units..... | 0.95 | 1.07 | 1.19 | 1.30 | 1.47 | 1.83 | 2.38 |
| TVEs..... | 0.41 | 0.44 | 0.45 | 0.49 | 0.53 | 0.64 | 0.82 |

¹ Before 2007, self-employed workers were included in TVE manufacturing data; since 2007, these workers have been excluded. This causes a break in 2007 in the series for hourly compensation in TVEs and in the series for hourly compensation in both urban units and TVEs.

NOTE: All figures are nominal. Exchange rate calculations were done at the market exchange rate for the year in question.

SOURCES: Table 3 of this article; and Erin Lett and Judith Banister, "China's manufacturing employment and compensation costs: 2002–06," *Monthly Labor Review*, April 2009, p. 35.

units, as well as with data from other countries in the BLS international hourly compensation series. The data for the urban units in China remain comparable with one another over the entire series.

Hourly compensation growth rates in China's manufacturing sector have been rising steadily, and comparatively quickly. Consider that, from 2002 to 2008, hourly labor costs in the manufacturing sector in the United States increased by 19 percent, while the corresponding figure in China grew 100 percent.²¹ The following section explores some of the contributing factors to rising labor costs in Chinese manufacturing.

Rising compensation costs

Inflation in China has been substantial. Consumer prices in urban areas increased an average of 3.3 percent annually from 2005 through 2008. Consumer prices in rural areas increased even more rapidly, at an average annual rate of 3.9 percent.²² Even after an adjustment for consumer price inflation, the rise in compensation costs for manufacturing workers in Chinese currency is real and rapid in urban manufacturing units. All earnings data calculated in this article are nominal values and therefore have not been adjusted for inflation.

One reason for the surging manufacturing labor compensation costs in China is the rising literacy, numeracy, and educational attainment of even unskilled and semi-skilled employees from rural as well as urban areas, and even greater increases in the human capital embodied in skilled workers and high-talent employees.²³ The in-

creased education and skill level of Chinese workers has helped to increase labor productivity in China's secondary industry, especially in manufacturing. Labor productivity in China's secondary industry (which is primarily manufacturing, but also includes construction, mining, and utilities) has risen about 10 percent per year since 1991 (4–26 percent each year over the 1991–2008 period), due to technological progress, increased capital investment, and rising human capital.²⁴

Another reason for the surging cost of labor in Chinese manufacturing today is a new employment contract law (also called a labor contract law) that came into effect at the beginning of 2008.²⁵ The law gives workers the right to have a signed labor contract, protects the working conditions and timely payment of wages to employees, limits overtime work, requires payments to compulsory social insurance schemes for employees, and makes it much more difficult to fire workers. This law, along with minimum-wage laws, appears to be strengthening the bargaining power of employees and contributing to wage increases, especially in foreign-owned factories where China's authorities recently are tolerating strikes by workers.²⁶ It is likely that the labor contract law will also cause the amount of social insurance paid by employers relative to wages to increase, but BLS has been unable to locate recent national-level data to quantify the effects of this law on nonwage compensation.

Reported manufacturing labor shortages

A third reason for rising compensation costs in China is

the growing shortage of workers. In recent decades, employers became accustomed to having a seemingly unlimited supply of very cheap labor, and being able to insist on certain qualities in their workers.²⁷ Through the turn of the millennium, China had an ample reserve supply of laborers, partly because young-adult farmers were moving out of agriculture into industry for the first time. Reports of emerging shortages of manufacturing workers began in the Pearl River Delta of Guangdong Province in about 2003 and have since spread.²⁸

From a macroscopic perspective, China, the world's most populous country with the world's largest labor force, seems an unlikely candidate for a labor shortage.²⁹ In fact, the bulk of China's population (73 percent) is in the cohorts considered to be of working age—that is, the cohorts with people at least 15 years of age but younger than 65—providing a massive pool of potential employees and talent (chart 1).³⁰ As of yearend 2008, China's employed population was reported to be 775 million, constituting 58 percent of the country's total population.³¹ Of the population ages 15–64, 77 percent was employed, which is high from an international comparative perspective.³²

