

Manufacturing earnings and compensation in China

On the basis of published earnings data, estimated compensation ratios, and estimated hours, China's manufacturing employees averaged about 57 cents compensation per hour worked in 2002

Judith Banister

With by far the world's largest manufacturing workforce, at more than 100 million,¹ China is widely known to have low labor costs. Statistics available for the first time for the entire country for 2002 now permit the estimation of those costs with some degree of precision. Employees in China's city manufacturing enterprises received a total compensation of \$0.95 per hour, while their noncity counterparts, about whom such estimates had not previously been generally available, averaged less than half that: \$0.41 per hour. Altogether, with a large majority of manufacturing employees working outside the cities, the average hourly manufacturing compensation estimated for China in 2002 was \$0.57, about 3 percent of the average hourly compensation of manufacturing production workers in the United States and of many developed countries of the world. Equally as striking, regional competitors in the newly industrialized economies of Asia had, on average, labor costs more than 10 times those for China's manufacturing workers; and Mexico and Brazil had labor costs about 4 times those for China's manufacturing employees.

This article evaluates the quality and usability of China's statistics on manufacturing earnings and labor compensation for 2002—the most recent year for which adequate data are available—and for the period since 1990. The analysis demonstrates that China has released just enough relevant data on average annual earnings and labor-related employer costs to derive 2002 estimates of annual labor compensation for 30 million city manufacturing employees² and 71 million noncity manufacturing employees—those working in town and village

enterprises (TVE's).³ Combining the published earnings figures and adjusted labor compensation figures for these two groups results in a reasonable approximation of average 2002 labor compensation per manufacturing employee in China. A national time series on compensation for China could not be developed due to the lack of earnings data for the country's noncity manufacturing workers prior to 2002; however, data on trends in real (price-adjusted) earnings for city manufacturing employees from 1990 onward are available and show a sharp upward trend since 1998.

Because China has not systematically collected and reported adequate data on actual hours worked by manufacturing employees for the whole year 2002 or, indeed, for any full year, this article uses published partial labor force survey information and a set of hypotheses to estimate annual hours worked by city and noncity manufacturing employees, thus calculating approximations of average 2002 hourly labor compensation in manufacturing for these two categories of manufacturing employees and for China as a whole. Labor compensation estimates are converted into U.S. dollars at the official exchange rate for 2002.

The article also assesses the probable biases in China's statistics on manufacturing earnings and total labor compensation. The analysis that follows argues that city manufacturing enterprises in particular have powerful incentives to underreport earnings and other elements of the compensation provided to their employees. The main purposes of underreporting employee compensation are to avoid taxes and to minimize required employer and employee payments to social insurance and employee housing funds administered by urban authorities.

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There is, however, a competing bias in city manufacturing employment and earnings data. Indirect evidence indicates that many city manufacturing workers are not included in these numbers at all. In particular, the lower paid migrant manufacturing workers seem to be considerably underrepresented in the reported urban employment data for cities, and the earnings of most of the comparatively poorly paid migrant workers in general also appear to be excluded from urban manufacturing earnings data. Whether the net result of these competing biases is to underreport or overreport earnings of the average urban manufacturing employee for 2002 is unclear; however, it is likely that the exclusion of the more stagnant earnings of the rural-to-urban migrants leads to some exaggeration of the trend of rising average earnings in city manufacturing for the 1990–2002 period.

The analysis that follows discusses the cost to employers of employee compensation and the competitiveness of Chinese manufacturing in the global economy. For comparative purposes, official exchange rates were used to convert compensation costs to U.S. dollars. The official exchange rate is the appropriate conversion rate for compensation cost comparisons, because it reflects the cost in U.S. dollars that employers must actually pay for Chinese labor. Compensation costs converted with the use of commercial exchange rates do not, however, indicate relative living standards of workers or the purchasing power of their income, for at least two reasons. First, because they include costs that are not paid directly to the worker, compensation costs do not provide an accurate portrayal of worker income. Second, prices of goods and services vary greatly

The Bureau of Labor Statistics has been a leader in compiling international comparisons of hourly compensation of manufacturing workers over a wide range of countries. Despite its large and growing importance in world manufacturing, China has not been included in the comparisons because of difficulties in obtaining and interpreting that country's data and because of concerns about the quality of the data. Although the two *Monthly Labor Review* articles by Judith Banister have greatly facilitated understanding of Chinese employment and compensation statistics, many problems with data availability, coverage, and reliability remain, as described in the articles. Therefore, the Bureau does not plan to include China in its regular comparisons of hourly compensation costs at this time. These articles and the associated report on the BLS Web site, which have been funded by the Bureau, are intended as first steps toward developing the measures necessary to include China in the regular comparisons series that currently includes 31 countries. Because of the widespread interest in expanded country coverage, the Bureau is indeed considering providing data on China, along with data on some other countries, the quality of whose data is problematic, but in a separate format with appropriate annotations. As better data become available, China and other countries could be moved into the regular comparisons series.

Division of Foreign Labor Statistics, Bureau of Labor Statistics

among countries, and the official exchange rate is not a reliable indicator of the relative difference in prices between China and other countries.⁴

As will be demonstrated in the analysis, the numbers frequently published in the global and U.S. popular media on the low compensation of China's manufacturing workers (\$0.40–\$1.50 per hour) are within the realm of reasonable estimates. China is indeed a relatively low wage manufacturing environment, and the country also enjoys other advantages that give it a competitive edge over many other manufacturing locations around the world.

