

China's manufacturing employment and hourly labor compensation, 2002-2009



International Labor Comparisons
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China is a powerhouse in global manufacturing, and it is of great interest to those countries and companies trading or competing with China in manufactured products. In 2006, China became the United States' second-largest trading partner in manufactured goods behind Canada.¹ By 2010, it surpassed Japan as the second-largest economy in the world.² Because of China's growing importance to the United States and the global economy, there has been great demand for statistics about China's manufacturing sector, particularly employment statistics and comparable labor-cost measures. In response to this interest, the Bureau of Labor Statistics (BLS) has sponsored several research projects to assess the quality of Chinese employment and earnings statistics and to develop estimates of employment and hourly compensation costs in Chinese manufacturing. This report combines new data through 2009 with earlier research³ to analyze changes in China's manufacturing employment and hourly labor compensation costs.

In spite of the global economic crisis beginning in late 2008, China's manufacturing employment increased to 99 million in 2009. Though earnings for manufacturing enterprise employees in China were higher than in any previous year, average hourly compensation costs were only \$1.74 in 2009. China's hourly compensation costs as of 2009 [remained far below](#) those of many of its East Asian neighbors such as Japan (\$30.03), the Republic of Korea (\$15.06), and Singapore (\$17.54), but were roughly on par with those of the Philippines (\$1.70).

This report reviews sources of data and presents recent trends in China's manufacturing employment and compensation. Using a new, official Chinese source on average labor costs per employee, China's manufacturing employment and hourly compensation costs are updated to 2009 and revised for the years 2002-2008. China's hourly manufacturing compensation costs are also compared with those of other countries and economic regions around the world.

Available data sources

China's published statistics on employment and wages in manufacturing do not meet international standards. No comprehensive source of frequently published, official data provides nationwide employment and labor compensation statistics on Chinese manufacturing. To obtain reliable national employment and earnings data that are updated annually, two sources must be utilized. Data for legally-established, 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) data⁴—are compiled and reported by the Ministry of Agriculture. In 2009, almost two-thirds (65%) of China's manufacturing workers were employed in TVEs, while just over one-third (35%) worked in urban units.

The published annual data on China's employment and wages in manufacturing are based on an annual reporting system that emphasizes urban data over rural data. There are comparatively detailed yearly figures on employment and earnings in urban manufacturing units, but only a small number of labor-related statistics are published describing China's large network of factories that are outside the category of "urban units" (TVEs). The majority of China's manufacturing workers are employed in these 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.⁵

Total employment and average hourly compensation costs estimates 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 non-wage 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.⁶

Manufacturing employment

For the period 2002-2009, China's statistical agencies (in particular the National Bureau of Statistics, the Ministry of Labor and Social Security, and the Ministry of Agriculture) have used a consistent definition of manufacturing employment in urban units. However, through 2006, the definition of TVE manufacturing employment included workers outside of established enterprises who were self-employed or worked in household, neighborhood, or other small manufacturing groupings. Since 2007, China's official statistics on TVE manufacturing have excluded these informal manufacturing workers. BLS adjusts the reported yearend and average annual TVE employment data to get a definition of TVE manufacturing employment consistent with the urban manufacturing definition for all years. Combined with the published manufacturing employment data from urban units, this results in annual figures for total manufacturing employment based on China's current definitions, which are also reasonably consistent with the BLS International Labor Comparisons definition of manufacturing employment.

China's manufacturing employment showed a continual increase over the 2002-2009 time period, rising from 85.9 million in 2002 to 99.0 million in 2009. As Chinese employment grew by about 15 percent over the 7-year period, [manufacturing employment in other countries covered by BLS](#) was stable or declined. China's 2009 manufacturing employment was much greater than manufacturing employment in any other country: for example, manufacturing employment in the United States in 2009 was about 14.2 million, was 10.8 million in Japan, and was about 7.8 million in Germany.

Table 1. Manufacturing employment in China, in millions, 2002 - 2009			
	Manufacturing Employment		
	Total	Urban	Rural (TVE)
2002	85.9	30.3	55.6
2003	86.4	29.8	56.5
2004	88.6	30.2	58.4
2005	92.0	31.3	60.7
2006	94.9	32.8	62.1
2007	96.9	34.1	62.8
2008	98.5	34.5	64.0
2009	99.0	34.6	64.4
Note: TVE refers to town and village enterprises.			
Source: U.S. Bureau of Labor Statistics, International Labor Comparisons.			

Manufacturing wages and labor compensation

China publishes annual data on the total national wage bill for manufacturing TVEs and the average annual wage for manufacturing employees in urban units. These figures can be used with appropriate weights to derive the yearly national average manufacturing wage per employee. However, data on the non-wage components of compensation are not systematically collected nor published annually.

In “[Manufacturing earnings and compensation in China](#),” Banister derived an estimate of the ratio of non-wage compensation to wages for 2002 based on limited data from China’s Ministry of Labor. In subsequent years, BLS held these ratios constant due to the lack of new data, even though anecdotal reports suggested rising above-wage labor costs.

In 2009, China conducted its Second National Economic Census, with data collected from enterprises all over China for calendar year 2008. For the first time, labor costs actually paid by employers including various forms of social insurance and employee benefits were collected. BLS derived average compensation costs per manufacturing employee by coupling wage data from the annual survey collected by the Ministry of Human Resources and Social Security with these data from the 2008 Economic Census: (1) Total 2008 average number of manufacturing employees (*congye ren yuan*), and (2) total 2008 manufacturing wage payroll (*gongzi zong’e*) plus subsidies to employees and welfare costs (*fulifei*)⁷. The total of wages plus employee subsidies and welfare costs is similar to the concept of “compensation costs,” which BLS uses for its program of International Labor Comparisons.