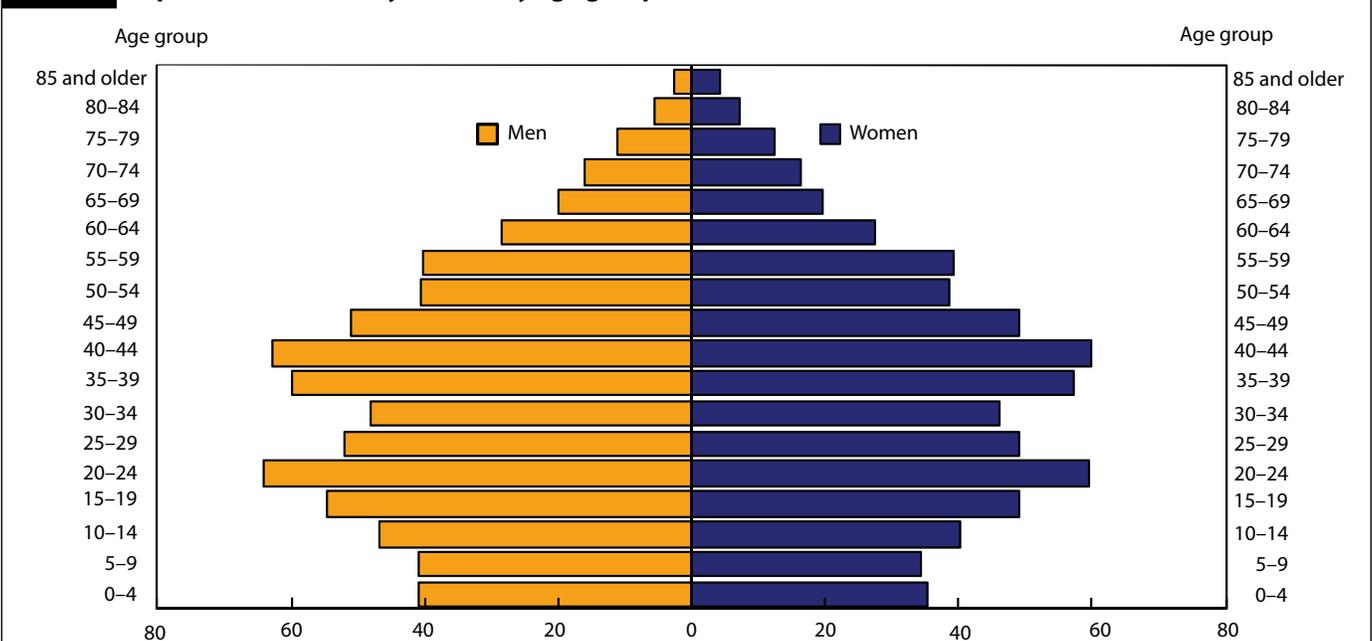
Nevertheless, as shown in chart 1, most of China's young-adult age groups are smaller than the groups in their late 30s and early 40s. In addition, the youth popula-

tion ages 0–14 has shrunk to an unusually small proportion of the population for a developing country. Indeed, a key determinant of China's paradoxically tightening labor market is low fertility. China's family planning and one-child policies have significantly reduced fertility and kept it low during most years since the 1970s.

The tight labor situation in manufacturing was temporarily eased by the global economic crisis. In late 2008 and early 2009, export markets for Chinese manufactured goods crashed because of the weak global economy. Large numbers of migrant manufacturing workers were suddenly laid off, and many of these workers moved back to the countryside.³³ China's government instituted a massive infusion of money to reinvigorate the economy.³⁴ Export markets began to recover during 2009; renewed hiring followed. But now, manufacturing employers are reporting that they cannot get the rural migrant workers to return to urban units, and are having difficulty luring new employees as well.

In response to the current labor shortages, manufacturing employers are raising wages, improving working conditions, hiring workers in a wider age range, increasing promised benefits, and generally doing what they can to attract enough workers. The tight labor market is therefore contributing to increasing labor costs in manufactur-

Chart 1. Population of China, by sex and by age group, in millions, 2010



NOTE: Data were compiled by the U.S. Census Bureau from public and private data sources. Values for 2010 are estimated on the basis of sampling done in previous years.

SOURCE: U.S. Census Bureau, International Database, www.census.gov/ipc/www/idb/

ing.³⁵ The next section will discuss the difference between hourly labor costs in urban units and those in TVEs and how the tightening labor market affects this relationship.

Compensation in urban units versus TVEs

A continuing feature of manufacturing labor compensation in China is the large and growing differential between average hourly compensation costs for employees in urban units and those for employees in TVEs. (Chart 2 illustrates the differential in U.S. dollars.) By 2002, hourly labor compensation in urban units was 2.3 times the compensation in TVEs; as of 2008, even after the removal of the self-employed (a group with low wages overall) from the TVE series, hourly labor compensation in urban units had jumped to 2.9 times that in TVEs. (See the compensation data in Chinese yuan in table 4).³⁶ One key reason for this increasing disparity is restrictions on geographical labor mobility. It remains difficult for rural laborers to move from the villages to the cities and reestablish their families and households there, a factor contributing to perceived labor shortages in the urban areas. There are legal, administrative, informational, financial, educational, social, housing, and other formal and informal barriers to permanent rural-to-city migration.³⁷

Therefore, labor shortages are more acute in the cities, driving up wages.

Because of China's strict family planning and one-child policies, most cohorts of workers that have entered China's labor force since the beginning of the 1990s have been much smaller than the cohorts now in their late 30s and early 40s (chart 1).³⁸ To meet labor demand in the cities, employers are utilizing the city-born supply of young adult workers as well as drawing rural-to-urban migrant workers on a steady basis.

Villages throughout China report that most of the young adults who want to migrate out of the village for nonagricultural work have already done so. Though China has hundreds of millions of workers, they are now becoming more demanding about what jobs they pursue and where. If potential labor migrants are not impressed with what they have experienced or what they hear about pay and working conditions in the urban factories, they may be unwilling to migrate over a long distance to take up such jobs.³⁹

China's official statistical publications report the average annual earnings per employee in urban units in each subsector of manufacturing (table 5). This is the basic annual wage, and does not include additional labor compensation costs such as required social insurance payments to

