Economics Program Working Paper Series

MANUFACTURING IN CHINA TODAY: EMPLOYMENT AND LABOR COMPENSATION

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September 2007

EPWP #07-01

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Final version, September 2007

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The Conference Board New York

Acknowledgements:

The author would like to thank China's National Bureau of Statistics for providing unpublished data on important elements of manufacturing labor compensation; Bart van Ark, Harry Wu, and Vivian Chen for their insightful comments on previous drafts of this paper; Song Jintao, Xing Shuqin, and Claire Xia in Beijing for procuring and transmitting Chinese sources; Jennifer Redmond, Vivian Chen, Xing Yan, and Qin Xiao for assistance with construction and calculation of the tables and for verifying the accuracy of the data, assumptions, and calculations; and Erin Lett for her analytical work on Chinese data sources.

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Executive Summary and Context

China is now the global manufacturing workshop. There is strong interest throughout the world in understanding what makes China so competitive in manufacturing. Clearly one component of that competitiveness is the low cost of labor in China's manufacturing sector. This report analyzes and evaluates the most complete recent data on China manufacturing employment and labor compensation, which come from China's First National Economic Census.

Based on the Economic Census, during 2004 China had a total of about 104.6 million manufacturing employees and workers, of whom 80.8 million worked in established manufacturing enterprises and another 23.8 million worked in household and individual self-employed manufacturing operations. The 104.6 million manufacturing employees earned total labor compensation averaging 13,314 yuan per employee for the year 2004, which was US$1,608 at the market exchange rate. Hourly labor compensation in China manufacturing for 2004 was 5.96 yuan or US$0.72, which was 3.15 percent of 2004 US hourly labor compensation in manufacturing.

Employees of large-scale manufacturing enterprises in China received much more labor compensation than those in smaller enterprises. For the full year 2004, the 56.7 million employees of manufacturing concerns "of designated size and above," defined as all state-owned enterprises plus non-state-owned enterprises that had sales of 5 million yuan or more, had average labor compensation of 18,043 yuan or US$2,179 per employee. On a per hour basis this came to 8.09 yuan or US$0.98 per hour. The 24.1 million employees of established manufacturing enterprises below designated size earned total compensation of 9,080 yuan or US$1,097 per employee, and only 4.05 yuan or US$0.49 in labor compensation per hour of work. Self-employed and small household manufacturing workers earned only an average of about 6,343 yuan or US$766, and merely 2.83 yuan or US$0.34 per hour of work, for 2004.

Clearly, average earnings in China manufacturing are low by international standards, but as domestic prices in China are lower than international prices, actual living standards are not so low as the comparative wage data would suggest. The take-home pay that China's average manufacturing employee has to spend for consumption, which is 4.87 yuan per hour of work, would buy goods and services worth the equivalent of US$2.14, calculated using a consumption purchasing power parity (PPP) exchange rate between Chinese yuan and dollars.

While the focus of the present report is on labor compensation, it supports a range of projects by *The Conference Board China Research Center for Economics and Business* on issues related to competitiveness, productivity and labor market issues in China. It should be stressed that China's strong competitiveness in manufacturing comes not only from low labor compensation. Competitive forces also include the opportunity to tap the rapidly emerging middle class market there for manufactured goods such as autos. Other investors are attracted to China by the massive concentrations of low-cost suppliers of components as inputs for their factory production. China also appears economically

and politically more stable in comparison to many other low-cost countries where terrorism, warfare, economic collapse, or kidnapping of business leaders and workers and their family members make it extremely unattractive to try to operate in those environments.

Finally, manufacturing employees in China are not only inexpensive in the global context, in addition they also have positive qualities that employers seek. Almost all manufacturing workers in China are at least basically literate and numerate. They have had some years of primary education and a large proportion have had at least some lower middle school education. China's manufacturing workers embody moderately high human capital by global standards and especially by developing country standards.

1. Introduction

This report utilizes newly collected and reported statistics from China's First Economic Census of 2004 to calculate and estimate China's total manufacturing employment and per employee average labor compensation in manufacturing for 2004. This work builds upon the strong foundation of the author's prior research on the same topic supported by the *United States Department of Labor, Bureau of Labor Statistics (BLS), Foreign Labor Statistics Division,* and the author's ongoing research co-authored with economist Erin Lett of BLS, all of which has used annually collected establishment data on China manufacturing employment, wages, and other components of labor compensation.

It is not surprising that data from annual establishment sources for 2004 and from the Economic Census for 2004 do not exactly agree, as this report demonstrates. It is, however, reassuring that statistics from the two differing sources concur as well as they do. Comparing and contrasting the two information sources helps to determine the more robust as well as the comparatively problematic components of China's annual data on manufacturing employment and labor compensation.

The second section of this report describes the data collection systems for annual data and for the Economic Census, and presents tables of manufacturing employment, wage, and other labor compensation data from the Economic Census. It also discusses components of the wage data, and shows the range of average nationwide manufacturing wages of the 30 subsectors of manufacturing in China.

The third part of this report explains the differences between base wage and the more comprehensive and internationally comparable concept of total labor compensation. The various elements of labor compensation in China are specified, including social insurance payments of several kinds, housing fund subsidies, and disbursements to employees from the company welfare fund. Then the average annual per employee labor compensation for 2004 is reported and discussed for manufacturing enterprises in different categories and for self-employed and household manufacturing workers.

The fourth section of the paper demonstrates how to estimate average hourly labor compensation in China manufacturing for comparison with the same measure for over 30 other countries of the world as reported by the *US Bureau of Labor Statistics*. This part of the paper also shows how hourly labor compensation varies among China's manufacturing employees in the three categories of manufacturing units--the bigger factories with the largest sales volumes, factories with lower sales volumes, and small manufacturing operations that are not part of established manufacturing enterprises.

Section 5 of the paper estimates the purchasing power of China's manufacturing workers by adjusting their extremely low nominal wages for the low costs of living in China. This provides a better picture of the actual living standards of manufacturing employees in China.

Section 6 compares figures and estimates for total manufacturing employment in China and for manufacturing labor compensation per employee from annually reported establishment data for the year 2004 and from Economic Census data for that year. This analysis shows that the Economic Census gives us further confidence in the usefulness and reasonable validity of certain types of annually available data for China manufacturing.

The seventh part of the paper breaks down the national-level data on manufacturing employment and labor compensation for China's manufacturing establishments with large sales volumes into the corresponding data for China's 31 provinces. It shows that there is a wide range in average labor compensation per manufacturing employee from province to province. This differential motivates some companies to move from provinces where labor compensation is more expensive to where it is cheaper.

Section 8 pulls together the available trend data for urban manufacturing employees in China from 1985 to 2004. It also compares data from China's 1995 Industrial Census and from the 2004 Economic Census on total manufacturing employment and on labor compensation for larger manufacturing enterprises. Both sets of trend data are presented showing changes in the real labor compensation over time, after adjustments for changing consumer prices. They demonstrate that real average annual labor compensation for the employees of larger manufacturing establishments in China increased by 11 percent a year from 1995 to 2004, and that real annual labor compensation for China's city manufacturing employees grew by an average of 8 percent a year from 1995-2004, and for the more recent years, by 11 percent a year from 1998 (after a statistical shift in urban manufacturing employment statistics) to 2004.

Section 9 of this paper discusses the various elements that contribute to China's strong global competitiveness in manufacturing. Low labor compensation is important, but it is only one of China's many comparative advantages in manufacturing production.

The final section of the report sums up the conclusions in this paper and provides suggestions for future research that is needed.

2. **Basic information from the First Economic Census**

China's Economic Census

The First Economic Census of China was conducted in 2005 with reference to calendar year 2004. "The reference time for the Economic Census was December 31st of 2004, and the flow data covered the whole year of 2004" (China NBS, 2005b). The focus was the non-agricultural and comparatively modern sectors of the economy, in particular

industry and services (China State Council, 2004). The results of the Economic Census have been released in several brief Communiques and in a 4-volume set of statistical tables (CEC, 2004).

China Manufacturing Employment Statistics

Prior to the Economic Census, previously available statistics on China's employment in manufacturing have been scattered and, in several cases, rather confusing, contradictory, or obscure (Banister 2005a, 2005c). Data for city manufacturing employment were comparatively complete, except that large proportions of rural-to-urban migrant manufacturing employees in the cities were apparently left out of the employment statistics reported by city manufacturing enterprises to authorities. Figures for manufacturing employment outside the cities covered a wide range of alternative estimates. For example, for yearend 2002, the *National Bureau of Statistics* and the *Ministry of Labor and Social Security* reported that there were 45.06 million "rural" (meaning non-city) manufacturing employees in China, while the *Township Enterprise Bureau of the Ministry of Agriculture* reported that there were 70.87 million "Township and Village Enterprise" (TVE) manufacturing employees in the countryside and towns at the end of 2002, a disparity of 25.81 million in the rural numbers.

China's First Economic Census ignored the urban vs. rural statistical quagmire and instead classified all manufacturing employees in established enterprises by the sales volume of the enterprise for which they worked. In addition, self-employed workers and family businesses not classified as "enterprises" reported their number of workers in "industry" [*gongye*], the vast majority of whom work in manufacturing. Economic Census employment statistics for manufacturing appear to be a great improvement over annually reported establishment data.

Employment and Wages in Manufacturing for 2004, Economic Census

China's Economic Census reported that at the end of 2004, there were 83.90 million employees of manufacturing enterprises. However, the tables of data for the full year 2004 show that the average number of employees actually employed and being paid during the year was 80.81 million. This average figure is calculated by adding up the actual number of employees actively employed and being paid at the end of every month in 2004 and dividing by 12 months (CEC, 2004, Vol. 2, p. 692). The discrepancy between these two numbers for average 2004 manufacturing employment and yearend 2004 employment in manufacturing companies is too large. It turns out that the yearend 2004 figure includes the following categories (CEC, 2004, Vol. 1, p. 121, Table 2-9):

> 80.96 million paid employees of manufacturing companies actually in business
> 2.08 million employees of companies that closed down in 2004

0.60 million prospective employees of companies not yet in business
0.27 million other

Therefore, it would be more useful to say that the average employment in manufacturing enterprises actually in business during 2004 was 80.81 million and the corresponding yearend employment figure was 80.96 million.

Of the 80.81 million average 2004 employment of manufacturing enterprises, 56.67 million employees worked in manufacturing companies of "designated size and above", defined as all state-owned enterprises plus non-state-owned enterprises that had sales of 5 million yuan or more, and 24.13 million employees worked in companies below designated size. In addition to the 80.81 million figure, there were 25.66 million self-employed and household workers in "industry" [*gongye*] during 2004. Most industry workers are in manufacturing. At yearend 2004, based on annual reporting from the *Township Enterprise Bureau of the Ministry of Agriculture*, 92.7 percent of industry workers in Township and Village Enterprises (TVEs) were working in manufacturing (China MOA, 2005, pp. 106, 134). Applying this percentage to the Economic Census number for self-employed and household industry workers, an estimated 23.79 million of them worked in manufacturing during 2004.

Therefore, we can conclude from the Economic Census that on average during 2004 China had an approximate total of 104.60 million manufacturing employees and workers, of whom 80.81 million worked in established manufacturing companies and 23.79 million worked in household and self-employed manufacturing.

These numbers correspond roughly with the annually reported establishment data as follows: For 2004, there were on average 30.29 million employees of urban manufacturing units and 74.20 million employees in manufacturing TVEs (which include self-employed and small private manufacturing operations), totaling 104.49 million manufacturing employees in China (Lett and Banister, 2006, Table 1). The Economic Census total of 104.60 million is close to the total of 104.49 million from annual data, if the TVE numbers are used to approximate rural manufacturing in the yearly compilations. This confirms the validity of the estimation procedures used by Banister and by Lett and Banister in previously published work.

The following tables give the Economic Census published data on manufacturing employment, wages, and other relevant labor-related costs in 2004. Table 1 refers to the 80.81 million employees of established registered manufacturing enterprises. Table 2 refers to employees of manufacturing companies of designated size and above, and Table 3 covers employees of manufacturing enterprises below designated size. Data in these tables are also broken down into 30 manufacturing subsectors.