This article is the second of a two-part series on manufacturing labor statistics in the People's Republic of China (hereinafter, "China").⁵ The earlier article⁶ focused on levels and trends of manufacturing employment; this one estimates average hourly labor compensation for China's manufacturing employees. A more detailed exposition of the analysis in the two articles is found on the Bureau of Labor Statistics (BLS) Web site.⁷ Occasionally, that report refers to terminology in Chinese because the standard English translations of the terms are misleading or ambiguous and, in some cases, because there is no succinct and accurate English translation of the term. A complete glossary of Chinese terms used in this and the earlier article can be found at the end of the report on the BLS Web site.

Background

The Bureau of Labor Statistics publishes estimates of hourly compensation costs for production workers in manufacturing for 31 economies on its Web site.⁸ Although most of the countries are developed countries with high-quality data, some developing countries with adequate data also are included. The Bureau is working to add countries, including China, to the published list, but BLS standards for the quality of statistics are high. Data for China are not yet in accord with BLS comparability definitions. (See box, this page.) This article assesses the quality and completeness of those statistics which are available on manufacturing earnings and compensation in China.

The subsequent analysis is based as much as possible on information published by China's official statistical organizations. Most statistics for China are collected under the central guidance of the National Bureau of Statistics (NBS) and often are published jointly with the Ministry of Labor and Social Security (hereinafter, Ministry of Labor). Collecting data on manufacturing employment and earnings in TVE's, however, is the responsibility of the Ministry of Agriculture, and data on the earnings of noncity manufacturing employees were first published for the year 2002.⁹

Focusing on 2002, the most recent year for which adequate data are available, the upcoming discussion tabulates information on earnings, required social benefit payments, and other

labor compensation and derives annual, monthly, and estimated hourly manufacturing labor compensation, in Chinese yuan, for urban, TVE, and all-China manufacturing employees. These estimates are then calculated in U.S. dollars at the official exchange rate.

The annual data on labor compensation in manufacturing used in this article come from the annual yearend statistical reporting system. (China's censuses do not ask for earnings data.) In China's cities and, to a lesser extent, outside the cities, each enterprise, economic unit, small business, or self-employed individual or group is required to report employment and earnings data each year according to the group's "labor situation" the previous year and at the previous yearend. The data are then compiled upward in a statistical reporting chain to the national government. Accountants or those who report employment and earnings figures on behalf of their enterprises or other work units (at least, those in urban areas) are given detailed instructions on how to report monthly, quarterly, yearend, and average annual figures on employment and earnings. The instructions are based on regulations released by the NBS, especially those released in 1990, with further clarifications in 1998 and 2002.¹⁰

In reporting annual statistics on employment and earnings, China's NBS and Ministry of Labor use an administrative reporting system that ignores the progress China has made in the statistical definitions of "urban" and "rural" during the last several decades. As mentioned in the earlier companion piece to this article, in statistical publications on China's labor force, employment and earnings data labeled "urban" actually refer to cities and exclude employees working outside narrowly defined city boundaries. Even factories located in suburbs, large industrial parks, and towns that have been officially established as urban places since the 1980s are excluded from the so-called urban statistics on employment and earnings. In the tables and charts of the current article, statistics are faithfully shown as they were reported in official publications. In the text, the word "city" often is used to describe the "urban" data, simply because those data actually refer to city employees and their earnings. By contrast, the term "town and village enterprises" (TVE's) seems to cover not only rural areas, but also factories in urbanized places outside narrow city boundaries. Accordingly, the text uses the word "noncity" to refer to TVE data.

The concept of compensation

The BLS measures of hourly compensation costs include both data on hourly direct pay (which includes pay for time worked, pay for vacations and holidays, bonuses, in-kind pay, and other premiums) and data on employer social insurance expenditures and other labor taxes (which include employer expenditures for legally required insurance programs and contractual and private benefit plans, as well as other taxes on payrolls or employment).

China's statistical authorities at the NBS also try to use an internationally recognizable definition of employee compensation in the calculation of China's gross domestic product. The NBS defines what it variously translates as "compensation of employees" or "laborers' remuneration" (*laodongzhe baochou*) as follows:

Laodongzhe baochou refers to the whole payment of various forms earned by the laborers from the productive activities they are engaged in. It includes wages, bonuses, and allowances the laborers earned in monetary form and in kind. It also includes the free medical services provided to the laborers and the medicine expenses, transport subsidies, social insurance, and housing fund paid by the employers.¹¹

This passage suggests that China's government either collects data on these various components of worker compensation or at least estimates them for its calculations of China's gross domestic product.

The subsequent analysis begins with a description of Chinese earnings statistics on manufacturing workers and then describes the sources and methods of estimating the nonearnings portions of compensation—that is, the social insurance expenditures that employers must pay on behalf of employees. Two issues that are relevant to the estimation of social insurance expenditures, namely, the difference by city in mandatory social insurance contribution rates and the likely underreporting of earnings to minimize tax and social insurance contributions, are discussed. The article then examines the difficult issue of estimating working time in manufacturing in order to construct estimates of compensation on a per hour basis. Following an analysis of the compensation of manufacturing employees in export-oriented industries and of migrant workers, the discussion touches on how manufacturing earnings in China have changed over time and how the compensation estimates in this article compare with those published in other venues. Finally, the implications of the current research results for China's competitiveness are explored.