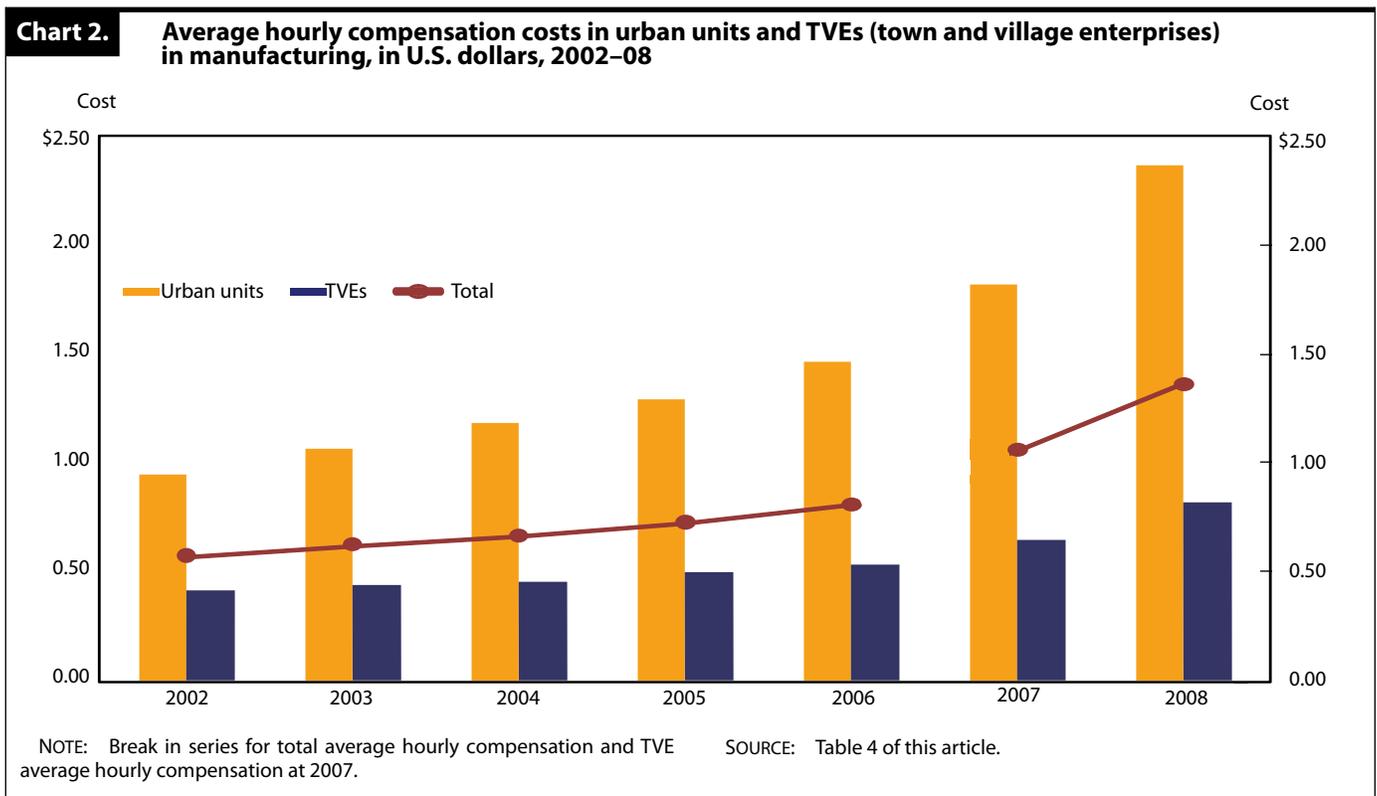


Table 5. Earnings in urban manufacturing units in China, by subsector, 2002–08

| Urban manufacturing subsector | Average annual earnings per employee | | | | | | |
|--|--------------------------------------|--------|--------|--------|--------|--------|--------|
| | (in yuan) | | | | | | |
| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| All subsectors..... | 11,152 | 12,671 | 14,251 | 15,934 | 18,225 | 21,144 | 24,404 |
| Food processing..... | 7,965 | 8,727 | 9,607 | 11,214 | 12,955 | 14,869 | 17,428 |
| Food product manufacturing..... | 10,064 | 11,157 | 12,360 | 13,408 | 15,292 | 17,533 | 20,586 |
| Beverage manufacturing..... | 9,619 | 10,746 | 12,174 | 13,506 | 15,382 | 18,135 | 21,557 |
| Tobacco processing..... | 23,744 | 27,143 | 34,688 | 42,355 | 46,089 | 52,418 | 60,200 |
| Textiles..... | 7,268 | 8,079 | 9,038 | 10,531 | 12,035 | 13,968 | 16,284 |
| Garments and other fiber products..... | 9,066 | 10,090 | 11,381 | 12,512 | 14,349 | 16,924 | 18,711 |
| Leather, fur, down, and related products..... | 9,108 | 9,883 | 10,964 | 12,497 | 14,415 | 16,263 | 18,228 |
| Timber processing, and bamboo, cane, palm and straw products.... | 7,339 | 7,879 | 8,801 | 10,033 | 11,290 | 13,212 | 15,699 |
| Furniture manufacturing..... | 8,881 | 9,501 | 10,808 | 12,639 | 14,684 | 16,871 | 20,215 |
| Papermaking and paper products..... | 8,668 | 10,067 | 11,232 | 12,580 | 14,599 | 16,731 | 19,359 |
| Printing and record medium reproduction..... | 10,863 | 11,707 | 13,409 | 14,984 | 16,820 | 19,350 | 22,603 |
| Stationery and educational and sporting goods..... | 10,390 | 11,432 | 12,183 | 13,075 | 15,015 | 16,603 | 18,268 |
| Petroleum processing and coking products..... | 17,357 | 20,733 | 22,951 | 25,494 | 28,335 | 31,614 | 35,343 |
| Chemical raw materials and products..... | 10,359 | 12,129 | 13,729 | 15,770 | 18,475 | 21,835 | 25,249 |
| Medical and pharmaceutical products..... | 13,207 | 14,556 | 15,652 | 17,170 | 19,104 | 21,595 | 24,828 |
| Chemical fibers manufacturing..... | 11,404 | 12,562 | 13,804 | 15,484 | 16,964 | 19,775 | 21,716 |
| Rubber products..... | 10,055 | 11,024 | 12,470 | 14,233 | 16,251 | 18,994 | 21,843 |
| Plastic products..... | 10,131 | 11,317 | 12,584 | 13,661 | 15,455 | 18,078 | 20,886 |
| Nonmetal mineral products..... | 8,123 | 9,173 | 10,394 | 11,540 | 13,403 | 15,715 | 18,523 |
| Smelting and pressing of ferrous metals..... | 15,032 | 17,989 | 21,074 | 24,030 | 26,999 | 30,786 | 34,482 |
| Smelting and pressing of nonferrous metals..... | 12,491 | 13,661 | 15,285 | 17,408 | 20,543 | 24,060 | 26,358 |
| Metal products..... | 10,075 | 11,073 | 12,451 | 15,061 | 16,287 | 18,894 | 21,757 |
| Ordinary machinery manufacturing..... | 10,668 | 12,777 | 14,549 | 16,628 | 19,332 | 22,854 | 26,284 |
| Special purpose equipment manufacturing..... | 10,406 | 12,040 | 13,985 | 16,228 | 19,103 | 22,232 | 26,394 |
| Transportation equipment manufacturing..... | 14,409 | 16,313 | 18,485 | 20,204 | 22,990 | 26,922 | 31,658 |
| Electrical equipment and machinery..... | 12,405 | 13,435 | 14,797 | 16,438 | 18,533 | 21,141 | 24,769 |
| Electronics and telecommunications..... | 17,636 | 18,922 | 20,428 | 21,213 | 24,119 | 26,934 | 29,915 |
| Machinery for cultural activity and office work..... | 12,720 | 15,044 | 16,543 | 17,644 | 21,933 | 23,669 | 27,182 |
| Other manufacturing..... | 8,781 | 10,049 | 11,334 | 12,789 | 14,392 | 16,479 | 19,017 |