What forms of remuneration are included in these average 2004 wage figures? Based on written instructions to enterprise accountants and statistical personnel for their regular wage reporting to authorities, most forms of income, benefits, and subsidies in cash and in kind are to be included in the reported wage. Cash salary and wage

payments, wages for piece work, bonuses, allowances, overtime pay, pay for dangerous or challenging duty, subsidies of all kinds, housing and transport provided to workers, meals given to them, and the value of income tax and social insurance payments deducted from wages and remitted to the government on behalf of the employee are all supposed to be part of the "total wage" figure [*gongzi zong'e,* or *laodong baochou zong'e*], based on relevant reporting regulations (Banister, 2005b, pp. 24-27).

Table 1. China, Total Manufacturing Enterprises, Economic Census, Average 2004 Labor Compensation by Subsector

Manufacturing subsector	2004 average number of employees	Total 2004 wage bill (in 100 million yuan)	Average 2004 wage per employee (in yuan)	2004 labor, unemployment insurance paid (in 100 million yuan)	Avg. 2004 labor, unemployment insurance per employee (in yuan)	Labor, unempl. insurance as % of wage	Other labor compensation (in 100 million yuan)	Average 2004 total compensation per employee (in yuan)
Total Manufacturing	80,806,237	9,885.13162	12,233.13	367.01572	454.19	3.71	2,164.71	15,366.21
Food processing	2,962,359	269.97129	9,113.39	6.30456	212.82	2.34	43.59	10,797.60
Food products manufacturing	1,597,953	181.69154	11,370.27	4.37988	274.09	2.41	34.95	13,831.42
Beverage manufacturing	1,221,427	137.84878	11,285.88	4.74845	388.76	3.44	35.12	14,549.99
Tobacco processing	202,125	96.03638	47,513.36	11.19955	5540.90	11.66	53.65	79,595.54
Textile industry	7,634,609	744.96507	9,757.74	17.81795	233.38	2.39	150.71	11,965.16
Garments and other fiber products	4,817,094	515.72800	10,706.21	6.96557	144.60	1.35	63.22	12,163.18
Leather, furs, down and related products	2,759,708	286.87145	10,394.99	3.47873	126.05	1.21	31.13	11,649.21
Wood, bamboo, natural fiber & straw products	1,575,150	130.83966	8,306.49	2.25743	143.32	1.73	16.46	9,495.08
Furniture manufacturing	1,079,886	114.38421	10,592.25	2.09095	193.63	1.83	12.52	11,945.30
Papermaking and paper products	2,008,978	208.18144	10,362.55	5.15813	256.75	2.48	36.93	12,457.42
Printing & record medium reproduction	1,270,090	148.91966	11,725.13	9.21840	725.81	6.19	29.97	14,810.52
Cultural, educational, and sport products	1,485,628	157.25106	10,584.82	2.88274	194.04	1.83	18.72	12,039.13
Petroleum processing and coking products	779,869	146.46875	18,781.20	13.50981	1732.32	9.22	49.14	26,814.57
Chemical raw materials & products	4,447,622	577.77782	12,990.71	32.32338	726.76	5.59	166.75	17,466.73
Medical & pharmaceutical products	1,324,823	197.43529	14,902.77	10.50829	793.18	5.32	57.13	20,008.50
Chemical fibers manufacturing	432,602	58.43393	13,507.55	2.46188	569.09	4.21	16.73	17,944.17
Rubber products	1,091,391	121.21899	11,106.83	3.38519	310.17	2.79	23.47	13,567.06
Plastic products	2,915,912	318.15250	10,910.91	7.52782	258.16	2.37	47.14	12,785.64
Nonmetal mineral products	8,397,530	750.90297	8,941.95	17.53062	208.76	2.33	122.40	10,608.30
Smelting & pressing of ferrous metals	3,092,923	592.20600	19,147.13	51.69059	1671.25	8.73	191.61	27,013.50
Smelting & pressing of nonferrous metals	1,472,404	210.83040	14,318.79	10.35513	703.28	4.91	64.04	19,371.67
Metal products	3,502,489	396.70378	11,326.34	10.00209	285.57	2.52	62.92	13,408.29
Ordinary machinery manufacturing	5,281,255	658.71768	12,472.75	25.10477	475.36	3.81	156.10	15,903.75
Special purpose equipment manufacturing	3,096,506	413.07709	13,340.10	21.09993	681.41	5.11	109.10	17,544.85
Transportation equipment manufacturing	4,327,726	685.95298	15,850.19	41.07539	949.12	5.99	215.68	21,782.96
Electric equipment and machinery	4,453,754	594.50794	13,348.47	15.34526	344.55	2.58	118.28	16,348.69
Electronics and telecommunications	4,354,753	790.85072	18,160.63	15.93128	365.84	2.01	164.12	22,295.25
Instruments & office machinery	1,139,503	165.37084	14,512.54	6.82722	599.14	4.13	44.35	19,003.51
Artwork & other manufacturing	1,993,547	204.51915	10,259.06	5.62961	282.39	2.75	27.29	11,910.47
Recycling & waste disposal	86,621	9.31625	10,755.19	0.20512	236.80	2.20	1.50	12,720.46

Sources: China Economic Census, Vol. 2, p. 9, Table 1-A-1; also Tables 2 and 3.
Note: Other labor compensation is summed from Tables 2 and 3.

Table 2. China, Manufacturing Enterprises of Designated Size and Above, Economic Census, Average 2004 Labor Compensation by Subsector

Manufacturing subsector	2004 average number of employees	Total 2004 wage bill (in thousands of yuan)	Average 2004 wage per employee (in yuan)	Total 2004 pension & medical insurance payments (in thousands of yuan)	Avg. 2004 pension & medical insurance per employee (in yuan)	Pension, medical insurance as % of wage	Total 2004 housing fund & housing subsidies (in thousands of yuan)	Avg. 2004 housing fund, subsidies per employee (in yuan)	Housing fund & subsidies as % of wage
Total Manufacturing	56,673,426	791,969,904	13,974.27	86,285,343	1,522.50	10.90	22,660,024	399.84	2.86
Food processing	1,965,097	19,754,914	10,052.90	1,437,575	731.55	7.28	239,448	121.85	1.21
Food products manufacturing	1,108,837	14,487,909	13,065.86	1,330,609	1,200.00	9.18	281,837	254.17	1.95
Beverage manufacturing	839,188	10,988,901	13,094.68	1,462,582	1,742.85	13.31	373,883	445.53	3.40
Tobacco processing	198,767	9,578,544	48,189.81	1,412,796	7,107.80	14.75	1,672,177	8,412.75	17.46
Textile industry	5,879,184	59,932,963	10,194.10	6,005,515	1,021.49	10.02	613,830	104.41	1.02
Garments and other fiber products	3,319,120	38,933,043	11,729.93	1,931,157	581.83	4.96	200,947	60.54	0.52
Leather, furs, down and related products	2,112,181	23,455,502	11,104.87	943,758	446.82	4.02	71,701	33.95	0.31
Wood, bamboo, natural fiber & straw products	767,994	7,341,563	9,559.40	444,061	578.21	6.05	61,075	79.53	0.83
Furniture manufacturing	649,377	7,883,398	12,139.94	372,922	574.28	4.73	43,895	67.60	0.56
Papermaking and paper products	1,304,399	15,260,562	11,699.31	1,312,088	1,005.89	8.60	326,850	250.58	2.14
Printing & record medium reproduction	634,995	9,447,772	14,878.50	1,128,397	1,777.02	11.94	361,758	569.70	3.83
Cultural, educational, and sport products	1,075,367	12,452,223	11,579.51	669,456	622.54	5.38	70,186	65.27	0.56
Petroleum processing and coking products	679,653	13,778,298	20,272.55	2,171,284	3,194.69	15.76	791,925	1,165.19	5.75
Chemical raw materials & products	3,263,454	48,318,979	14,806.09	7,226,200	2,214.28	14.96	2,207,919	676.56	4.57
Medical & pharmaceutical products	1,143,815	18,110,752	15,833.64	2,489,650	2,176.62	13.75	736,768	644.13	4.07
Chemical fibers manufacturing	391,942	5,492,165	14,012.70	730,436	1,863.63	13.30	131,776	336.21	2.40
Rubber products	807,838	9,816,963	12,152.14	961,435	1,190.13	9.79	184,431	228.30	1.88
Plastic products	1,751,965	22,217,862	12,681.68	1,521,701	868.57	6.85	274,703	156.80	1.24
Nonmetal mineral products	4,153,157	45,210,388	10,885.79	4,055,983	976.60	8.97	669,882	161.29	1.48
Smelting & pressing of ferrous metals	2,772,674	56,479,552	20,370.07	9,257,262	3,338.75	16.39	2,354,201	849.07	4.17
Smelting & pressing of nonferrous metals	1,273,275	19,386,461	15,225.67	2,699,113	2,119.82	13.92	671,968	527.75	3.47
Metal products	2,131,107	27,769,462	13,030.53	2,050,422	962.14	7.38	364,239	170.92	1.31
Ordinary machinery manufacturing	3,437,449	49,482,232	14,395.04	6,550,149	1,905.53	13.24	1,473,041	428.53	2.98
Special purpose equipment manufacturing	2,199,262	32,957,296	14,985.62	5,249,242	2,386.82	15.93	1,008,013	458.34	3.06
Transportation equipment manufacturing	3,413,057	60,432,779	17,706.35	9,232,325	2,705.00	15.28	3,108,180	910.67	5.14
Electric equipment and machinery	3,486,797	50,940,555	14,609.56	4,679,438	1,342.04	9.19	1,042,089	298.87	2.05
Electronics and telecommunications	3,787,947	73,439,822	19,387.76	6,311,911	1,666.31	8.59	2,038,465	538.15	2.78
Instruments & office machinery	843,372	13,618,204	16,147.33	1,620,304	1,921.22	11.90	1,120,064	1,328.08	8.22
Artwork & other manufacturing	1,242,216	14,470,760	11,649.15	979,419	788.45	6.77	153,963	123.94	1.06
Recycling & waste disposal	39,940	530,080	13,271.91	48,153	1,205.63	9.08	10,810	270.66	2.04

Sources: China Economic Census, Vol. 2, pp. 47-129, Table 1-A-2; also Special Tabulations from the China National Bureau of Statistics.

Note: Most of the columns in this table were not published in the Economic Census volumes. They were provided as a Special Tabulation by the China National Bureau of Statistics.

Table 2, Continued.