Throughout the analysis, separate estimates are made for urban workers and TVE workers, because the data sources and the working situations that relate to each group are different. Where possible, national estimates combining the two groups are made as well.

Reported manufacturing earnings in Chinese currency

Earnings and other compensation data for manufacturing workers in China are poorly and partially reported. The available data on "wages" or "earnings" come from the annual yearend reporting system, and the fragmentary figures are published in the *China Labor Statistical Yearbook* and, for TVE employees,

China Village and Town Enterprise Yearbook 2003.¹² Average annual remuneration for manufacturing workers is called “wages” (*gongzi*) when referring to staff and workers, but is called “earnings” or remuneration (*laodong baochou*) when referring to the other employees of urban manufacturing units. The two terms appear to mean the same thing, and both are defined as follows:

The total wages and total earnings are calculated this way: They include whatever is paid to or for the workers in money or in kind according to relevant regulations, including salaries paid for a certain time period or payments based on piece work, bonuses, allowances, subsidies, overtime pay, and pay for dangerous or challenging duty.¹³

In this article, the term “earnings” designates the wages or earnings of both urban and TVE manufacturing employees in cash and in kind, as reported to statistical and tax authorities. The term does not include the social insurance payments that employers are required to pay to city or county authorities on behalf of their employees or the welfare fund payments given to employees in the enterprises. The terms “compensation” and “total compensation” include earnings plus these other elements of total labor compensation in manufacturing. These definitions correspond to the definitions used by the Bureau of Labor Statistics in its international report on hourly compensation costs.

Table 1 shows that the 30 million on-post employees of manufacturing enterprises in China’s cities had average reported earnings of 11,152 yuan for the year 2002.¹⁴ Of these employees, 95 percent were on-post (not laid-off or unemployed) “staff

and workers” whose earnings that year averaged 11,001 yuan, and 5 percent were the 740,000 “other” city manufacturing workers, who averaged much higher earnings of 17,237 yuan in 2002 (in part because this category includes foreign employees of China’s manufacturing companies and reemployed or still employed retirement-age workers with high seniority, and both these groups probably get higher earnings than the average for “staff and workers”).

The 11,152-yuan average annual earnings figure of the 30 million workers in manufacturing urban units masks a wide range of earnings in different urban manufacturing subsectors, as shown in table 2. For example, the lowest-paid group of city manufacturing workers is the 3 million textile industry workers, whose earnings average 7,268 yuan per year. The 5 million city manufacturing workers in the subsectors of timber and bamboo products, food processing, nonmetal mineral products, paper products, furniture manufacturing, and “other” manufacturing also earn less than the average urban worker: their reported average annual earnings are less than 9,000 yuan. At the other end of the pay spectrum, the 7.5 million city manufacturing workers in tobacco processing, electronics and telecommunications, petroleum processing, ferrous metal smelting, transport equipment manufacturing, and medical and pharmaceutical products all have average annual earnings of 13,000 yuan or higher.

The recorded 9 million laid-off manufacturing workers still nominally connected to their manufacturing units averaged a small annual living subsidy of 2,213 yuan. (See table 1.) This kind of payment might be considered similar to payments of unemployment compensation for laid-off or unemployed workers in developed countries.

Table 1. Published earnings of manufacturing employees in China, 2002

Category of manufacturing workers	Total earnings paid (billions of yuan)	Number of employees (yearend, millions)	Average number of employees (millions)	Average earnings per employee (yuan)	Average living subsidy (yuan)
Manufacturing in urban units	334.39	29.81	² 29.98	11,152	—
On-post urban manufacturing staff and workers	321.90	29.07	29.26	11,001	—
Other urban manufacturing employment	—	.74	—	17,237	—
Laid-off urban manufacturing staff and workers	—	9.13	—	—	2,213
Manufacturing TVE's ¹	489.22	70.87	² 70.62	² 6,927	—
Large-scale manufacturing TVE's ¹	168.94	19.05	² 18.98	² 8,899	—

¹TVE's are town and village enterprises.

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

NOTES: Dash indicates data are not available or not applicable. In the sources, remuneration for workers in urban manufacturing units and for other urban manufacturing employees is called “earnings” (*laodong baochou*), whereas remuneration for on-post urban manufacturing staff and workers is called “wages” (*gongzi*). For manufacturing TVE's, only the total 2002 expenditure for earnings (*laodongzhe baochou*) is reported; the average per employee is not

directly reported. All figures for manufacturing in urban units exclude self-employed individuals and small privately owned firms.

SOURCES: China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 29, 34, 46, 169, 171, 179, 230, 243, 249, 473; China Ministry of Agriculture, TVE Yearbook Editorial Committee, ed., *China Village and Town Enterprise Yearbook 2003* [in Chinese] (Beijing, China Agriculture Publishing House, 2003), pp. 130–31.