NOTE: The data in this table refer only to the earnings of manufacturing employees in urban units. Within each subsector, rural manufacturing workers likely have lower earnings than those shown here. The earnings figures in the table do not include required employer social insurance payments or other nonwage labor costs. All currencies represented in current values.

SOURCES: Data for all years were collected by the China National Bureau of Statistics and the China Ministry of Human Resources and Social Security.

Data for 2002 through 2004 are from Erin Lett and Judith Banister, "Labor costs of manufacturing employees in China: an update to 2003–04," *Monthly Labor Review*, November 2006, p. 45. Data for 2005 are from *China Labor Statistical Yearbook 2006* (Beijing, China Statistics Press, 2006), pp. 185–200. Data for 2006 are from *China Labor Statistical Yearbook 2007* (Beijing, China Statistics Press, 2007), pp. 203–18. Data for 2007 are from *China Labor Statistical Yearbook 2008* (Beijing, China Statistics Press, 2008), pp. 179–194. Data for 2008 are from *China Labor Statistical Yearbook 2009* (Beijing, China Statistics Press, 2009), pp. 193–208.

municipalities. There was a surge in the average wage in every urban manufacturing subsector in 2007 and 2008, as shown in table 5. Broad and strong manufacturing earnings growth in China's cities is fueled in large part by urban labor shortages, labor productivity growth, and rapidly rising educational attainment in the cities. Pressure to keep up with higher inflation rates in 2007 and 2008 than in earlier years also is a major factor.

Even while domestic differences in Chinese labor costs have grown, China's overall manufacturing labor compensation costs have risen every year, affecting China's global competitiveness in manufacturing. The next section will explore how Chinese hourly compensation costs

measured in U.S. dollars compare with costs in both developed and developing economies.

Compensation measured in U.S. dollars

Hourly manufacturing compensation costs in China are increasing at an even faster rate in U.S. dollars than in Chinese yuan. Hourly compensation costs expressed in a domestic currency (in this case, yuan) can show trends in labor costs within a country, but they do not allow for comparisons across countries. For this reason, table 4 expresses Chinese compensation costs in both Chinese yuan and U.S. dollars.

The exchange rate between the yuan and the dollar has become an important and at times contentious issue.⁴⁰ During 2002–04, the first 3 years of the hourly compensation series measured in this article, the Chinese central bank (the People’s Bank of China) pegged the yuan to the U.S. dollar at a rate of 8.28 yuan per dollar. Beginning in July 2005 the People’s Bank of China began a series of adjustments to the yuan–dollar exchange rate. Initially the new rate was set at 8.11 yuan per dollar with some small fluctuation allowed; later, the yuan was pegged to a basket of currencies instead of strictly to the U.S. dollar, allowing even further fluctuation between the yuan and the dollar.⁴¹

In 2008, the most recent year in the Chinese hourly manufacturing compensation series, the yuan traded at an average of 6.95 yuan to 1 dollar.⁴² The yuan’s appreciation with respect to the dollar during the period covered in this report contributed 19 percent to growth in Chinese manufacturing labor costs in U.S. dollar terms.