Manufacturing subsector	Total 2004 welfare fund (in thousands of yuan)	Average 2004 welfare fund per employee (in yuan)	Welfare fund per employee as % of wage	2004 labor, unemployment insurance paid (in thousands of yuan)	Avg. 2004 labor, unempl. insurance per employee (in yuan)	Labor, unempl. insurance as % of wage	Average 2004 compensation per employee (in yuan)
Total Manufacturing	91,802,391	1,619.85	11.59	29,843,554	526.59	3.77	18,043.05
Food processing	2,102,373	1,069.86	10.64	439,051	223.42	2.22	12,199.58
Food products manufacturing	1,587,870	1,432.01	10.96	268,557	242.20	1.85	16,194.25
Beverage manufacturing	1,451,881	1,730.10	13.21	379,218	451.89	3.45	17,465.06
Tobacco processing	2,277,674	11,459.01	23.78	1,118,493	5,627.16	11.68	80,796.53
Textile industry	7,286,615	1,239.39	12.16	1,337,781	227.55	2.23	12,786.93
Garments and other fiber products	3,178,518	957.64	8.16	325,963	98.21	0.84	13,428.15
Leather, furs, down and related products	1,679,412	795.11	7.16	176,569	83.60	0.75	12,464.34
Wood, bamboo, natural fiber & straw products	681,940	887.95	9.29	116,466	151.65	1.59	11,256.74
Furniture manufacturing	550,826	848.24	6.99	81,765	125.91	1.04	13,755.96
Papermaking and paper products	1,609,177	1,233.65	10.54	336,297	257.82	2.20	14,447.25
Printing & record medium reproduction	1,071,198	1,686.94	11.34	616,228	970.45	6.52	19,882.60
Cultural, educational, and sport products	870,815	809.78	6.99	155,658	144.75	1.25	13,221.85
Petroleum processing and coking products	1,881,304	2,768.04	13.65	1,327,339	1,952.97	9.63	29,353.43
Chemical raw materials & products	6,484,466	1,986.99	13.42	2,901,293	889.03	6.00	20,572.94
Medical & pharmaceutical products	2,356,320	2,060.05	13.01	970,837	848.77	5.36	21,563.21
Chemical fibers manufacturing	782,793	1,997.22	14.25	234,413	598.08	4.27	18,807.84
Rubber products	1,016,290	1,258.04	10.35	243,844	301.85	2.48	15,130.46
Plastic products	2,149,583	1,226.96	9.68	346,795	197.95	1.56	15,131.95
Nonmetal mineral products	5,123,866	1,233.73	11.33	1,272,712	306.44	2.82	13,563.86
Smelting & pressing of ferrous metals	7,330,273	2,643.76	12.98	5,088,769	1,835.33	9.01	29,036.97
Smelting & pressing of nonferrous metals	2,897,571	2,275.68	14.95	980,325	769.92	5.06	20,918.84
Metal products	2,925,079	1,372.56	10.53	515,829	242.05	1.86	15,778.20
Ordinary machinery manufacturing	6,275,150	1,825.53	12.68	1,880,109	546.95	3.80	19,101.57
Special purpose equipment manufacturing	3,984,750	1,811.86	12.09	1,715,984	780.25	5.21	20,422.89
Transportation equipment manufacturing	8,574,321	2,512.21	14.19	3,731,895	1,093.42	6.18	24,927.65
Electric equipment and machinery	5,425,366	1,555.97	10.65	1,108,709	317.97	2.18	18,124.42
Electronics and telecommunications	7,610,126	2,009.04	10.36	1,300,268	343.26	1.77	23,944.53
Instruments & office machinery	1,460,868	1,732.18	10.73	498,419	590.98	3.66	21,719.79
Artwork & other manufacturing	1,117,331	899.47	7.72	365,599	294.31	2.53	13,755.31
Recycling & waste disposal	58,635	1,468.08	11.06	8,369	209.54	1.58	16,425.81

Table 3. China, Manufacturing Enterprises Below Designated Size, Economic Census, 2004 Labor Compensation by Subsector

Manufacturing subsector	2004 average number of employees	Total 2004 wage bill (in 100 million yuan)	Average 2004 wage per employee (in yuan)	2004 labor, unemployment insurance paid (in 100 million yuan)	Avg. 2004 labor, unempl. insurance per employee (in yuan)	Labor, unempl. insurance as % of wage	Other estimated labor compensation per employee (in yuan)	Average 2004 compensation per employee (in yuan)
Total Manufacturing	24,132,811	1,965.43258	8,144.23	68.58018	284.18	3.49	651.54	9,079.95
Food processing	997,262	72.42215	7,262.10	1.91405	191.93	2.64	580.97	8,035.00
Food products manufacturing	489,116	36.81245	7,526.32	1.69431	346.40	4.60	602.11	8,474.83
Beverage manufacturing	382,239	27.95977	7,314.74	0.95627	250.18	3.42	585.18	8,150.09
Tobacco processing	3,358	0.25094	7,472.90	0.01462	435.38	5.83	597.83	8,506.11
Textile industry	1,755,425	145.63544	8,296.31	4.44014	252.94	3.05	663.70	9,212.95
Garments and other fiber products	1,497,974	126.39757	8,437.90	3.70594	247.40	2.93	675.03	9,360.33
Leather, furs, down and related products	647,527	52.31643	8,079.42	1.71304	264.55	3.27	646.35	8,990.33
Wood, bamboo, natural fiber & straw products	807,156	57.42403	7,114.37	1.09277	135.39	1.90	569.15	7,818.90
Furniture manufacturing	430,509	35.55023	8,257.72	1.27330	295.77	3.58	660.62	9,214.10
Papermaking and paper products	704,579	55.57582	7,887.81	1.79516	254.78	3.23	631.02	8,773.61
Printing & record medium reproduction	635,095	54.44194	8,572.25	3.05612	481.21	5.61	685.78	9,739.24
Cultural, educational, and sport products	410,261	32.72883	7,977.56	1.32616	323.25	4.05	638.21	8,939.02
Petroleum processing and coking products	100,216	8.68577	8,667.05	0.23642	235.91	2.72	693.36	9,596.32
Chemical raw materials & products	1,184,168	94.58803	7,987.72	3.31045	279.56	3.50	639.02	8,906.30
Medical & pharmaceutical products	181,008	16.32777	9,020.47	0.79992	441.93	4.90	721.64	10,184.03
Chemical fibers manufacturing	40,660	3.51228	8,638.17	0.11775	289.60	3.35	691.05	9,618.82
Rubber products	283,553	23.04936	8,128.77	0.94675	333.89	4.11	650.30	9,112.96
Plastic products	1,163,947	95.97388	8,245.55	4.05987	348.80	4.23	659.64	9,254.00
Nonmetal mineral products	4,244,373	298.79909	7,039.89	4.80350	113.17	1.61	563.19	7,716.25
Smelting & pressing of ferrous metals	320,249	27.41048	8,559.11	0.80290	250.71	2.93	684.73	9,494.56
Smelting & pressing of nonferrous metals	199,129	16.96579	8,520.00	0.55188	277.15	3.25	681.60	9,478.75
Metal products	1,371,382	119.00916	8,678.05	4.84380	353.21	4.07	694.24	9,725.50
Ordinary machinery manufacturing	1,843,806	163.89536	8,888.97	6.30368	341.88	3.85	711.12	9,941.97
Special purpose equipment manufacturing	897,244	83.50413	9,306.74	3.94009	439.13	4.72	744.54	10,490.41
Transportation equipment manufacturing	914,669	81.62519	8,924.01	3.75644	410.69	4.60	713.92	10,048.62
Electric equipment and machinery	966,957	85.10239	8,801.05	4.25817	440.37	5.00	704.08	9,945.50
Electronics and telecommunications	566,806	56.4525	9,959.76	2.92860	516.68	5.19	796.78	11,273.22
Instruments & office machinery	296,131	29.1888	9,856.72	1.84303	622.37	6.31	788.54	11,267.63
Artwork & other manufacturing	751,331	59.81155	7,960.75	1.97362	262.68	3.30	636.86	8,860.29
Recycling & waste disposal	46,681	4.01545	8,601.89	0.12143	260.13	3.02	688.15	9,550.17

Source: China Economic Census, 2004, Vol. 2, pp. 282-285, Table 1-A-7.
Note: Other labor compensation is assumed to total 8 percent of the average wage. See text.

As shown in Table 1, the 80.81 million enterprise manufacturing employees received an average wage of 12,233 yuan for the year 2004. The lowest paid subsector of manufacturing was the 1.6 million workers making products from wood, bamboo, cane, palm fiber, and straw, who earned an average wage of only 8,306 yuan in 2004, while the best paid group was the small number of workers, only 202,000, in manufacture of tobacco products. They earned an average wage of 47,513 yuan in 2004. This sector is primarily a government monopoly.

Tables 2 and 3 present the wage data for two components of the 80.81 million employees of established manufacturing enterprises. Table 2 shows that the 56.67 million employees of manufacturing companies of designated size and above earned an average wage of 13,974 yuan for the year 2004. The wage range is wide from one subsector to another. The only subsector with average 2004 wage below 10,000 yuan was the wood and bamboo and straw products workers, while three subsectors averaged above 20,000 yuan per employee: energy subsector workers processing coke, refined petroleum products, and nuclear fuel; workers smelting and pressing ferrous metals; and employees of the tobacco subsector.

Table 3 shows that the 24.13 million employees of manufacturing enterprises below designated size received an average wage of only 8,144 yuan for the year. The wage range for these moderate-sized or small enterprises among subsectors was narrow, from a 2004 average wage of 7,040 yuan for workers manufacturing nonmetal mineral products to 9,960 yuan for employees who manufacture telecommunication equipment, computers, and electronic devices.

Very little information was collected on self-employed and household manufacturing workers. The 25.66 million industry [*gongye*] workers who were self-employed or working for household industrial concerns averaged 6,343 yuan in 2004 wages (CEC, 2004, Vol. 1, p. 63, Table 1-26). For lack of a better alternative, it is reasonable to assume that this 2004 average wage applies to the approximately 23.79 million manufacturing workers who comprise most of the industry workers.

3. Measuring Labor Compensation from the Economic Census

Manufacturing Labor Compensation, 2004, Economic Census Data

For international comparisons, it is important to calculate "labor compensation" or "total labor compensation," a global standard category of remuneration that includes not only wage, but also all the labor-related costs to employers, such as social insurance payments to government, medical insurance payments for employees, pension system contributions by employers, payments for unemployment insurance and workers' compensation systems for work-related injuries, and so forth. China's 2004 Economic Census gathered information on most of these components of labor compensation for

only some of the manufacturing employees. For the 56.67 million employees of manufacturing companies of designated size and above, the Economic Census gathered from their employers data on wage, pension and medical insurance payments, housing fund and housing subsidy payments not included in the wage, labor and unemployment insurance payments, and welfare fund payments to employees (China Economic Census Form B 604). In the published volumes of data from the Economic Census, none of the collected data on pension and medical insurance or on housing fund payments were published, but the National Bureau of Statistics provided The Conference Board with special tabulations that included the collected data on these payments. In the Economic Census form for manufacturing enterprises below designated size, only data on wage and on labor and unemployment insurance payments were requested (China Economic Census Form B 610). Individual and household businesses were asked only about wage (China Economic Census Form B 629).

To estimate total compensation for China's manufacturing employees, it is necessary to add to the reported wages the other components of total compensation, including social insurance payments paid by employers on behalf of employees, as well as other payments to or for employees that are not included in the wage data.

In cities, but not in towns or rural areas, employers pay considerable sums for social welfare benefits on behalf of their employees, above and beyond wages. China's cities today have built, or are in the process of building, municipal social insurance funds and housing funds to which both employers and employees are required to contribute each month (for more detail see Banister, 2005b, pp. 27-29, and 2005c, pp. 32-33). There are six kinds of funds: an old-age pension fund, a medical insurance fund, an unemployment insurance fund, a workers' compensation fund, a maternity leave fund, and a fund in which money is set aside for each worker by name--money that the worker can use to help buy an apartment. These monthly payments by employers to city governments are legally mandated, though evasion is widespread, as are locally permitted exceptions. The payments deducted from employee wages for the six public funds and remitted to city governments are included in the reported wage data, but the part paid by employers is excluded from the wage figures.

Legally required payments to government social insurance and employee benefit programs are included in the international concept of labor compensation. Therefore, in order to adjust the reported manufacturing wages to include employer social insurance payments and other labor compensation costs, one needs to know the overall percentage of the total wage bill that manufacturing employers paid in 2004, in addition to wages, for social insurance and required housing fund payments, as well as other employee benefit payments.

Manufacturing Enterprises of Designated Size and Above, Labor Compensation

China's National Bureau of Statistics provided to The Conference Board special tabulations of compensation data gathered in the 2004 Economic Census from enterprises of designated size and above. All these data are included in Table 2. According to the Economic Census, employers in these larger enterprises paid out to employees or to local authorities on behalf of employees the following benefits for 2004:

- Pension and medical insurance payments, averaging 10.90 percent of wage.
- Housing fund and subsidies, averaging 2.86 percent of wage.
- Employee welfare fund, averaging 11.59 percent of wage.
- Labor, unemployment insurance payments, averaging 3.77 percent of wage.