Table 2. Urban manufacturing employment and earnings by subsector in China, 2002

Urban manufacturing subsector	Urban employees (yearend)	Average earnings per employee (yuan)
Total manufacturing in urban units ...	29,984,619	11,152
Tobacco processing	233,485	23,744
Electronics and telecommunications ...	1,623,783	17,636
Petroleum processing and coking products	565,505	17,357
Smelting and pressing of ferrous metals	1,900,648	15,032
Transportation equipment manufacturing	2,319,421	14,409
Medical and pharmaceutical products	844,857	13,207
Instruments and office machinery ...	464,762	12,720
Smelting and pressing of nonferrous metals	755,646	12,491
Electric equipment and machinery ...	1,441,399	12,405
Chemical fibers manufacturing	263,378	11,404
Printing and record medium reproduction	493,497	10,863
Ordinary machinery manufacturing ...	1,921,315	10,668
Special-purpose equipment manufacturing	1,400,594	10,406
Cultural, educational, and sport products	294,636	10,390
Chemical raw materials and products	2,213,256	10,359
Plastic products	606,800	10,131
Metal products	897,455	10,075
Food products manufacturing	621,757	10,064
Rubber products	377,633	10,055
Beverage manufacturing	740,250	9,619
Leather, furs, down, and related products	578,590	9,108
Garments and other fiber products	1,336,191	9,066
Furniture manufacturing	180,484	8,881
Other manufacturing	601,416	8,781
Papermaking and paper products	592,400	8,668
Nonmetal mineral products	2,116,034	8,123
Food processing	977,439	7,965
Timber, bamboo, natural fiber and straw products	267,666	7,339
Textile industry	2,841,565	7,268

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

SOURCES: China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 179 and 218–25.

In years prior to 2002, earnings data were not published for manufacturing workers outside the cities. For the reported 71 million manufacturing TVE employees in 2002, the Ministry of Agriculture published, for the first time, the total earnings (*laodongzhe baochou*) paid out for that entire year in all manufacturing TVE's.¹⁵ Average annual earnings per worker are derived in table 1 in the same way that the average annual earnings are calculated for urban manufacturing workers. TVE manufacturing workers averaged 6,927 yuan in reported earnings

in 2002, 62 percent of the average earnings that year for employees of urban manufacturing units. Workers in large-scale manufacturing TVE's had higher average 2002 earnings of 8,899 yuan, 80 percent of the average reported earnings for employees of urban manufacturing units.

What forms of remuneration are included in the average annual earnings figures for China's manufacturing employees? Exhibit 1 lists all the items whose value is required to be included in earnings data reported by enterprises in urban China for their on-post manufacturing staff and workers, based on written instructions to enterprise accountants and statistical personnel. Most forms of income, benefits, and subsidies in cash and in kind are on this list. Cash salary and earnings payments, housing and transportation provided to workers, meals given to them, and the value of income tax and social insurance payments deducted from earnings and remitted to the government on behalf of employees are all required to be included in the "total earnings" figure, based on relevant reporting regulations.

One group of benefits that is provided by some of China's manufacturing enterprises to employees, but that is specifically excluded from the earnings figures, is the use of a company medical clinic or the payment of some employee hospital costs.¹⁶ It would seem that this is an important group of benefits which, conceptually, ought to be included in earnings data. But many countries share this shortcoming in earnings statistics, with the result that the Bureau of Labor Statistics specifically excludes the costs of medical clinics in plant facilities from its comparative international data on labor compensation in manufacturing.¹⁷ This article does not include any estimation of these particular medical benefits which are missing from China's earnings data.

One important difference between China's earnings data shown in table 1 and the data used by the Bureau in its international comparisons is that the Bureau data relate only to production workers, while the Chinese data relate to all employees—that is, both production and nonproduction workers. Because production workers typically have lower wages than those of nonproduction workers, it is likely that the inclusion of both types of workers in the Chinese data leads to higher earnings levels. However, the production worker data necessary to match the BLS concept are not available for China, so it is unclear how much lower Chinese earnings for production workers would be.

The earnings data do not include figures for the comparatively small privately owned manufacturing groupings and the self-employed manufacturing workers in China's cities. These two categories of workers together totaled 8.2 million (22 percent of China's reported total of urban manufacturing workers) in 2002, according to China's State Administration for Industry and Commerce.¹⁸ This feature of China's earnings data parallels the same dearth in manufacturing earnings data from many countries. For reasons of practicality, if a country does not include earnings for employees in small manufacturing units in its earnings data,

Exhibit 1. Components of Chinese urban earnings statistics

The statistical concept of wage (*gongzi*) or earnings for on-post urban “staff and workers” includes the following components, whether the employees receive the earnings or benefits in money or in kind and whether the earnings or benefits are or are not taxable items:

Monthly or annual salary income (including base earnings and additions based on position, seniority, wage scale, and so on)	Housing subsidy (dormitory provided, or directly subsidized rent or purchase of housing)
Earnings during on-the-job training, probationary period	Individual income tax deducted from earnings and paid directly by enterprise to government
Employee income paid on an irregular basis	Social insurance funds (pension, medical, unemployment insurance funds, and housing purchase fund) deducted from the employee's wage and paid by the work unit to government on behalf of the employee
Hourly payment for work performed	Money for rent, and utilities (electricity, water)
Piecework payment for work performed	Money given for fixed line or mobile phone
Bonus payments	Clothing subsidy
Incentive, performance-based payments	Subsidy compensating workers for lack of vacation time
Overtime pay	Earnings during approved leaves of absence, pay for time not worked (regular vacation, compassionate leave, to visit relatives, family-planning operation, national or societal duty, study leave, leave due to sickness or injury)
Hardship, danger pay	Anything that has the nature or spirit of labor earnings, even if it is not spelled out in the regulations
All kinds of subsidies in cash or in kind	
Festival, holiday subsidy	
Travel money, food allowance while traveling	
Transport subsidy (car or shuttle bus provided, cash for bus or taxi, and so on)	
Personal services such as baths, haircuts	
Books, newspapers, magazines provided for employees	
Meals provided, food allowance	

SOURCE: *Laodong gongzi; tongji taizhang* [Labor wages; statistical accounts] (Beijing, Beijing Municipality Statistical Bureau, 2004), pp. 2–1 to 2–5.

the Bureau also excludes the employees and compensation for these units from its estimates of hourly labor compensation in manufacturing.¹⁹ Self-employed workers in manufacturing also are excluded from the Bureau's estimates. Using data from manufacturing censuses, the Bureau has researched the effect of excluding such earnings and found it to be small.

Estimating total 2002 compensation in manufacturing

To estimate total compensation for China's manufacturing employees, it is necessary to add to the reported earnings 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 earnings data.

In the urban areas, employers pay considerable sums for social welfare benefits on behalf of their employees, above and beyond the employees' earnings. 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.²⁰ 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 mandatory, and stiff penalties are specified for noncompliance,²¹ but noncompliance is rampant and penalties are rarely enforced.

The payments deducted from employee earnings for the six public funds and remitted to city governments are included in the reported earnings data (see exhibit 1), but the part paid by employers is excluded.²² Legally required payments to government social insurance and employee benefit programs are included in the BLS concept of compensation,²³ so, in order to adjust the reported manufacturing earnings to include legally required employer social insurance payments and other labor compensation costs, one needs to know the overall per-

centage of the total earnings bill that urban manufacturing employers paid in 2002 for social insurance and required housing fund payments, as well as other employee benefit payments. China's Ministry of Labor conducted a survey of 11,704 urban enterprises in 51 large and medium-sized cities throughout the country and collected all relevant worker compensation data from these organizations for the year 2002.²⁴ This article uses the results of that large survey to estimate average labor compensation costs in urban manufacturing above and beyond the reported earnings data for 2002 given in table 1. On the basis of the results of this Labor Ministry survey, the reported 2002 annual earnings should be increased by an amount equivalent to 53.8 percent of earnings to estimate the following labor compensation costs (expressed as a percentage of urban earnings) actually paid by employers:²⁵

<i>Cost</i>	<i>Percent</i>
Required employer social insurance payments to the government	28
Required housing fund payments	4
Additional employee welfare costs not included in earnings	12
Other labor-related costs not specified in detail	10

In table 3, therefore, average 2002 total compensation for employees of urban manufacturing enterprises is estimated to be 17,152 yuan.

Note that the amount China's urban employers are required by law to remit to the government every month as the employer

contribution to the social insurance system and, in some cities, the home purchase fund varies from city to city.²⁶ For example, the following tabulation shows the additional amount, expressed as a percentage of earnings, that manufacturing employers in three cities are required to contribute:²⁷

<i>Contribution</i>	<i>Changshu City, Wuxi City,</i>		
	<i>Jiangsu Province</i>	<i>Jiangsu Province</i>	<i>Beijing Municipality</i>
Old-age pension fund	16.5	22.0	20.0
Medical insurance fund	8.0	8.0	9.0
Unemployment insurance	2.0	2.0	1.5
Workers' compensation insurance .....	.6-.8	—	1.0
Maternity leave insurance	1.0	—	—
Employee housing fund	—	—	8.0

Not only do the required employer contributions vary by municipality and city, but also, the amounts have been increasing over time. Therefore, it is likely that the legally required employer contribution to the social insurance funds for the average manufacturing employee has increased since 2002.

The inclusion in total labor compensation of the amorphous, vaguely reported categories of welfare costs and other unspecified labor-related costs just discussed may help offset some of the likely downward biases in the basic earnings data. To minimize individual and corporate taxes and required social insurance payments, urban employers tend to underreport earnings to the extent possible, neglecting to include some in-kind benefits in the reported earnings and offloading as many employee subsidies and benefits as possible into the welfare

Table 3. Estimated labor compensation of manufacturing employees in China, 2002

Category of manufacturing workers	Average number of employees (millions)	Average earnings per employee (yuan)	Annual compensation per employee		Monthly compensation per employee		Hourly compensation per employee	
			Yuan	U.S. dollars	Yuan	U.S. dollars	Yuan	U.S. dollars
Total for manufacturing urban units and TVE's ¹	100.61	8,186	10,363	\$1,252	864	\$104	4.73	\$0.57
Manufacturing urban units	29.98	11,152	17,152	2,071	1,429	173	7.87	.95
On-post urban manufacturing staff and workers	29.26	11,001	16,920	2,043	1,410	170	7.76	.94
Other urban manufacturing employment .....	.72	17,237	26,511	3,202	2,209	267	12.17	1.47
Manufacturing TVE's ¹	70.62	6,927	7,481	904	623	75	3.40	.41
Large-scale manufacturing TVE's ¹	18.98	8,899	9,611	1,161	801	97	4.37	.53

¹TVE's are town and village enterprises.

that TVE workers perform 2,200 hours per year. (See text for details.)