A complicating factor in determining compensation costs for China is that the ratio of non-wage compensation costs to workers’ base wages differs between urban units and TVEs as well as between larger firms and smaller firms. Therefore, separate estimates of compensation costs must be derived for employees in urban firms and TVEs, with separate TVE estimates of

compensation costs developed for larger and smaller firms. Annual 2008 data on manufacturing employment and wages are available for both urban and TVE employees, but non-wage compensation data are not available. Total compensation data are available in the 2008 Economic Census, but the data are not broken into wage and non-wage components. In addition, the Economic Census data are broken down only by whether the firms are above or below “designated size.” Because of these data limitations, BLS utilizes some simplifying assumptions in order to calculate the ratio of non-wage compensation to wages for workers in both urban units as well as TVEs.

The Economic Census counted 77.3 million employees of manufacturing units of designated size. Average compensation costs for employees in these firms were well over twice those of the 28.9 million employees in manufacturing enterprises below designated size. In the annual survey data for 2008, the average base wage of workers in manufacturing urban units was just over twice that of TVE manufacturing workers. BLS thus made the following simplifying assumptions about employee classification to utilize data from the Economic Census: 1) that all urban unit employees are classified among the more highly-compensated above designated size employees; 2) that all manufacturing units below designated size are TVEs and therefore the approximately 28.9 million manufacturing employees within this designation are TVE employees; and 3) the remaining employees were employed in TVEs above designated size.

Using data from the 2008 Economic Census, total average compensation costs for all manufacturing enterprise employees in China was 25,219 RMB, which was 1.54 times the base wage for all manufacturing enterprise employees as calculated from 2008 annual data. Previous BLS research found the ratio of compensation costs to the base wage to be much higher in urban manufacturing units than in TVEs, and higher in larger TVEs than smaller ones. Based upon this previous research and data from the annual survey and the 2008 Economic Census, BLS estimated the 2008 multiplier in TVEs to be 1.4 times the base rate, implying a 2008 multiplier of 1.67 times the base rate in urban firms. Multipliers were then interpolated for both urban firms and TVEs for the years 2003-2007 using the original 2002 multipliers from “[Manufacturing earnings and compensation in China](#)” and the new 2008 estimates (multiplier estimates for 2009 were held at 2008 levels).

Hours worked

Annual compensation is divided by an estimate of annual hours worked per employee to create an estimate of hourly compensation. Hourly compensation is the preferred measurement of compensation costs across countries, because hours worked can vary widely from one country to another.

A detailed description of the methods used to calculate the original 2002 estimates of hours worked for China can be found in “[Manufacturing earnings and compensation in China](#).” 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. 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. For more information about the hours calculation from 2003 onward, see "[Labor costs of manufacturing employees in China: an update to 2003–04.](#)"

Summary results

Average hourly labor compensation in Chinese manufacturing more than doubled in nominal Chinese RMB from 2002 to 2009, and nearly tripled in nominal U.S. dollars, in part because of the changing RMB-to-dollar exchange rate. Manufacturing labor compensation per hour in China was 5 percent of U.S. compensation costs in 2009, up from 2 percent in 2002.

Hourly compensation costs rose relatively rapidly between 2006 and 2009. Base wages were pushed upward in part due to reported labor shortages and to compensate employees for increased price inflation. In addition, non-wage labor costs increased in tandem with increased requirements for social insurance payments by companies.

Table 2. Average hourly compensation costs of manufacturing employees in China, U.S. Dollars, 2002-2009			
	Hourly Compensation per Employee		
	All Firms	Urban	Rural (TVE)
2002	0.60	0.95	0.41
2003	0.68	1.09	0.46
2004	0.74	1.23	0.50
2005	0.83	1.35	0.57
2006	0.95	1.56	0.64
2007	1.21	1.96	0.80
2008	1.59	2.58	1.06
2009	1.74	2.85	1.15
Note: TVE refers to town and village enterprises.			
Source: U.S. Bureau of Labor Statistics, International Labor Comparisons.			

For more tables and charts, see the [BLS China Page](#).

Notes

¹ “Top Trading Partners - Surplus, Deficit, Total Trade,” U.S. Census Bureau, Foreign Trade Division, www.census.gov/foreign-trade/top/ (visited Jun. 3, 2013).

² “World Economic Outlook Database,” International Monetary Fund, www.imf.org/external/pubs/ft/weo/2012/02/weodata/index.aspx (visited Jun. 3, 2013).

³ For the original report on 2002 employment and labor compensation in manufacturing, see Judith Banister, “Manufacturing Employment and Compensation in China,” www.bls.gov/fls/chinareport.pdf. 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, www.bls.gov/opub/mlr/2005/07/art2full.pdf; and Judith Banister, “Manufacturing earnings and compensation in China,” *Monthly Labor Review*, August 2005, pp. 22–40 at www.bls.gov/opub/mlr/2005/08/art3full.pdf.

⁴ For a discussion of TVEs, see Banister, “[Manufacturing Employment and Compensation in China](#).”

⁵ See years 2003–2010 of the *China Town and Village Enterprise Yearbook* (in Chinese) (Beijing, China Ministry of Agriculture).

⁶ Published data from China’s first economic census, referring to 2004, supported 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.

⁷ *Fulifei* are defined as “all of the welfare expenditures by enterprises during the reporting period according to the relevant national regulations, which includes the basic pension, basic medical insurance, unemployment insurance, work injury insurance, maternity insurance, housing fund, supplementary pension insurance, supplementary medical insurance, which are all paid by the enterprises; and the collective welfare benefits, employee’s hardship grants, rent subsidies, transport subsidies, winter heating costs, and the costs of other staff and workers subsidies that have already been paid according to the regulations.”