These above-wage benefits totaled 29.12 percent of the wage. It is possible that these categories do not encompass all beyond-wage labor-related costs to employers. For example, some cities require that employers pay to the municipality monthly payments into a workers' compensation fund *(gongshang baoxian),* which is used to support employees who are injured on the job. In 2004, required employer payments into this fund were equivalent to 0.6-0.8 percent of the wage bill in Changshu City of Jiangsu Municipality, and 1.0 percent of the wage bill in Beijing Municipality. Changshu City also required employers to pay 1.0 percent of the wage bill into a maternity leave insurance fund. It is not clear whether these types of social insurance payment are included under "Labor, unemployment insurance payments" reported in the Economic Census. We have no evidence that payments into workers' compensation funds or maternity leave insurance funds are included in this concept. Yet the amount paid into these "Labor, unemployment insurance payments," averaging 3.77 percent of wage for manufacturing enterprises of designated size and above, is far too large to cover just unemployment insurance paid out by employers, normally about 1.5-2.0 percent of city manufacturing wage bills and probably far less for rural manufacturing (Banister, 2005b, p. 28; 2005c, p. 33).

In 2004, no more than 56 percent of the employees in manufacturing enterprises of designated size and above were categorized as urban, and the rest were called rural. The Economic Census did not report this breakdown; it comes from annually reported data. At yearend 2004, there were reportedly 25.00 million TVE (Township and Village Enterprises, which by definition are outside the cities) employees working in manufacturing units of designated size and above (China MOA, 2005, p. 106). Of the average 2004 figure of 56.67 million employees of manufacturing enterprises of designated size and above counted in the Economic Census, if 25.00 million worked outside the cities in 2004, then 31.67 million worked in the cities.

At yearend 2004, China's annual enterprise reporting system counted a total of 30.51 million manufacturing employees in all urban units nationwide (China NBS and MOLSS, 2005, p. 191). Comparing the two totals 30.51 million and 31.67 million

suggests that essentially all urban manufacturing employees in China work in manufacturing units of designated size and above.

After adjusting wages for all the collected and reported elements of total labor compensation, Table 2 shows that the 56.67 million employees of manufacturing enterprises of designated size and above averaged 2004 compensation of 18,043 yuan, which is equivalent to US$ 2,179 for the year at the 2004 market exchange rate (8.28 yuan per dollar). The range of average labor compensation was wide among the 30 manufacturing subsectors, starting at only 11,257 yuan for workers making wood and bamboo and straw products. Five subsectors had average total labor compensation per employee at least double that (or 22,513 yuan and above): tobacco processing; petroleum, coke, and nuclear fuels; ferrous metals; transportation equipment manufacturing; and electronics and telecommunications.

The Economic Census volumes did publish 2004 total labor compensation figures for the most educated and skilled employees in manufacturing enterprises of designated size and above. The Economic Census publication defined *laowufei* [costs for labor services] for industrial enterprises of designated size and above, which seems to be the same as the concept of labor compensation (CEC, 2004, Vol. 3, p. 626). But the total cost of labor services was published only for the 1.62 million scientific and technical experts who comprise just 2.9 percent of total employment in manufacturing enterprises of designated size and above; during 2004 these highly educated employees averaged 30,116 yuan in total labor compensation (CEC, 2004, Vol. 3, p. 8, Table 1-A-4). This was equivalent to annual labor compensation of US$3,637 at the market exchange rate. It is interesting to note that these comparatively talented employees in China manufacturing receive total labor compensation of only about 13.50 yuan or US$1.63 per hour of work, which makes their work very inexpensive in a global context. (See the discussion below on calculating hourly labor compensation in China manufacturing.) The 2004 labor compensation of the 1.62 million skilled manufacturing specialists was only 1.7 times the average labor compensation of all employees in manufacturing units of designated size and above. This implies that the rewards to employees for high levels of education and technical skills in China's large manufacturing enterprises are surprisingly small.

Manufacturing Enterprises below Designated Size, 2004 Labor Compensation

Table 3 gives us only average wage and average labor, unemployment insurance for the 24.13 million employees of manufacturing enterprises below designated size in 2004. No evidence is available regarding how many of these employees work in cities or what other labor compensation costs such enterprises pay beyond wage and labor, unemployment insurance.

The following totals for average 2004 manufacturing employment are derived from China's annual enterprise and TVE reporting systems (Lett and Banister, 2006, Table 1):

Manufacturing urban units:	30.29 million
Manufacturing TVEs:	74.20 million
Total for manufacturing urban units and TVEs:	104.49 million

These numbers suggest that the estimated 31.67 million urban employees of manufacturing enterprises of designated size and above already account for the total 2004 employment of manufacturing urban units. Besides, even though some of the employees of manufacturing enterprises below designated size may be in cities, they are in practice not systematically required to pay all the social insurance and housing fund payments required of state-owned and designated-size-and-above non-state employers. Therefore, let us assume for simplicity that essentially all the manufacturing enterprises below designated size are located outside city district boundaries and that, wherever they are, they pay out only minimal social insurance and welfare expenditures for their employees.

There are almost no data on employee benefits for manufacturing units outside the cities. For TVE manufacturing employees, there is ample evidence that the reported wage total may capture almost all of their total compensation, because TVE workers do not have many of the social insurance and other welfare benefits that urban employees often get (Banister, 2005b, pp. 28-29, and 2005 c, pp. 33-34). For example, by the end of 2004, the number of rural and small town workers with any rural social pension insurance was minuscule. Only 102,525 of China's 22.13 million TVEs of all types paid into any pension insurance system; of the 138.66 million reported TVE employees in all economic sectors, pension insurance contributions were made on behalf of only 369,000 of them (China NBS and MOLSS, 2005, pp. 493, 495, 597-598). China's towns and rural areas have very weak or nonexistent social benefit systems for pensions, medical insurance, unemployment insurance, workers' compensation, and the like. Pension and medical insurance systems paid into by employers and employees barely exist in China outside of cities today.

A survey of large manufacturing enterprises in Nanjing Municipality, the capital of Jiangsu Province on the country's east coast, found that welfare benefits for workers, above and beyond wages, for the years 1994-2001 averaged 36 percent of the earnings in urban state-owned manufacturing enterprises, but only 16 percent of the earnings in unusually large manufacturing TVEs in counties under Nanjing's administration (Dong, 2004, pp. 28-29, Table 1). TVEs in counties near major cities have much better social welfare benefits than those farther out in the countryside, so 16 percent of wage is too high an estimate for all TVE manufacturing enterprises in those years. On the other hand, TVE worker welfare benefits in 2004 were very likely a higher percentage of those workers' total compensation than in earlier years.

In estimating total labor compensation for TVE manufacturing employees in 2002, this author extrapolated from the Nanjing survey reported by Dong Xiaoyuan discussed above. Noting that average TVE labor-related costs beyond the wage were probably between zero and 16 percent for 2002 for the great majority of TVEs that are not in the close suburbs of a leading Chinese city, she arbitrarily chose the midpoint of this range to represent TVE non-wage labor costs. For 2004, recognizing that there may have been slight increases in labor-related expenditures between 2002 and 2004, let us keep the 8 percent figure to represent all social insurance and labor costs beyond the wage, except for the labor, unemployment insurance figures reported in Table 3.

Table 3 estimates that 2004 total labor compensation per employee in manufacturing enterprises below designated size was about 9,080 yuan per employee, or US$1,097 at the 2004 market exchange rate. The 30 manufacturing subsectors had a narrow range of average compensation, from 7,716 yuan for nonmetal mineral products to about 11,270 yuan for electronics, communication equipment, and computers; and instruments and office machinery. Average labor compensation for employees of manufacturing enterprises below designated size was about half that for employees of manufacturing enterprises of designated size and above. This differential is caused in part by China's large differences in labor compensation between urban and rural areas.

Labor Compensation for All Manufacturing Employees

Estimates from Tables 2 and 3 are combined in Table 1 to give estimated average 2004 labor compensation for all 80.81 million manufacturing employees in China's manufacturing enterprises. These employees of established manufacturing enterprises averaged 15,366 yuan or US$1,856 in total labor compensation for the year 2004.

Table 1 does not, however, include the self-employed and household industry manufacturing employees in China. One Economic Census table published the total numbers of employees in industry [*gongye*] and their total wage bill, from which this analysis estimated average 2004 non-enterprise self-employed and household manufacturing employees and their average 2004 wage for the year. This information was not collected and is not available by manufacturing subsector. It is likely that such household manufacturing workers receive few or no other benefits and that the household or self-employed individual pays little or no social insurance or medical payments to authorities. It is reasonable to conclude that the average 2004 wage is the same as average 2004 labor compensation for these workers—6,343 yuan equivalent to US$766 for the year.

4. Transforming to Hourly Labor Compensation

Hourly Labor Compensation in China Manufacturing

To calculate the hourly labor compensation of China's manufacturing employees in 2004 would require data on the average number of hours actually worked per employee during that year. Even though some factories in China are regularly required to report hours worked by their employees to authorities, it appears that so far no such data have been published.

The only published data on hours worked in manufacturing during 2004 are for city manufacturing workers. China's NBS and Labor Ministry have been conducting a labor force survey for some years. The survey is conducted once a year only in urban areas and once a year in rural and urban areas. The survey collects data with reference to the week before the survey.

Most results of this survey have not been published, but data on hours worked by urban manufacturing workers during both reference weeks in 2002 and one reference week in November 2003 and November 2004 have been published (China NBS and MOLSS, 2005, p. 103). This author averaged the weekly hours worked in the two reference weeks of 2002 in her earlier work (for more detail, see Banister, 2005b, pp. 30-33; and 2005c, pp. 36-38). During 2002, in the weeks when urban manufacturing employees actually worked at all, they averaged 45.4 hours of work per week (44.86 hours in May and 46.0 in September). Using available information about the weeks worked per year in urban China, this author estimated that China's urban manufacturing employees worked 48 weeks during 2002, averaging 45.4 hours per week, resulting in an estimate of 2,179 hours worked on average during that year. Because NBS has never published the corresponding information from the labor force survey on weekly hours worked in rural manufacturing, this author used reasonable but hypothetical assumptions to estimate that during 2002, rural manufacturing workers averaged about 2,200 hours worked for the whole year.

The published hours worked in the autumn reference weeks from 2002 through 2004 show that the average weekly hours worked in urban manufacturing appear to be increasing slightly (2002: 46.0 hours; 2003: 46.4; 2004: 46.9). Using the ratio for 2004 hours worked to 2002 hours worked in urban manufacturing to adjust the 2002 annual hours worked in both urban and rural manufacturing results in estimates of 2,222 hours for urban manufacturing and 2,243 hours for rural manufacturing in 2004 (Lett and Banister, 2006, text and Table 1).

Table 4 estimates hourly labor compensation in 2004 for employees of manufacturing enterprises of designated size and above. Assuming that 25.00 million of these workers are rural and worked 2,243 hours in 2004, and that 31.67 million are urban

and worked 2,222 hours in 2004, average hours worked for the 56.67 million employees would be about 2,231 hours.

According to the estimates in Table 4, 2004 total labor compensation for employees of manufacturing enterprises of designated size and above was about 8.09 yuan or US$0.98 per hour of work. Except for the highly paid tobacco workers, average 2004 compensation by subsector ranged from US$0.61 to $1.59.