NOTES: Total labor compensation for urban workers is 1.538 times earnings and for TVE workers is 1.08 times earnings. U.S. dollars are calculated at the 2002 prevailing commercial exchange rate: 8.28 yuan = U.S.\$1. Hourly compensation is calculated under the assumption that urban manufacturing employees perform 2,179 actual hours of work per year and

SOURCES: Table 1; China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 29, 34, 46, 169, 171, 179, 230, 249, 473; China Ministry of Agriculture, TVE Yearbook Editorial Committee, ed., *China Village and Town Enterprise Yearbook 2003* [in Chinese] (Beijing, China Agriculture Publishing House, 2003), pp. 130-31.

fund category or “other” labor compensation category. (Underreporting of urban manufacturing employment and earnings is discussed shortly.)

For TVE manufacturing employees, there is ample evidence that the reported earnings 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. For example, by the end of 2002, the number of rural and smalltown workers with any rural social pension insurance was minuscule.²⁸ China’s urban 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 essentially do not exist in China outside of cities today.²⁹ 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 earnings, 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 TVE’s in counties under Nanjing’s administration.³⁰ Now, on the one hand, these TVE’s surely had an exceptionally high level of welfare benefits compared with those offered by all manufacturing TVE’s in China during those years, both because TVE’s in counties near major cities have better social welfare benefits than TVE’s elsewhere and because large TVE’s have better benefits than average-sized TVE’s. On the other hand, average manufacturing TVE worker welfare benefits in 2002 were very likely a higher percentage of those workers’ total compensation than in earlier years. Therefore, pending the discovery of better data for 2002, the average total of social insurance and other welfare benefits for China’s manufacturing TVE employees can be tentatively estimated to be in the range from 0 percent to 16 percent of their total earnings. A reasonable estimate of such employee benefits for the average TVE employee in 2002 is 8 percent, the midpoint of the range. Table 3 estimates average annual total compensation for TVE employees at 7,481 yuan.

Underreporting of urban manufacturing employment and earnings

China’s people and work units were unaccustomed to paying income taxes, value-added taxes, corporate income taxes, or high payments for social insurance during the Maoist decades from 1949 to 1978. The government extracted the money for its budget in other ways, but not so visibly as the way taxes are taken out now. Individuals got benefits in both urban and rural areas, while earnings were kept very low. Today, during the post-Mao economic reform era, employers appear to have developed a culture of tax avoidance. For example, when foreign and multinational companies come to China and attempt to acquire, or set up a

joint venture or merger with, a (usually state-owned) Chinese company, the foreign company insists on engaging in a due diligence process to determine whether the joint venture, merger, or acquisition is in the interests of its owners and shareholders. The auditors and accounting companies frequently discover that the target company has two sets of books: “Most domestic enterprises keep separate sets of ‘management accounts’ and ‘tax accounts.’”³¹ The “tax ledger” is the set of employee and financial data reported to the tax and other authorities, and the “administrative ledger” records a more accurate picture of the numbers of employees, their actual earnings, the true costs and income of the company, its actual profits, and more. The tax ledger is designed to minimize tax exposure, particularly corporate income taxes, value-added taxes, personal income taxes for employer and employees, and required social benefit payments. It is believed that non-public-sector domestic Chinese enterprises avoid taxation and social benefit payments to an even greater extent than the state-owned and collective-owned enterprises.

Such tax avoidance in the manufacturing sector probably has a number of implications.³² First, many urban employees, especially those who are in-migrants and do not have city residence permits or those who are temporary or part-time workers, may be left off the books entirely, at least with regard to what is reported to authorities. When they are, their employment is kept informal, and neither the employee nor his or her earnings, which are paid in cash, are reported. This means that the employee can avoid paying income tax and any required social insurance deductions, while the employer can avoid paying the required social insurance payments for the employee. As a result, actual manufacturing employment may be underreported in China’s statistics, especially in the urban figures.³³

Second, even when employment is reported to authorities, both employer and employees tend to collude to minimize reported earnings. Employers in urban areas are required to remit to the city government social insurance and other payments that are calculated as a percentage of the unit’s reported total earnings. These required payments are high by international standards and have been increasing rapidly: “high contribution rates are leading to high rates of evasion in the basic pension system,” as well as evasion of other required social welfare payments.³⁴ Many employers might perceive that the required payments are squeezing their profits and are burdensome; they would therefore have an incentive to underreport employee earnings. Some of the money actually given to employees (as bonuses, overtime pay, or financial subsidies of various kinds) may not be reported as earnings, instead getting shifted to the welfare fund category or other unspecified labor-related cost category; thus, it is important to include these labor cost categories in a realistic estimate of urban manufacturing labor compensation in China. It is also likely that many urban enter-

prises underreport or leave out of reported earnings the value of some benefits provided in kind to employees (for example, meals, housing, transportation, and food distributions). Therefore, it is likely that even the earnings of urban manufacturing workers whose employment is reported to authorities are systematically underreported.