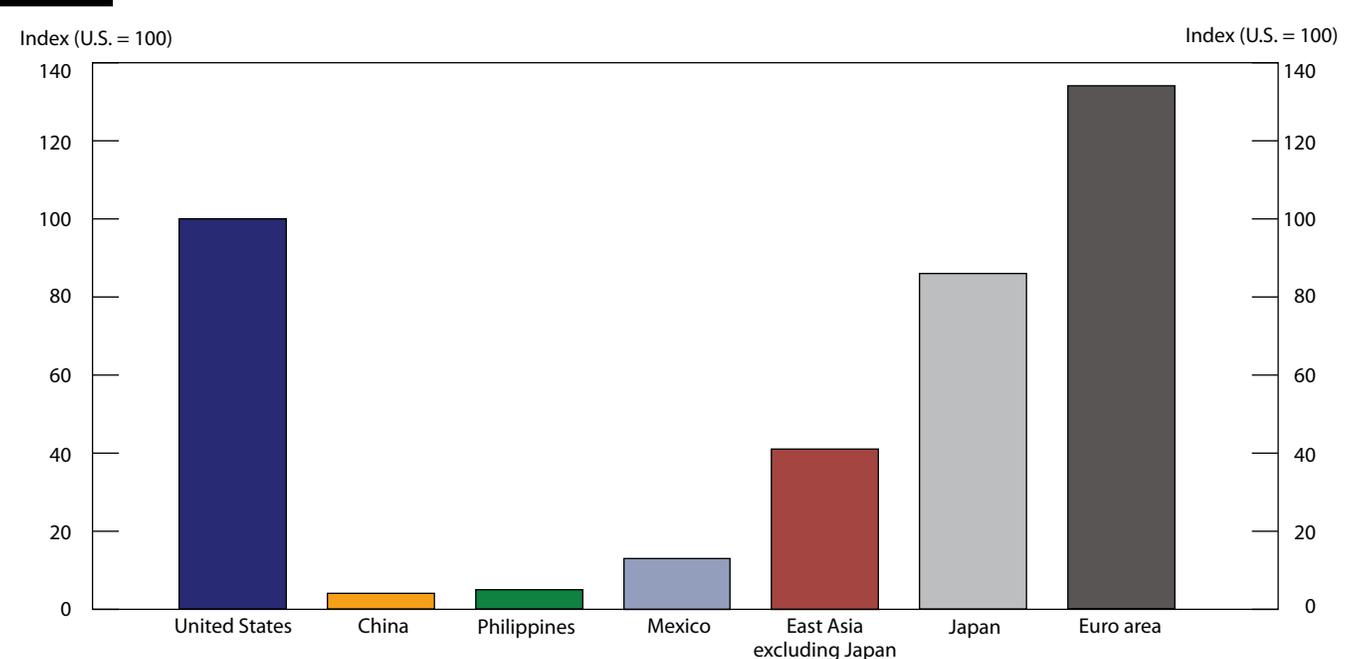
China in the global economy

Even as China ascends as a major economic player in the global economy, its position in the international landscape

of labor costs has not changed dramatically. As measured in U.S. dollars, Chinese hourly labor compensation costs in manufacturing were roughly 4 percent of those in the United States and about 3 percent of those in the Euro Area in 2008 (chart 3). China’s costs were roughly on par with those of some developing countries like the Philippines, but lagged noticeably behind those of other countries like Mexico and Brazil.

The Division of International Labor Comparisons at BLS recently released the results of a special study on labor costs in the formal manufacturing sector in India. The data from the study go through 2005 and are presented separately from the main BLS series because of comparability issues. Hourly compensation costs in Chinese manufacturing as a whole were slightly lower than those in India’s formal manufacturing sector in 2005. However, when hourly compensation costs in India’s formal manufacturing sector are compared with those in Chinese urban manufacturing units, a comparison of establishments that are more similar, Chinese compensation costs are slightly higher (chart 4).⁴³ These differences are dwarfed, however, when labor costs in China or India are compared with those in developed countries. For example, as of 2005, total hourly compensation costs in Chinese man-

Chart 3. Index of hourly compensation costs in manufacturing, selected countries and areas, 2008