Table 4. China, Manufacturing Enterprises of Designated Size and Above, Economic Census, Average 2004 Hourly Labor Compensation by Subsector

Manufacturing subsector	2004 average number of employees	Average 2004 compensation per employee		2004 hourly compensation per employee	
		(yuan)	(US dollars)	(yuan)	(US dollars)
Total Manufacturing	56,673,426	18,043.05	2,179.11	8.09	0.98
Food processing	1,965,097	12,199.58	1,473.38	5.47	0.66
Food products manufacturing	1,108,837	16,194.25	1,955.83	7.26	0.88
Beverage manufacturing	839,188	17,465.06	2,109.31	7.83	0.95
Tobacco processing	198,767	80,796.53	9,758.04	36.22	4.37
Textile industry	5,879,184	12,786.93	1,544.32	5.73	0.69
Garments and other fiber products	3,319,120	13,428.15	1,621.76	6.02	0.73
Leather, furs, down and related products	2,112,181	12,464.34	1,505.36	5.59	0.67
Wood, bamboo, natural fiber & straw products	767,994	11,256.74	1,359.51	5.05	0.61
Furniture manufacturing	649,377	13,755.96	1,661.35	6.17	0.74
Papermaking and paper products	1,304,399	14,447.25	1,744.84	6.48	0.78
Printing & record medium reproduction	634,995	19,882.60	2,401.28	8.91	1.08
Cultural, educational, and sport products	1,075,367	13,221.85	1,596.84	5.93	0.72
Petroleum processing and coking products	679,653	29,353.43	3,545.10	13.16	1.59
Chemical raw materials & products	3,263,454	20,572.94	2,484.66	9.22	1.11
Medical & pharmaceutical products	1,143,815	21,563.21	2,604.25	9.67	1.17
Chemical fibers manufacturing	391,942	18,807.84	2,271.48	8.43	1.02
Rubber products	807,838	15,130.46	1,827.35	6.78	0.82
Plastic products	1,751,965	15,131.95	1,827.53	6.78	0.82
Nonmetal mineral products	4,153,157	13,563.86	1,638.15	6.08	0.73
Smelting & pressing of ferrous metals	2,772,674	29,036.97	3,506.88	13.02	1.57
Smelting & pressing of nonferrous metals	1,273,275	20,918.84	2,526.43	9.38	1.13
Metal products	2,131,107	15,778.20	1,905.58	7.07	0.85
Ordinary machinery manufacturing	3,437,449	19,101.57	2,306.95	8.56	1.03
Special purpose equipment manufacturing	2,199,262	20,422.89	2,466.53	9.15	1.11
Transportation equipment manufacturing	3,413,057	24,927.65	3,010.59	11.17	1.35
Electric equipment and machinery	3,486,797	18,124.42	2,188.94	8.12	0.98
Electronics and telecommunications	3,787,947	23,944.53	2,891.85	10.73	1.30
Instruments & office machinery	843,372	21,719.79	2,623.16	9.74	1.18
Artwork & other manufacturing	1,242,216	13,755.31	1,661.27	6.17	0.74
Recycling & waste disposal	39,940	16,425.81	1,983.79	7.36	0.89

Sources: Table 2; Lett and Banister, 2006.
Note: These manufacturing employees are assumed to have worked 2,231 hours in 2004. See text.

Table 5 calculates 2004 hourly labor compensation for employees of manufacturing enterprises below designated size. On the assumption that essentially all of them are employed outside the cities, they worked an estimated 2,243 hours in 2004. Average hourly labor compensation for these manufacturing employees was less than half that of the employees of manufacturing enterprises of designated size and above. These employees received total labor compensation averaging about 4.05 yuan or US$0.49 per hour. Employees in the 30 manufacturing subsectors averaged between 3.44 yuan or US$0.42 per hour and 5.03 yuan or US$0.61. The much higher labor compensation for employees of the state-owned and designated-size-and-above manufacturing enterprises, in comparison to employees of manufacturing enterprises below designated size, is attributable to the following factors:

- Employees in China's cities receive much higher wages, social insurance, housing, and other benefits than do employees outside of cities.
- In general, enterprises with large sales volume probably receive more foreign direct investment, have more economies of scale, have better and newer machinery, have higher productivity, are better managed, and are more successful than enterprises with small sales volume.
- State-owned enterprises in China still benefit from favorable treatment that includes higher wages and employee benefits.

Table 6 combines the estimates from Tables 4 and 5 to show 2004 annual and hourly labor compensation for the 80.81 million employees of China's manufacturing enterprises by subsector. Assuming that 31.67 million of these are city employees who worked 2,222 hours in 2004, and 49.13 million were located outside the cities and worked 2,243 hours, the hours worked for all 80.81 million manufacturing enterprise employees for the year 2004 was 2,235 on average.

Based on China's Economic Census, Table 6 shows that China's 80.81 million employees of manufacturing enterprises averaged 2004 total labor compensation of 6.88 yuan or US$0.83 per hour of work. Setting aside the highly paid tobacco subsector, average hourly labor compensation by manufacturing subsector ranged from 4.25 yuan or US$0.51 to 12.09 yuan or US$1.46.

Finally, the analysis presented in Table 7 combines labor compensation estimates for the reported 80.8 million employees of manufacturing enterprises and the estimated 23.8 million self-employed and household manufacturing employees to derive estimates for annual and hourly labor compensation in China's manufacturing sector. As shown in Table 7, these 104.6 million Chinese manufacturing employees received an average of approximately US$1,608 in labor compensation in 2004, a figure that works out to about US$0.72 in hourly labor compensation. This figure is only 3.15 percent of hourly manufacturing labor compensation in the United States, which was US$22.87 in 2004 (BLS, 2006b).

Table 5. China, Manufacturing Enterprises Below Designated Size, Economic Census, Average 2004 Hourly Labor Compensation by Subsector

Manufacturing subsector	2004 average number of employees	Average 2004 compensation per employee		2004 hourly compensation per employee	
		(yuan)	(US dollars)	(yuan)	(US dollars)
Total Manufacturing	24,132,811	9,079.95	1,096.61	4.05	0.49
Food processing	997,262	8,035.00	970.41	3.58	0.43
Food products manufacturing	489,116	8,474.83	1,023.53	3.78	0.46
Beverage manufacturing	382,239	8,150.09	984.31	3.63	0.44
Tobacco processing	3,358	8,506.11	1,027.31	3.79	0.46
Textile industry	1,755,425	9,212.95	1,112.68	4.11	0.50
Garments and other fiber products	1,497,974	9,360.33	1,130.47	4.17	0.50
Leather, furs, down and related products	647,527	8,990.33	1,085.79	4.01	0.48
Wood, bamboo, natural fiber & straw products	807,156	7,818.90	944.31	3.49	0.42
Furniture manufacturing	430,509	9,214.10	1,112.81	4.11	0.50
Papermaking and paper products	704,579	8,773.61	1,059.62	3.91	0.47
Printing & record medium reproduction	635,095	9,739.24	1,176.24	4.34	0.52
Cultural, educational, and sport products	410,261	8,939.02	1,079.59	3.99	0.48
Petroleum processing and coking products	100,216	9,596.32	1,158.98	4.28	0.52
Chemical raw materials & products	1,184,168	8,906.30	1,075.64	3.97	0.48
Medical & pharmaceutical products	181,008	10,184.03	1,229.96	4.54	0.55
Chemical fibers manufacturing	40,660	9,618.82	1,161.69	4.29	0.52
Rubber products	283,553	9,112.96	1,100.60	4.06	0.49
Plastic products	1,163,947	9,254.00	1,117.63	4.13	0.50
Nonmetal mineral products	4,244,373	7,716.25	931.91	3.44	0.42
Smelting & pressing of ferrous metals	320,249	9,494.56	1,146.69	4.23	0.51
Smelting & pressing of nonferrous metals	199,129	9,478.75	1,144.78	4.23	0.51
Metal products	1,371,382	9,725.50	1,174.58	4.34	0.52
Ordinary machinery manufacturing	1,843,806	9,941.97	1,200.72	4.43	0.54
Special purpose equipment manufacturing	897,244	10,490.41	1,266.96	4.68	0.56
Transportation equipment manufacturing	914,669	10,048.62	1,213.60	4.48	0.54
Electric equipment and machinery	966,957	9,945.50	1,201.15	4.43	0.54
Electronics and telecommunications	566,806	11,273.22	1,361.50	5.03	0.61
Instruments & office machinery	296,131	11,267.63	1,360.82	5.02	0.61
Artwork & other manufacturing	751,331	8,860.29	1,070.08	3.95	0.48
Recycling & waste disposal	46,681	9,550.17	1,153.40	4.26	0.51

Sources: Table 3; Lett and Banister, 2006.
Note: These manufacturing employees are assumed to have worked 2,243 hours in 2004. See text.

Table 6. China, All Manufacturing Enterprises,
Economic Census, Average 2004 Hourly Labor Compensation by Subsector

Manufacturing subsector	2004 average number of employees	Average 2004 compensation per employee		2004 hourly compensation per employee	
		(yuan)	(US dollars)	(yuan)	(US dollars)
Total Manufacturing	80,806,237	15,366.21	1,855.82	6.88	0.83
Food processing	2,962,359	10,797.60	1,304.06	4.83	0.58
Food products manufacturing	1,597,953	13,831.42	1,670.46	6.19	0.75
Beverage manufacturing	1,221,427	14,549.99	1,757.24	6.51	0.79
Tobacco processing	202,125	79,595.54	9,612.99	35.61	4.30
Textile industry	7,634,609	11,965.16	1,445.07	5.35	0.65
Garments and other fiber products	4,817,094	12,163.18	1,468.98	5.44	0.66
Leather, furs, down and related products	2,759,708	11,649.21	1,406.91	5.21	0.63
Wood, bamboo, natural fiber & straw products	1,575,150	9,495.08	1,146.75	4.25	0.51
Furniture manufacturing	1,079,886	11,945.30	1,442.67	5.34	0.65
Papermaking and paper products	2,008,978	12,457.42	1,504.52	5.57	0.67
Printing & record medium reproduction	1,270,090	14,810.52	1,788.71	6.63	0.80
Cultural, educational, and sport products	1,485,628	12,039.13	1,454.00	5.39	0.65
Petroleum processing and coking products	779,869	26,814.57	3,238.48	12.00	1.45
Chemical raw materials & products	4,447,622	17,466.73	2,109.51	7.82	0.94
Medical & pharmaceutical products	1,324,823	20,008.50	2,416.49	8.95	1.08
Chemical fibers manufacturing	432,602	17,944.17	2,167.17	8.03	0.97
Rubber products	1,091,391	13,567.06	1,638.53	6.07	0.73
Plastic products	2,915,912	12,785.64	1,544.16	5.72	0.69
Nonmetal mineral products	8,397,530	10,608.30	1,281.20	4.75	0.57
Smelting & pressing of ferrous metals	3,092,923	27,013.50	3,262.50	12.09	1.46
Smelting & pressing of nonferrous metals	1,472,404	19,371.67	2,339.57	8.67	1.05
Metal products	3,502,489	13,408.29	1,619.36	6.00	0.72
Ordinary machinery manufacturing	5,281,255	15,903.75	1,920.74	7.12	0.86
Special purpose equipment manufacturing	3,096,506	17,544.85	2,118.94	7.85	0.95
Transportation equipment manufacturing	4,327,726	21,782.96	2,630.79	9.75	1.18
Electric equipment and machinery	4,453,754	16,348.69	1,974.48	7.31	0.88
Electronics and telecommunications	4,354,753	22,295.25	2,692.66	9.98	1.20
Instruments & office machinery	1,139,503	19,003.51	2,295.11	8.50	1.03
Artwork & other manufacturing	1,993,547	11,910.47	1,438.46	5.33	0.64
Recycling & waste disposal	86,621	12,720.46	1,536.29	5.69	0.69

Sources: Table 1; Lett and Banister, 2006.
Note: These manufacturing employees are assumed to have worked 2,235 hours in 2004. See text.

Table 7. China, Hourly Labor Compensation for All Manufacturing Employees, 2004, Economic Census

Manufacturing Employee Category	2004 average number of employees	Average 2004 compensation per employee		2004 hourly compensation per employee	
		(yuan)	(US dollars)	(yuan)	(US dollars)
All manufacturing employees and workers	104,599,937	13,313.61	1,607.92	5.96	0.72
Manufacturing enterprise employees	80,806,237	15,366.21	1,855.82	6.88	0.83
Designated size and above	56,673,426	18,043.05	2,179.11	8.09	0.98
Below designated size	24,132,811	9,079.95	1,096.61	4.05	0.49
Self-employed and household manufacturing workers	23,793,700	6,342.71	766.03	2.83	0.34

Sources: Tables 4, 5, 6; Economic Census, Vol. 1, Table 1-26.
Notes: The Economic Census of China reported that in 2004 there were 25,657,500 self-employed and household workers in "industry" [*gongye*]. TVE data for 2004 showed that 92.7% of TVE industry workers were in manufacturing. The figure of 23,793,700 self-employed and household manufacturing workers is derived from the foregoing data.