Those employees whose employment is not reported to the authorities at all, whether in urban or rural areas, are usually paid lower wages than other employees. According to anecdotal evidence, the going rate for an unskilled rural or migrant worker in nonagricultural work in China today is about 500–600 yuan per month, plus whatever benefits it is essential to provide, such as simple meals, dormitories, and emergency medical assistance. Some rural workers are paid as little as 300 yuan per month, while more desirable workers might get as much as 800 yuan monthly. If unreported workers in the manufacturing sector average cash pay of 550 yuan per month, and if their simple accommodations and food cost another 200 yuan per month, then their earnings total 750 yuan, or U.S.\$91, per month, but only when they are actually working. Thus, if, for 3 months of the year, they are not engaged in paid employment while planting and harvesting and while taking time off for holidays, illnesses, and personal business, then their annual take-home cash plus in-kind benefits would be 6,750 yuan per year. This estimate is close to the reported data that yield earnings of 6,927 yuan for TVE manufacturing workers in 2002.

Annual dollar compensation for manufacturing workers

To translate reported average annual earnings for China's manufacturing workers into dollars (see table 3), the analysis that follows uses official nominal exchange rates between U.S. dollars and Chinese yuan. The Chinese yuan was pegged to the U.S. dollar at 8.28 yuan per dollar for a decade from 1994 to August 2005; this exchange rate is the correct one for 2002 data.³⁵

On the basis of reported earnings data only, China's 30 million employees of urban manufacturing units had average 2002 earnings of 11,152 yuan, or U.S.\$1,347, at the official exchange rate. China's manufacturing workers in TVE's averaged 6,927 yuan, or U.S.\$837, in reported annual earnings in 2002. (See tables 1 and 3.) After adjusting reported earnings to account for additional indirect and direct remuneration for employees, table 3 estimates that China's urban manufacturing employees received an average of about U.S.\$2,071 in annual labor compensation for 2002, while TVE manufacturing employees got approximately U.S.\$904. It is important to note, however, that TVE employment is highly desirable to China's rural workers because their TVE earnings are higher than the earnings they can derive from agriculture.³⁶

Monthly labor compensation in manufacturing

To calculate the monthly compensation of TVE manufacturing workers from their average annual labor compensation, it would be helpful to know whether all or even most of the reported 71 million TVE manufacturing employees work most of the year and what proportion are part-year or part-time workers. As noted earlier, it is likely that many unreported workers do not work year round. If the assumption is made that these 71 million reported workers represent year-round workers, then their average monthly total compensation was about U.S.\$75. (See table 3.) Urban manufacturing employees are, generally speaking, year-round, full-time employees. Monthly urban manufacturing labor compensation was U.S.\$173.

Annual hours worked in manufacturing

To calculate the hourly labor compensation of China's manufacturing employees in 2002 would require data on the average number of hours actually worked per employee during that year. Some data have been published on China's urban manufacturing employees' average hours worked in 2002. Specifically, China's NBS and Labor Ministry have been conducting a labor force survey for some years. Most results of this survey have not been published, but data on hours worked by urban manufacturing workers during 2 reference weeks of 2002 have been published. According to the survey, urban manufacturing employees in China actually worked an average of 44.86 hours during the 7-day period from May 9 to May 15, 2002, and 46.0 hours during the reference week of September 24–30, 2002.³⁷ Averaging those two figures results in the estimate that, during 2002, in the weeks when urban manufacturing employees actually worked at all, they averaged 45.4 hours of work per week.

The remaining problem is to estimate the average number of weeks actually worked by urban manufacturing employees in China during 2002. Because urban employees are supposed to receive a total of 10 days of statutory holidays per year, it is reasonable to assume that urban manufacturing employees get 2 weeks of public holidays per year. It is also reasonable to assume that urban manufacturing employees, on average, missed 1 week per year for some combination of illness, injury leave, and maternity leave and 1 week per year for personal leave plus work stoppages and downtime due to equipment repair and shortages of electricity and manufacturing inputs. On the assumption that China's urban manufacturing workers actually worked 48 weeks during 2002, averaging 45.4 hours per week, the average annual hours worked are estimated to be 2,179 hours.

No data have been published or released on average hours worked per week by rural or TVE manufacturing employees, even though such data were collected for September 24–30, 2002, in China's October 2002 labor force survey.³⁸ All of the calculations

that follow are therefore strictly hypothetical. Because labor laws are more explicit and more enforced in cities than outside the cities, it is likely that, during each week that manufacturing employees actually are working, those in cities work fewer hours than those outside the cities. Therefore, it is in this case reasonable to assume that TVE manufacturing workers averaged 50 hours of work per week in 2002 during those weeks that they were working. Also, assuming that TVE manufacturing employees took 2 weeks off for Chinese New Year and stopped work for another 2 weeks for reasons such as illness, injury, family emergencies, personal leave, and factory downtime due to shortages and breakdowns, this would leave 48 weeks of actual work per year. In addition, some TVE manufacturing employees who work in the same county as their home village also may be involved in agriculture during peak seasons. This assumption is made because most TVE workers come from rural households that still grow crops, and farm households tend to need all the labor they can get for planting and harvesting. However, migrant manufacturing workers would not be able to get home to participate in agriculture, and some manufacturing workers who live close to their family homes have left agriculture altogether. It is therefore reasonable to assume that, say, one-half of TVE manufacturing workers take leave from their manufacturing jobs for 2 weeks for peak planting time twice a year (assuming double-cropping, on average) and 2 weeks for each of two peak harvest seasons, thus working 40 weeks per year in manufacturing, but that the other half of TVE manufacturing workers do not do agricultural work and, as a consequence, work 48 weeks in manufacturing each year. Under these assumptions, TVE manufacturing workers would have averaged 44 weeks of actual factory work in 2002 at 50 hours per week, totaling 2,200 hours for the year.