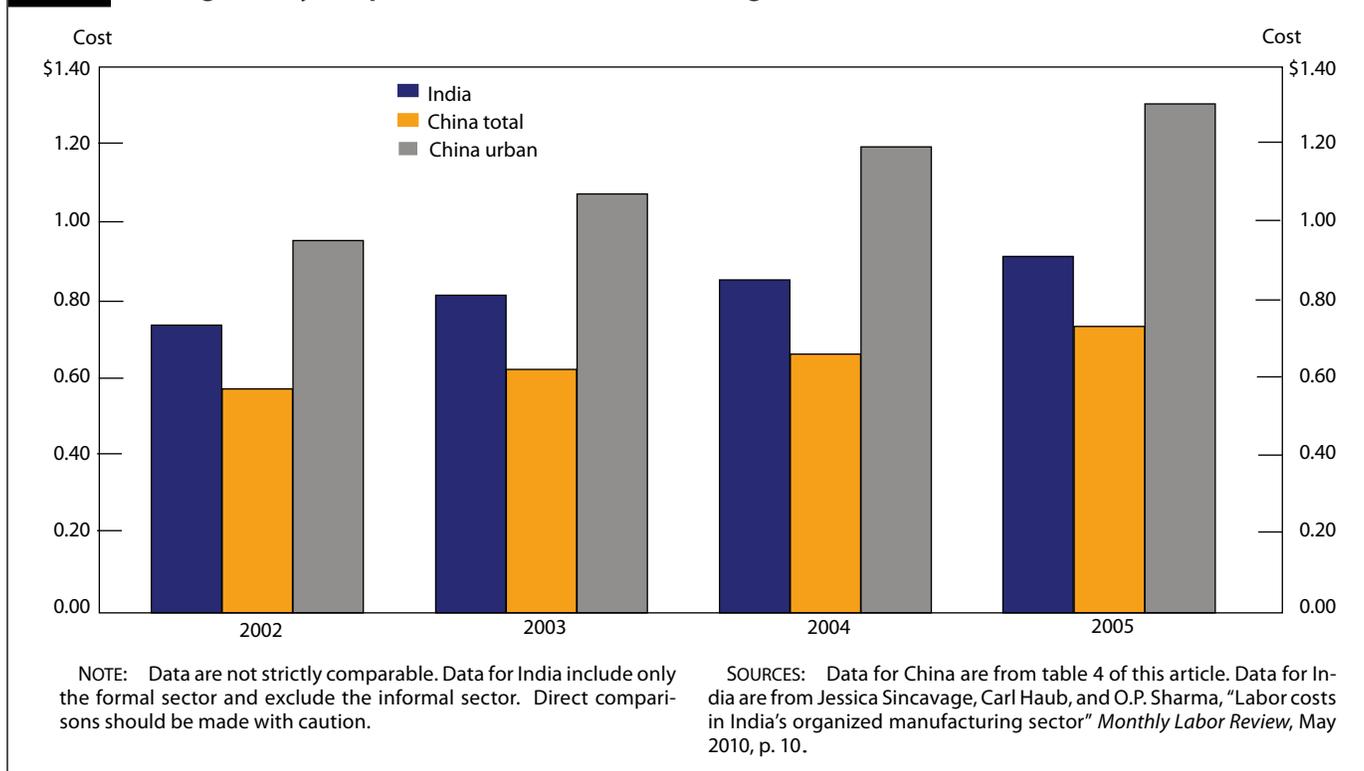


NOTE: Data are not strictly comparable. Direct comparisons should be made with caution.

SOURCES: Data for China are from table 4 of this article. Data for

other countries and areas are from *International comparisons of hourly compensation costs in manufacturing, 2008*, USDL 10–1173 (Bureau of Labor Statistics), Aug. 26, 2010.

Chart 4. Average hourly compensation costs in manufacturing in China and India, U.S. dollars, 2002–05



ufacturing (for TVEs and urban units) represented about 2.5 percent of those in the United States, while the corresponding percentages for the Indian formal sector and Chinese urban units were only slightly higher, at about 3.1 percent and 4.4 percent, respectively.

Looking forward

Growth in China's labor costs and employment in manufacturing from 2007 to 2008 suggests some resilience

in the Chinese economy to withstand a major economic downturn. This growth is largely due to expanding domestic demand from a nation with rapidly rising per-capita income. Factors such as the gradual recovery in the global economy and renewed global demand for manufactured goods, as well as the growing shortage of labor in China, will likely put upward pressure on wages and compensation in China's manufacturing sector in the future. These changes could fundamentally shape the global market for manufactured goods for decades to come. □

Notes

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¹ "TopTrading Partners - Surplus, Deficit, Total Trade," U.S. Census Bureau, Foreign Trade Division, on the Internet at www.census.gov/foreign-trade/top/ (visited Feb. 7, 2011).

² Tomoko A. Hosaka, "China surpasses Japan as world's No. 2

economy," *Washington Post*, Aug. 16, 2010, on the Internet at www.washingtonpost.com/wp-dyn/content/article/2010/08/15/AR2010081503697.html?hpid=topnews (visited Feb. 7, 2011).

³ For the original report on 2002 employment and labor compensation in manufacturing, see Judith Banister, "Manufacturing Employment and Compensation in China," on the Internet at www.bls.gov/fls/chinareport.pdf (visited Feb. 7, 2011). See also 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 www.bls.gov/opub/mlr/2005/07/art2full.pdf (visited Feb. 7, 2011); 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 (visited Feb. 7, 2011).

⁴ The baseline research for the year 2002 was 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 (visited Feb. 7, 2011). Manufacturing employment and compensation estimates were extended from 2002 through 2006 in Erin Lett and Judith Banister, “China’s manufacturing employment and compensation costs: 2002–06,” *Monthly Labor Review*, April 2009, pp. 30–38, on the Internet at www.bls.gov/opub/mlr/2009/04/art3full.pdf (visited Feb. 7, 2011).

⁵ *International Comparisons of Hourly Compensation Costs in Manufacturing, 2008*, USDL 10-1173 (Bureau of Labor Statistics), Aug. 26, 2010, on the Internet at www.bls.gov/news.release/pdf/ichcc.pdf (visited Feb. 14, 2011).