5. Adjusting Labor Compensation for Purchasing Power

Purchasing Power of Take-home Pay in China Manufacturing

Prices of goods and services vary greatly among countries, and the official exchange rate is not a reliable indicator of the relative difference in prices between China and other countries (Banister, 2005c, pp. 39-41). While the exchange rate is the correct conversion factor for comparisons of labor cost from a company's perspective, it is not an adequate reflection of the comparative cost of living related to those wage levels. Prices for most purchases in China are low, so the dollar figure of US$0.72 in hourly labor compensation does not adequately capture the purchasing power of the incomes of China's manufacturing workers. To more closely approximate the purchasing power of Chinese manufacturing worker incomes in U.S. dollars, some type of purchasing power parity (that is, the amount of yuan required to purchase the equivalent of $1 of goods and services in China) is needed. One way to better account for different purchasing power of different currencies is to utilize the "purchasing power parity" (PPP) exchange rate based on the cost of a comparable "basket" of goods in the two currencies, yuan in China and dollars in the U.S. or on the international market.

> "In theory, use of market or commercial exchange rates is most appropriate for some purposes, and use of PPP exchange rates is the best method for other purposes:

> PPP is not appropriate for everything. Trade and capital flows, unlike the bulk of GDP, are actually transacted at market exchange rates, and should be converted into dollars at those rates. PPP is useful in showing how much a country's money is worth in its home market, but it does not measure effective purchasing power across borders. What matters for businesses that trade internationally is China's buying power in current-dollar terms" (*Economist*, Sept. 30, 2004).

This paper gives manufacturing wages and total labor compensation in Chinese domestic currency and in dollars at commercial exchange rates. The cash portion of income is then calculated in PPP international dollars. These alternative estimates allow us to select the appropriate measures for different purposes.

To use PPP exchange rates, one should estimate the proportion of earnings that employees actually get to spend in the form of take-home pay, net of deferred compensation. (Total labor compensation costs per hour worked do not provide an accurate portrayal of worker income because they include costs that are not paid directly to the worker.) In China, especially in urban areas, employers often try to minimize the reported wage because they have to pay high social insurance and housing payments calculated as a percent of the reported wage bill. Therefore, they hold down wage and increase other non-wage payments such as the welfare fund and other unspecified labor payments to their employees. Even though the required employee contributions to social insurance costs as well as income taxes are deducted from their wages, the employee take-home pay is then increased, sometimes substantially, by the untaxed non-wage payments. For simplicity, let us use the reported wage for all employees in urban and rural areas as a proxy for their take-home pay after social insurance payments and income taxes (the reasoning behind this procedure is discussed more fully in Banister, 2005c, pp. 40-41).

The average 2004 wage for the 80.81 million manufacturing enterprise employees, 12,233 yuan (Table 1), was US$1,478 at the commercial exchange rate. To calculate the purchasing power parity (PPP) equivalent of this annual take-home pay, one approach is to use a PPP for the consumption portion of GDP. Based on this procedure, the PPP value of yearly take-home pay of China's manufacturing enterprise employees in 2004 was 5,369 international dollars. (For calculating labor compensation in international dollars, divide labor compensation in yuan by 2.2786. This figure is derived by multiplying the relative price level for consumption of .2753 of the U.S. level by the market exchange rate of 8.2768. See Penn World Table, 2006.) This means that the average employee of manufacturing enterprises in China in 2004 could purchase goods and services that gave the worker and family a living standard equivalent to annual take-home pay of about US$5,369 in the U.S. The Chinese enterprise manufacturing workers averaged take-home pay of about 5.47 yuan or US$0.66 per hour (exchange rate-converted), which is equivalent to US$2.40 (PPP-converted).

The 23.79 million self-employed and household manufacturing employees have much lower living standards. Their average take-home pay in 2004 was only 6,343 yuan or US$766 at the market exchange rate, which is the PPP equivalent of 2,784 international dollars. Hourly pay was only 2.83 yuan or US$0.34 (exchange rate-converted), which is equivalent to $1.24 take-home pay per hour of work (PPP-converted).

For China's 104.6 million manufacturing workers, average 2004 take-home pay was 4.87 yuan per hour of work, equivalent to PPP-converted US$2.14. These PPP figures give us a feel for the purchasing power of the take-home pay of China's manufacturing employees. Enterprise manufacturing workers in China are getting cash in hand that US$2.40 per hour in cash would buy in the U.S., while China's household and self-employed manufacturing workers receive only $1.24 in purchasing power parity dollars per hour of work. Overall equivalent buying power of cash income (exclusive of social insurance and income tax payments) for all of China's manufacturing employees and workers is about PPP-converted US$2.14 per hour of work.

How did the 2004 buying power of the average Chinese manufacturing employee and the average U.S. manufacturing production worker compare in 2004? The total labor compensation of U.S. manufacturing production workers in 2004 was $22.82 per hour of work. Of this hourly compensation, $5.01 was employer expenditures for both legally required insurance programs and contractual and private benefit plans. The remaining $17.81 was hourly direct wage or salary gross income for the production workers (BLS, 2006c, Table 8). Of this employee income, a portion went to employee income taxes and social security contributions—from about 10 percent of gross pay for a married one-earner couple with two children to about 24 percent for a single worker with no children (OECD, 2005, Table I.2, Chart I.2). Therefore, take-home after-tax cash income for average U.S. manufacturing workers in 2004 was $13.54-$16.03 depending on how many dependents the workers had. The average Chinese manufacturing employee took home PPP-converted US$2.14 per hour of work. Hence on the basis of one hour of work, a Chinese manufacturing employee could purchase goods and services at about 13-16 percent of what an American worker could buy with after-tax take-home pay of 13.54-16.03 dollars per hour. The Chinese manufacturing workers employed by enterprises had cash income of PPP-converted US$2.40, about 15-18 percent of the average take-home pay of U.S. manufacturing production workers. Therefore, living standards of China's manufacturing employees averaged one-sixth to one-eighth of the standard of living of U.S. manufacturing workers in 2004.

6. Comparison of Economic Census and Establishment Data for 2004

Are the Economic Census numbers for manufacturing workers and employees in China complete and accurate? Is there any overcount or undercount? We do not know. There might still have been a statistical problem with coverage of casual migrant manufacturing workers who are informally hired only when needed to meet temporary

demand for the product of a manufacturing company or workshop. Such workers of rural origin are often not listed as employees. These manufacturing workers may not enter the data at all, in which case the Economic Census total numbers for manufacturing employees and workers might be an undercount, in the sense that casual part-time manufacturing workers are not being included. Even some rural-to-urban migrant workers who work full-time and year-round for a manufacturing operation might not be reported in the Economic Census, a coverage problem that has been apparent in China's annually reported urban manufacturing data for some time (Banister, 2005a, pp. 23-24; 2005c, pp. 18-20).

Alternatively, perhaps the manufacturing companies and the industrial household operations actually did count and report their monthly and yearend 2004 payrolls accurately for 2004 in the Economic Census, in which case the reported numbers would be close to the truth. There was a thorough data collection process implemented in the Economic Census, and penalties for underreporting or misreporting data were announced and publicized (China State Council, 2004). NBS reported that: "Data from the Economic Census are more complete and accurate when compared with annual statistics" (China NBS 2005a). This assessment indicates that Economic Census data should supersede annual data when the two sources conflict. Table 8 compares 2004 data from the two sources.

Table 8. China 2004 Manufacturing Wage Comparison, Economic Census and Annual Establishment Data

Annual Establishment Data for 2004			Economic Census Data for 2004		
Category of manufacturing workers	Average number of employees (millions)	Average 2004 wage per employee (yuan)	Category of manufacturing workers	Average number of employees (millions)	Average 2004 wage per employee (yuan)
2004			2004		
Total for manufacturing urban units and TVEs...	104.49	9,635	Total for manufacturing employees.....	104.60	10,893
Manufacturing urban units.....	30.29	14,251	Manufacturing enterprises of designated size & above....	56.67	13,974
Manufacturing TVEs.....	74.20	7,751	Manufacturing enterprises below designated size....	24.13	8,144
			Self-employed and household manufacturing workers..	23.79	6,343

Notes: This table compares only the average wage for the whole year 2004 based on reported employment and wage data. Other elements of total labor compensation are not reported or estimated in this table.

Sources: For annual establishment data: Lett and Banister, 2006, Table 1.
For Economic Census data: China Economic Census, Vol. 1, p. 63, Table 1-26; and this report Tables 2 and 3.

According to 2004 data from the annual reporting systems, the average number of manufacturing employees in urban enterprises that year was 30.29 million, and the average number of TVE manufacturing workers was 74.20 million, totaling 104.49 million average 2004 urban unit plus TVE manufacturing employees (Lett and Banister, 2006, Table 1). This total is close to the 104.60 million average 2004 manufacturing worker figure in Table 7 based on the Economic Census. China's 104-105 million manufacturing workers, in terms of sheer numbers, overwhelm the 53.76 million

manufacturing employees in the 10 developed countries U.S., Japan, Canada, Australia, and six European leading manufacturing countries (BLS, 2006a, p. 28, Table 6).

The analysis in this report, based on the Economic Census, results in a somewhat higher estimate for hourly total labor compensation in manufacturing, US$0.72, than an equally sophisticated analysis based on 2004 data from the annual reporting systems of the Ministry of Labor and the Ministry of Agriculture, US$0.67 (Lett and Banister, 2006, Table 1). What accounts for this difference? The primary reason is that the Economic Census reported higher wages for 2004 than did routine establishment and TVE wage reporting systems. Table 8 compares wage data from the two different sources for the calendar year 2004. Annual data including that from the Township Enterprise Bureau of the Ministry of Agriculture gives us an average 2004 wage of 9,635.25 yuan for 104.5 million manufacturing employees. Reported wage data from the Economic Census averaged 10,893.22 yuan for 104.6 million manufacturing employees, 13 percent higher than the annual data collection system had reported. This disparity in reported wages leads to disagreement between the labor compensation results from the routine reporting system and the Economic Census for the year 2004. The Economic Census apparently elicited more complete wage reporting than the regular data collection systems. But this means that Economic Census results should not be directly compared with results for earlier years from the annual reporting system in an attempt to infer trends; these data sources are not comparable.

7. Manufacturing Labor Compensation by Province

China's Economic Census reported province-level manufacturing data only for the manufacturing enterprises of designated size and above, which includes 56.67 million of China's 104.60 million manufacturing employees and workers. Table 9 displays the geographical distribution of manufacturing employees in these manufacturing enterprises that are state-owned or have more than 5 million yuan in annual sales. There is some large-scale manufacturing production going on in every province and region of China, even Tibet (which, however, has only 11,000 manufacturing employees in such big manufacturing enterprises). The largest concentrations of employees in state-owned and large-scale manufacturing enterprises are Guangdong province (contiguous with Hong Kong and Macao in southern China), provinces at the mouth of the Yangze River (Jiangsu, Zhejiang, and Shanghai), and Shandong province, another large coastal province.

In provinces that are not major manufacturing centers, the large-scale factories they do have tend to be in their cities. In most provinces, 60-98 percent of the employees of manufacturing enterprises of designated size and above are urban. For example, the urban proportion is 90 percent in mountainous Guizhou and Yunnan provinces in the southwest and 98 percent in the far northwestern desert province of Xinjiang. But in Guangdong, Jiangsu, and Zhejiang, only one-quarter to one-third of employees of these

large-scale manufacturing units is located in cities. (The 2004 figure for manufacturing employment in urban units by province is from China NBS and MOLSS, 2005, p. 207.)

Average reported 2004 manufacturing wage in enterprises of designated size and above ranged from only 9,646 yuan in inland Henan province to 16,124 yuan in Yunnan province. Of the four municipalities that are also provinces, manufacturing wages are high in Beijing, 23,992 yuan, and Shanghai, 23,572 yuan, but much less in Tianjin and Chongqing. The range of total labor compensation per employee is wide, from 12,933 yuan in Henan to 31,919 yuan in Beijing municipality. This big range motivates large manufacturing enterprises to consider relocating to less expensive provinces. However, there are many trade-offs in such a decision. Leaving places with higher labor compensation costs may bring negatives such as more inconvenience, higher costs of transport and logistics, greater bureaucratic logjams, and shortages of experienced and educated and talented employees.