⁶ For a discussion of TVEs, see Banister, “Manufacturing Employment and Compensation in China.”

⁷ See years 2003–09 of the *China Town and Village Enterprise Yearbook* (in Chinese) (Beijing, China Ministry of Agriculture).

⁸ For example, analysis of results from China’s first economic census, with data from 2004, supported the validity of the independently derived BLS estimates of China’s 2004 employment and labor compensation in manufacturing. See Lett and Banister, “China’s manufacturing employment and compensation costs: 2002–06,” p. 37.

⁹ Banister, “Manufacturing employment in China.”

¹⁰ *China Labor Statistical Yearbook 2008* (Beijing, China National Bureau of Statistics and China Ministry of Human Resources and Social Security), Table 7-1, p. 465.

¹¹ Banister, “Manufacturing employment in China.”

¹² Michael Schuman, “How Will China Weather the Financial Storm?” *Time*, Oct. 23, 2008, on the Internet at www.time.com/time/business/article/0,8599,1853112,00.html (visited Feb. 28, 2011).

¹³ *China Statistical Yearbook 2008*, Table 16-9; and *China Statistical Yearbook 2009* (Beijing, China National Bureau of Statistics), Tables 8-1, 8-3, 8-4, 8-12, 16-9, and 16-13.

¹⁴ For the original hourly compensation costs estimates and a detailed explanation of the methods used, see Banister, “Manufacturing earnings and compensation in China.” For the hourly compensation cost data updated to 2003–04, see Lett and Banister, “Labor costs of manufacturing employees in China: an update to 2003–04.” Compensation estimates were updated through 2006 in Lett and Banister, “China’s manufacturing employment and compensation costs: 2002–06.”

¹⁵ Banister, “Manufacturing earnings and compensation in China.”

¹⁶ *Ibid.*, pp. 30–31.

¹⁷ The workers employed by urban manufacturing corporations continue to put in a heavy workweek. As of late 2008, 5 percent of China’s urban manufacturing employees worked 20–39 hours in a week, 33 percent worked 40 hours weekly, 25 percent were on the job 41–48 hours, and 36 percent worked 48 hours or more per week. See the *China Labor Statistical Yearbook 2009*, Tables 1-70 and 1-77 (Beijing, China National Bureau of Statistics and China Ministry of Human Resources and Social Security), pp. 112, 120, and 121.

¹⁸ When China’s statistical organizations dropped self-employed manufacturing workers from the TVE employment data, effective for 2007 and subsequent years, it is possible that this adjustment changed the actual average weekly hours worked by TVE manufacturing workers in China. However, the authors have no way of determining the impact of the absence of such published data. It is

informally reported that weekly-hours-worked data are collected in China’s annual rural labor force survey, but these results have never been released.

¹⁹ For more information about these sources, see Banister, “Manufacturing earnings and compensation in China.”

²⁰ For details on the compensation of self-employed versus enterprise manufacturing workers, see Judith Banister, “Manufacturing in China today: Employment and labor compensation,” The Conference Board Economics Program Working Paper Series, report number E-0021-07-WP, November 2007, pp. 23–26, and see especially table 7 on p. 26; on the Internet at www.conference-board.org/publications/publicationdetail.cfm?publicationid=1377 (visited Feb. 15, 2011).

²¹ The U.S. figure represents nominal growth in dollars, and the Chinese figure represents nominal growth in yuan. The Chinese figure was calculated with data from table 4 of this article, and the U.S. figure was calculated with data from “Table 1.2: All Employees: Hourly compensation costs in U.S. dollars in manufacturing, 33 countries or areas and selected economic groups, 1996–2008” (Bureau of Labor Statistics, August 2010), on the Internet at ftp://ftp.bls.gov/pub/suppl/ichcc.ichccaesuppt1_2.txt (visited Mar. 4, 2011).

²² Price inflation for urban households was 1.5–1.6 percent annually in 2005 and 2006, but escalated to 4.5 percent in 2007 and 5.6 percent in 2008. Consumer prices for rural households rose by 2.2 percent in 2005, 1.5 percent in 2006, 5.4 percent in 2007, and 6.5 percent in 2008. See *China Statistical Yearbook 2009*, Table 8-1, p. 281.

²³ Hongbin Li, Pak Wai Liu, Ning Ma, and Junsesn Zhang, *Does Education Pay in Urban China? Estimating Returns to Education Using Twins* (Sept. 23, 2005), on the Internet at <http://iis-db.stanford.edu/docs/270/hongbin-Does-Education-Pay-in-Urban-China.pdf> (visited Feb. 16, 2011).

²⁴ Carsten A. Holz, *Measuring Chinese Productivity Growth, 1952–2005* (Hong Kong, July 2006), Tables 22–23 and Figures 33–34, on the Internet at <http://hussonet.free.fr/chprodu.pdf>; “Labor supply to become a constraint on economic growth in China—Policies focus to shift from job creation to increasing productivity,” (Japan, Research Institute of Economy, Trade, and Industry, 2009); Xin Yong-rong, Chen Qil, and Xiao Jun-Zhe, “The Decomposition of Labor Productivity Factors of Chinese Manufacturing Industry: A Dynamic Study Based on DEA method” (China, 2008); and Vincent Fernando, “Why China’s Labor Cost Advantage Is About to Disappear,” *Business Insider*, June 8, 2010, on the Internet at www.businessinsider.com/china-labor-cost-inflation-2010-6 (visited Feb. 16, 2011).