Colleagues at The Conference Board have analyzed the economic impacts of the wide range of labor compensation, productivity, and unit labor costs in manufacturing across all China's provinces, and looked separately at the different types of manufacturing by province and over time (Chen et al., 2007). They found that unit labor costs have declined significantly across the entire spectrum of manufacturing in the 1995-2004 decade, because manufacturing labor productivity has grown faster than labor compensation over that period throughout China. This study detected some convergence across provinces in labor compensation, productivity, and unit labor costs in labor-intensive manufacturing subsectors, but diverging tendencies in manufacturing industries characterized by high skill levels and capital intensity.

Table 9. China, Manufacturing Enterprises of Designated Size and Above, Economic Census, Average 2004 Labor Compensation by Province

Province	2004 average number of employees	Total 2004 wage bill (in thousands of yuan)	Average 2004 wage per employee (yuan)	Total 2004 welfare fund (in thousands of yuan)	Average 2004 welfare fund per employee (yuan)	Welfare fund per employee as % of wage	Total 2004 other labor compensation (in thousands of yuan)	Other 2004 labor compensation per employee (yuan)	Average 2004 total compensation per employee (yuan)
National	56,673,426	791,969,904	13,974.27	91,802,391	1,619.85	11.59	138,788,884	2,448.92	18,043.04
Beijing	1,045,000	25,072,000	23,992.34	3,414,000	3,266.99	13.62	4,869,691	4,659.99	31,919.32
Tianjin	1,139,500	18,479,000	16,216.76	3,099,000	2,719.61	16.77	3,479,746	3,053.75	21,990.12
Hebei	2,232,700	26,116,000	11,697.05	3,172,000	1,420.70	12.15	5,517,761	2,471.34	15,589.09
Shanxi	1,130,600	12,665,000	11,202.02	1,717,000	1,518.66	13.56	3,039,842	2,688.70	15,409.38
Inner Mongolia	531,200	6,882,000	12,955.57	926,000	1,743.22	13.46	1,420,432	2,674.01	17,372.80
Liaoning	2,069,700	31,136,000	15,043.73	3,798,000	1,835.05	12.20	6,730,933	3,252.13	20,130.90
Jilin	767,800	10,323,000	13,444.91	1,224,000	1,594.17	11.86	2,232,456	2,907.60	17,946.67
Heilongjiang	822,700	9,883,000	12,012.88	2,199,000	2,672.91	22.25	2,348,982	2,855.21	17,541.00
Shanghai	2,561,500	60,379,000	23,571.74	7,071,000	2,760.49	11.71	10,733,693	4,190.39	30,522.62
Jiangsu	6,848,500	98,471,000	14,378.48	13,394,000	1,955.76	13.60	16,407,648	2,395.80	18,730.04
Zhejiang	6,058,300	83,744,000	13,823.02	10,179,000	1,680.17	12.15	12,639,457	2,086.30	17,589.50
Anhui	1,124,400	12,712,000	11,305.59	1,560,000	1,387.41	12.27	2,460,587	2,188.36	14,881.35
Fujian	2,579,200	34,542,000	13,392.52	2,650,000	1,027.45	7.67	4,439,947	1,721.44	16,141.42
Jiangxi	803,000	8,857,000	11,029.89	989,000	1,231.63	11.17	1,738,774	2,165.35	14,426.87
Shandong	5,824,100	64,741,000	11,116.05	6,657,000	1,143.01	10.28	11,047,303	1,896.83	14,155.89
Henan	2,457,600	23,705,000	9,645.59	3,436,000	1,398.11	14.49	4,642,697	1,889.12	12,932.82
Hubei	1,533,300	20,517,000	13,380.94	2,455,000	1,601.12	11.97	4,464,325	2,911.58	17,893.64
Hunan	1,320,200	17,018,000	12,890.47	2,052,000	1,554.31	12.06	3,519,239	2,665.69	17,110.47
Guangdong	9,707,800	144,587,000	14,893.90	10,523,000	1,083.97	7.28	19,412,137	1,999.64	17,977.52
Guangxi	745,200	9,717,000	13,039.45	1,270,000	1,704.24	13.07	1,940,232	2,603.64	17,347.33
Hainan	81,600	1,184,000	14,509.80	127,000	1,556.37	10.73	203,500	2,493.87	18,560.05
Chongqing	753,000	10,024,000	13,312.08	1,298,000	1,723.77	12.95	2,223,012	2,952.21	17,962.83
Sichuan	1,615,400	20,237,000	12,527.55	2,775,000	1,717.84	13.71	5,450,726	3,374.23	24,628.41
Guizhou	470,600	6,175,000	13,121.55	865,000	1,838.08	14.01	1,421,928	3,021.52	17,981.15
Yunnan	504,700	8,138,000	16,124.43	1,117,000	2,213.20	13.73	2,045,010	4,051.93	22,389.56
Tibet	11,200	156,000	13,928.57	22,000	1,964.29	14.10	26,939	2,405.30	18,298.16
Shaanxi	877,900	11,721,000	13,351.18	1,791,000	2,040.10	15.28	2,427,612	2,765.25	18,156.52
Gansu	533,500	7,845,000	14,704.78	1,080,000	2,024.37	13.77	1,802,334	3,378.32	20,107.47
Qinghai	86,300	1,093,000	12,665.12	154,000	1,784.47	14.09	232,018	2,688.50	17,138.09
Ningxia	171,200	2,043,000	11,933.41	279,000	1,629.67	13.66	425,304	2,484.25	16,047.34
Xinjiang	265,700	3,806,000	14,324.43	509,000	1,915.69	13.37	760,015	2,860.43	19,100.55

Notes: Unrounded data in the first row for all China are from Table 2. Only highly rounded data are available by province. The collected data on pension and medical insurance, housing fund and subsidies, and labor, unemployment insurance have not been reported by province. This table allocates the national total for other labor compensation to the provinces using the provincial wage plus welfare bills as weights. Because of these data reporting problems, the sum of the data from the 31 provinces in this table do not exactly equal the national level figures.
Sources: China Economic Census, Vol. 2, pp. 384-385, Table 1-B-13; also Special Tabulations from the China National Bureau of Statistics.

8. Trends in China Manufacturing Labor Compensation

Annual data on manufacturing wage trends are collected from establishment data and published only for urban areas. Figures for other elements of total labor compensation are not available for most years. Table 10 and Figure 1 display trends in reported real wages for most urban manufacturing employees from 1985 to 2004. The average real wage for manufacturing workers in the cities multiplied three times in two decades.

As highlighted in Figure 1, the reported wages of manufacturing employees in China's cities have been rising rapidly in real terms since 1998. The average 2004 wage of 29.40 million "on-post urban manufacturing staff and workers" was 14,033 yuan,

according to annual establishment data, almost double the 1998 average wage for the same category of urban manufacturing employee, which was 7,301 yuan in constant 2004 yuan (Lett and Banister, 2006, Table 4).

Table 10. Average annual real wages of urban manufacturing staff and workers in China, 1985-2004

(In constant 2004 yuan)

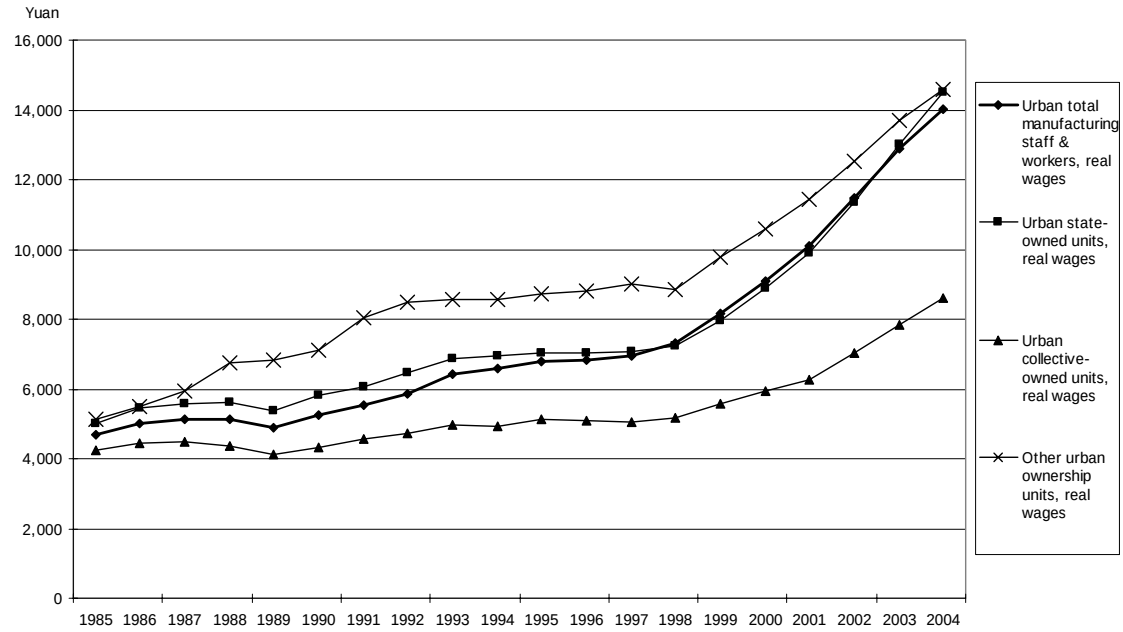
Year	Urban manufacturing staff and workers			
	Total	Urban state-owned units	Urban collective-owned units	Other urban ownership units
1985	4,688	5,019	4,252	5,127
1986	5,021	5,451	4,435	5,512
1987	5,131	5,593	4,470	5,931
1988	5,126	5,621	4,359	6,761
1989	4,895	5,373	4,110	6,822
1990	5,272	5,835	4,324	7,122
1991	5,541	6,075	4,558	8,041
1992	5,874	6,451	4,708	8,483
1993	6,426	6,851	4,962	8,576
1994	6,574	6,934	4,947	8,585
1995	6,791	7,044	5,120	8,739
1996	6,811	7,016	5,074	8,809
1997	6,947	7,051	5,059	9,012
1998	7,301	7,214	5,181	8,850
1999	8,163	7,971	5,574	9,761
2000	9,094	8,888	5,942	10,591
2001	10,085	9,892	6,281	11,427
2002	11,466	11,336	7,035	12,536
2003	12,908	13,016	7,850	13,700
2004	14,033	14,486	8,598	14,569

Note: This table includes only the reported annual wages, which have not been adjusted to include other labor compensation costs such as required employer payments to municipal social insurance systems.

Sources: China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers. *China Labor Statistical Yearbook 2005.* Beijing: China Statistics Press, 2005, p. 56. Based on original table for 1990-2004 in Lett and Banister, 2006.

Figure 1. Average annual real wage of urban manufacturing staff and workers in China, 1985-2004

(In constant 2004 yuan)



Source: Table 10.

China's total number of urban manufacturing staff and workers dropped from 46 million in 1985 to 29 million in 2004. In 1985, 30 million of the city manufacturing employees worked for state-owned enterprises and 16 million were employed by urban collective-owned units. Private sector manufacturing was negligible at that time. The wage range was narrow. But in the 1990s, private-sector manufacturing took off in the cities as employment shrank in state-owned and collective enterprises. The private sector paid better wages than state-owned enterprises and collective units had the lowest wages.

By 2004, 20 million of the 29 million urban manufacturing staff and workers were in the private sector (referred to as "other" ownership units in China's publications), the state-owned manufacturing enterprises employed only 7 million, and very few manufacturing employees remained in the urban collective units. By 2004, the average wage in state-owned units had caught up with the private sector wage, and both had risen steeply since 1998.

Wage data for TVE (non-city) manufacturing employees are available for only a short period of time. Trends in TVE wages are less well understood. Anecdotal observations suggest that manufacturing wages outside China's cities have been increasing much more slowly than urban manufacturing wages. Because manufacturing wages have climbed so rapidly in China's cities, many employers have begun moving their factories to locations outside cities because this steeply reduces their labor compensation costs.

Census Trends in Manufacturing Labor Compensation

Table 11 compares data on manufacturing employment and labor compensation derived from China's 1995 Industrial Census and the 2004 Economic Census. Unfortunately, in most ways the data are not directly comparable.

A figure of about 123.01 million manufacturing workers in China can be estimated from published 1995 Industrial Census data (China 1995 Industrial Census, 1997). The total declined to 104.60 million by 2004. In this 9-year period China manufacturing became more productive and required fewer workers to produce vastly more manufactured products.

Manufacturing employment in the 1995 Industrial Census was composed of two apparently mutually exclusive categories: manufacturing employment in enterprises at and above township level (72 million at yearend 1995), and manufacturing workers in village, private, joint, and individual enterprises (51 million). But labor compensation data were published only for the enterprises at and above township level, and for 15 million employees in the larger village, private, joint, and individual manufacturing enterprises with sales over 1 million yuan. It appears that no wage or other labor compensation data were collected for the manufacturing workers in smaller units in 1995.

We can make a rough comparison between 1995 labor compensation of manufacturing employees of enterprises at and above township level, which was annual labor compensation of 6,791.07 yuan calculated in 2004 yuan, and the 2004 total labor compensation of 18,043.05 yuan for employees of manufacturing enterprises of designated size and above. Real labor compensation of the 57 million employees in 2004 was 2.66 times the real compensation of the 71 million average 1995 employees of the largest category of manufacturing enterprises. In these 9 years, the average annual growth rate of labor compensation for these manufacturing employees was 10.9 percent per year.

As shown in Table 11, in 1995 labor compensation in the largest enterprises was only 25 percent higher than compensation in a smaller category of enterprises. By 2004 the disparity had widened so much that employees of manufacturing enterprises of designated size and above earned almost twice the compensation of employees in manufacturing enterprises below designated size.

Table 11. China, Manufacturing Employment and Labor Compensation, 1995 and 2004

1995 Industrial Census						
Category of employment	1995 yearend employment (millions)	Average 1995 employment (millions)	Total 1995 wage bill (in 100 million yuan)	Total 1995 welfare fund (in 100 million yuan)	Average 1995 labor compensation in 1995 yuan	Average 1995 labor compensation in 2004 yuan adjusted by CPI
Estimated total manufacturing	123.01					
Manufacturing at and above township level	71.91	70.77	3,654.20	531.03	5,913.51	6,791.07
Manufacturing village, private, joint, and individual enterprises	51.10					
Manufacturing village, private, joint, and individual enterprises with sales over 1 million yuan	14.70		696.51		4,739.07	5,442.34

2004 Economic Census			
Category of employment	2004 yearend employment (millions)	Average 2004 employment (millions)	Average 2004 labor compensation (yuan)
Estimated total manufacturing		104.60	13,313.61
Manufacturing enterprises at and above designated size		56.67	18,043.05
Manufacturing enterprises below designated size		24.13	9,079.95
Self-employed and household manufacturing	23.79		6,342.71

Notes: Data for 1995 are directly reported or derived from China's 1995 Industrial Census published data. Data for 2004 are from Table 7.
Sources: China 1995 Industrial Census, 1997; Table 7.

9. Global Competitiveness of China's Manufacturing Sector

Low Cost of Labor

It is widely agreed that low wages and low total labor compensation costs help to make manufacturing production in China competitive in the international market. One of the leading reasons that some of China's own domestic manufacturing industries can sell their products at home and abroad, and that multinational and other foreign companies are moving their manufacturing operations to China, is the low cost of employing manufacturing workers there.

The truly low cost of labor makes China particularly competitive in a number of manufacturing industries, including labor-intensive, assembly, and reprocessing industries; industries with low value added; those with simple repetitive steps in the manufacturing process; and food-processing industries. As one source puts it, "China has become an essential link in the global production chain for many labor-intensive products...a manufacturing hub for the rest of the world in low-end labor-intensive goods" (Hale and Hale, 2003, p. 46). China is not as competitive in capital-intensive and materials-intensive industries.

However, China is beginning to compete successfully in some kinds of moderately skills-intensive kinds of manufacturing. Large proportions of China's young adults now have at least a lower middle school education and therefore are basically literate and numerate. Also, millions of young and middle-aged workers from rural areas are eager to get out of the countryside and therefore willing to work hard in a disciplined manner for pay that is low by international standards, but higher than they can earn in agriculture. China also has many millions of university-educated young adults who are especially competitive because they are good in engineering and technical fields, are hard-working and motivated, and work for a fraction of the salaries received by equally capable young adults in developed countries.

Labor compensation in China's manufacturing sector is higher than it was a decade or two ago. This means that some other developing countries are now able to compete with China purely on the basis of wages and labor compensation per manufacturing worker. Real living standards have been rising in China's cities, and real wages have been rising for urban staff and workers in manufacturing.

Why are urban manufacturing wages rising rapidly in China? Some scholars argue that because labor productivity is rising rapidly in China's city factories, we would expect city manufacturing wages also to rise (Lardy, 2004). Among the forces driving the increase in urban manufacturing wages are a sustained rise in the returns to education and skill, as well as a wage premium for Communist Party members and others remaining in protected state-owned enterprises (Fox and Zhao, 2002). Rigidities in urban labor markets also have forced wages upward and impeded competition (Knight and

Yueh, 2004). In addition to the wage bill, required payments for other urban employee benefits have increased (Yang, 2003). China is trying to build a viable system of pensions, medical benefits, unemployment benefits, workers' compensation, and housing benefits, at least for its city population, as discussed previously. One source argues that required employer payments for these urban social safety net programs in China are now higher than they need to be--for example, substantially higher than in Malaysia, South Korea, Taiwan, and Singapore (Rawski, 2003, p. 27).

As wages and mandated social insurance payments increase, urban China becomes less competitive in the global context and even in the domestic Chinese context. Shanghai, for example, is beginning to become too expensive for many manufacturing concerns: "The massive influx of investment and rapidly improving standard of living has driven up labor costs in Shanghai, almost high enough to price Shanghai out of the market" (McDaniels, 2004, p. 8). Many businesses are now locating elsewhere. Some businesses are moving from the city to the poorer inland province of Anhui (French, 2004, p. A7). Cities throughout China are much more expensive for manufacturing than even their nearby suburbs. Factories can save a third in power costs and half in wage bills just by relocating a factory half an hour's drive outside of Guangdong's capital city of Guangzhou (*Economist*, Nov. 20, 2004, p. 44).

Many manufacturing companies are now choosing to move their production operations from developed countries or from China to other developing countries with lower labor costs. For instance, India, Pakistan, and Vietnam are becoming competitive as textile and apparel producing and exporting countries because the cost of textile production is generally lower there than in China (Xin and Liang, 2004). Of course, China remains highly competitive globally because of its relatively low labor costs and many other favorable factors, but rising labor compensation in China has begun to erode the country's manufacturing price advantage.

The leading reason that China is so competitive in manufacturing for the international market as well as its own domestic market is the low cost of labor in China. But China has other competitive advantages over most other countries as well.

China's Domestic Market

Of the world's total population, 21 percent live in China. They provide a far larger domestic market for manufactures than any other developing country today; the hugely populous country of India is also an enticing manufacturing market (see also McGuckin and Spiegelman, 2004, pp. 4, 23). Though China is still a lower middle income country, ordinary people buy some manufactured goods, providing a ready market for the least expensive manufactured products. More important, China has a growing middle class and a small luxury class, especially in cities.

Because of its huge consumer base, China is already the world's biggest market for television sets, refrigerators, and mobile phones, and China ranks third after the U.S. and Japan in sales of personal computers (Smith, 2002, p. 2; Ramstad, 2004, p. A9). No matter how China's luxury class or middle class consumer base is defined or calculated, it is clear that the growing domestic market is a factor drawing manufacturers to China. Indeed, multinational corporations from the most developed countries and economic blocs—the U.S., Western Europe, and Japan—aim their foreign direct investment (FDI) into China primarily at capital-intensive, technology-intensive, and skill-intensive products and services aimed at China's domestic market, in contrast to the FDI from Hong Kong, Taiwan, Singapore, and South Korea into China, which is concentrated on labor-intensive, relatively low-technology manufactured goods to be exported to the international developed country market (Zhang, 2001).

Convenient Logistics in Coastal Regions of China

In certain coastal regions of China, especially the Pearl River Delta region of Guangdong Province near Hong Kong and Macao, the Yangtze River Delta region including Shanghai and Zhejiang and southern Jiangsu Provinces, the Fujian Province coastal areas across from Taiwan, the Beijing-Tianjin region, and other coastal cities including Qingdao and Dalian, the local infrastructure supports comparatively low-cost and efficient manufacturing production. Huge networks of component suppliers have concentrated in these places, providing manufacturers with many choices for basic parts and with the ability to pit vendors against one another (Ramstad, 2004, p. A9; Stalk and Young, 2004, p. B3). "The critical mass of factories, subcontractors, and specialized vendors has created a manufacturing environment with which few can compete" (Garten, 2002, p. 20). Transportation and telecommunications networks are adequate in these areas. Improving infrastructure has been an important factor bringing FDI to China's coastal regions (Zhang, 2001). Also in the booming coastal cities, there are large numbers of educated and bilingual or multilingual local Chinese to staff the professional and managerial layers of manufacturing concerns, and they are willing to work for moderate salaries.

Relatively Stable Political and Economic Situation

If a company located in an economy with high labor costs wishes to move its manufacturing operations to a lower-cost environment, why would it choose China? Many other poor countries have extremely low costs of labor as well. But many developing or poor countries are not attractive because they have unstable political, economic, and financial situations. China is not a perfect manufacturing environment by any means, but there is relatively low terrorist risk, civil unrest does not destabilize the economy, there are few public safety concerns for multinationals' property and personnel, and the economy and financial system are functioning—-not supremely well

but at least adequately. Multinational firms are thought to allocate their investment among countries so as to maximize their risk-adjusted profit (Caves, 1996; Zhang, 2001). China compares rather well with other less developed countries when both risk and costs of production are considered.

Current Shortcomings in China Manufacturing

China has some weaknesses as a manufacturing base. One of the most serious problems is China's poor record in protecting intellectual property such as patents, trademarks, and copyrights. In addition, there are other practical problems such as shortages of electric power and raw materials. There is also some concern in China that there is too much continuing investment going into China's manufacturing sector:

> Economists note surging manufacturing capacity in already-glutted industries. China's auto industry has enough capacity to make 8 million units a year, far above the 5.7 million in sales in 2005. Supplies of about 70 percent of all consumer goods exceed demand, according to the Ministry of Commerce—factors that contributed to a tripling in China's exports over the past five years (Kurtenbach, 2006).

10. Conclusions and Research Suggestions

This report has utilized recent high quality data to estimate total labor compensation in China manufacturing. Based on China's First Economic Census, the analysis shows that China averaged about 104.6 million manufacturing employees in 2004. These manufacturing workers averaged US$0.72 in hourly labor compensation.

The labor compensation and employment estimates can be combined with output estimates for China's manufacturing employees in each reported category, and for 30 subsectors of manufacturing, to derive Unit Labor Cost estimates for China manufacturing. This is a more refined way to determine each country's relative competitiveness in manufacturing production. The Conference Board has developed these ULC estimates for China and many other countries (Van Ark, Banister, and Guillemineau, 2006), and new work looking at the provincial level has now been released (Chen et al., 2007). Businesses in all countries are most interested in their competitors in their own branch of business, so the ongoing analysis by manufacturing subsector will be especially useful for manufacturing companies.

Future research should branch out beyond manufacturing. The Economic Census gathered better data than ever before available on China's service and financial branches

of the economy. Construction, transport, and energy sectors also deserve more research attention. Research should emphasize not only labor compensation but also human capital and productivity in these important branches of the economies of China and other countries.

Much more research is also needed on labor migration in China. This ongoing movement of workers is a powerful component and a driving force of China's phenomenal economic transformation from the beginnings of the economic reform in 1978 until today. This factor will continue to be important. China's collection of statistics on this component of the workforce and analysis of the data so collected should catch up with this key demographic reality.

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