²⁵ Jian Qiao, “Labor Contract Law in China: Changes and Implications.” Paper presented at the conference Breaking Down Chinese Walls: The Changing Faces of Labor and Employment in China, Cornell University, September 2008.

²⁶ Shinning Zhao and Jie Zhang, “Impact of employment contracts law on employment relations in China,” April 2010, on the Internet at www.thefreelibrary.com/Impact+of+employment+contracts+law+on+employment+relations+in+China.-a0228172472; “China’s labour market,” *The Economist*, July 29, 2010; and Tini Tran, “China’s workers force unions to speak up,” *The Globe and Mail*, Toronto, Aug. 5, 2010, p. B7.

²⁷ Examples of such specifications for workers at particular factories might include good health, good eyesight, a strong body, the age of young adult, an unmarried status with no children or other dependents, a compliant and flexible personality, and the willingness to work very long hours, live in a group dormitory, and migrate far

from home for a job. See “How Rising Wages Are Changing The Game In China,” *Bloomberg Businessweek*, Mar. 27, 2006, on the Internet at www.businessweek.com/magazine/content/06_13/b3977049.htm (visited Feb. 17, 2011); David Barboza, “Labor Shortage in China May Lead to Trade Shift,” *New York Times*, Apr. 3, 2006, on the Internet at www.nytimes.com/2006/04/03/business/03labor.html (visited Feb. 17, 2011); Jim Jubak, “A 15% raise? Try China or India,” MSN Money, Jan. 5, 2007, on the Internet at <http://articles.moneycentral.msn.com/Investing/JubaksJournal/A15RaiseTryChinaOrIndia.aspx> (visited Feb. 17, 2011); and Andrew Jacobs, “Chinese Factories Now Compete to Woo Laborers,” *New York Times*, July 10, 2010, on the Internet at www.nytimes.com/2010/07/13/world/asia/13factory.html (visited Feb. 17, 2011).

²⁸ See, for example, “How Rising Wages Are Changing The Game in China”; Barboza, “Labor Shortage in China May Lead to Trade Shift”; and Alan Wheatley, “Wage pressures hit Chinese city,” *The China Post*, June 14, 2007, on the Internet at www.chinapost.com.tw/editorial/112324.htm (visited Feb. 28, 2011).

²⁹ See the International Labour Organization database on total and economically active populations by country, on the Internet at <http://laborsta.ilo.org> (visited Feb. 17, 2011).

³⁰ *China Population & Employment Statistics Yearbook 2009* (Beijing, China National Bureau of Statistics), Table 1-3.

³¹ *China Statistical Yearbook 2009*, Table 1-2.

³² *China Population & Employment Statistics Yearbook 2009*, Tables 1-3, 1-10, and 3-5.

³³ Jane Macartney, “China’s migrant workers hit by economic pinch as 20 million lose jobs,” *The Times*, Feb. 3, 2009, on the Internet at <http://business.timesonline.co.uk/tol/business/economics/article5638893.ece> (visited Feb. 17, 2011).

³⁴ “China’s economic stimulus creates 22m jobs,” *China Daily*, Sept. 16, 2010, on the Internet at www.chinadaily.com.cn/

bizchina/2010-09/16/content_11313345.htm (visited Feb. 17, 2011).

³⁵ Barboza, “Labor Shortage in China May Lead to Trade Shift.”

³⁶ For discussion of compensation costs in urban units and TVEs, see Lett and Banister, “China’s manufacturing employment and compensation costs: 2002–06,” table 3, chart 3, and p. 36.

³⁷ John Knight, Deng Quheng, and Li Shi, *The Puzzle of Migrant Labour Shortage and Rural Labour Surplus in China* (Oxford, England, Oxford University Discussion Paper Series, number 494, July 2010), on the Internet at www.economics.ox.ac.uk/Research/wp/pdf/paper494.pdf (visited Feb. 17, 2011).

³⁸ The exception is the cohort born in the late 1980s during a temporary easing of the implementation of family-planning regulations. Children born at that time are now in their early 20s.

³⁹ Jubak, “A 15% raise? Try China or India”; Jacobs, “Chinese Factories Now Compete to Woo Laborers.”

⁴⁰ Christopher A. McNally, “Defusing Tensions over China’s Exchange Rate Policy,” *Asia Pacific Bulletin*, Feb. 18, 2010, on the Internet at www.eastwestcenter.org/fileadmin/stored/pdfs/apb048_3.pdf (visited Feb. 18, 2011).

⁴¹ 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/publish/english/955/2001/20014/20014_.html (visited Feb. 28, 2011).

⁴² “Foreign Exchange Rates (Annual),” Board of Governors of the Federal Reserve System, Jan. 3, 2011, on the Internet at www.federalreserve.gov/releases/g5a (visited Feb. 18, 2011).

⁴³ Note that Indian and Chinese data are not strictly comparable because each country has its particular data limitations. The Indian data are from Jessica R. Sincavage, Carl Haub, and O.P. Sharma, “Labor costs in India’s organized manufacturing sector,” *Monthly Labor Review*, May 2010, pp. 3–22, on the Internet at www.bls.gov/pub/mlr/2010/05/art1full.pdf (visited Feb. 18, 2011).