It is possible that the estimate for the numbers of hours worked, on average, per year by manufacturing employees in city and noncity factories is too low. Some investigations in China's export zones in Guangdong and other coastal provinces have discovered many factories in which the employees typically work the entire year, with a 2-week holiday at Chinese New Year. In many such export-oriented factories, employees usually work 6 or 7 days each week, totaling 60 to 80 hours per week in whatever period constitutes the peak season for that manufacturing subsector.³⁹ This season can last up to 8 months a year. Average yearly hours actually worked per employee might be as high as 4,000 hours in some China manufacturing enterprises. Suppose that, in those hardworking Guangdong factories, the average urban wage in 2002 was 14,958 yuan, as discussed shortly and as reported in table 4, and suppose also that urban earnings must be increased by 53.8 percent to include all employer social insurance payments, welfare costs, and other labor costs,⁴⁰ giving an average annual labor compensation of

23,005 yuan, or \$2,778. Then, if some city manufacturing employees worked 4,000 hours in 2002 for that income, hourly compensation was \$0.69 per hour. Outside Guangdong's cities in Guangdong Province, reported 2002 average earnings in industry were 8,345 yuan. (See table 4 and the discussion that follows.) Increasing this figure by 8 percent to adjust for social insurance payments on the part of employers results in a total average labor compensation of 9,013 yuan, or \$1,088, in 2002. For those factories whose workers put in 4,000 hours of production work that year, per hour average labor compensation was \$0.27. This illustration emphasizes why it is important to determine the actual average number of hours worked in each year for both city and TVE manufacturing employees.

Data from China's 2000 census confirm that, generally speaking, manufacturing employees in China work a lengthy week; at least, they did during the last week of October 2000. The census indicated that 58 percent of manufacturing workers had worked 6 or 7 days the previous week; however, the census may have classified tens of millions of part-year, seasonal manufacturing workers from rural areas and small towns as farmers.⁴¹ Such rural (probably called TVE) manufacturing workers would put in far fewer hours in manufacturing per year than those counted in the census or those working year round in coastal-zone factories. Thus, the percentage of workers who worked 6 or 7 days probably was lower than 58 percent.

It is not known whether manufacturing employees whose factories sell only to China's domestic market work about the same number of hours per week, month, or year as does the average employee of export-oriented factories. Of China's reported 70.9 million TVE manufacturing employees in 2002, for example, only 13.4 million were reported to be producing for export, while 57.5 million were apparently producing only for the domestic market.⁴² An adequate estimate of average annual hours worked must take into account both of these categories of manufacturing workers—those who produce for export and those who produce for domestic sale.

For China, legal limits on working hours or overtime hours are not likely to yield realistic estimates of actual hours worked. Factories routinely report that they are abiding by the regulations when, in fact, employees are working more hours per day, and many more hours per week or month, than the statutory limits. One purpose of the double bookkeeping in China's factories is to report compliance with laws on minimum wages and maximum permissible overtime hours when, in reality, the factory routinely violates the laws. Generally speaking, grassroots investigators report that the factories do not claim that they paid more total earnings per month or per day to the employees than they actually paid; rather, they underreport the actual hours worked to earn the reported monthly or daily income.

Hourly labor compensation in manufacturing

Despite the limitations on estimates of annual hours worked, it is possible to produce reasonable estimates of hourly compensation costs for manufacturing workers in China, as is shown in table 3. According to these estimates, compensation for employees of urban manufacturing units was about U.S.\$0.95 per hour of work and for TVE manufacturing employees was about U.S.\$0.41 per hour.

The analysis presented herein combines labor compensation estimates for the reported 71 million TVE manufacturing employees and the 30 million manufacturing employees of urban units to derive estimates for annual, monthly, and hourly labor compensation in China's manufacturing sector. As shown in table 3, these 101 million Chinese manufacturing employees received an average of approximately U.S.\$1,252 in labor compensation in 2002, a figure that works out to about U.S.\$104 in monthly labor compensation and implies an hourly labor compensation of around U.S.\$0.57 for China's manufacturing employees.⁴³

How does that U.S.\$0.57 compare internationally? Chart 1 shows manufacturing hourly compensation costs in China in relation to the same costs in several other countries. Chinese costs are 3 percent of those in the United States, according to

data from the BLS series. Even compared with some of the lower cost countries in the series, Chinese costs are low: a quarter of the cost level in Brazil and Mexico and less than a tenth of the average of Hong Kong, Korea, Singapore, and Taiwan.⁴⁴

Manufacturing labor compensation in key export regions

China's urban manufacturing earnings statistics are reported by province, which facilitates estimating urban manufacturing labor compensation for the leading export centers. Using the same ratio of additional compensation to earnings, namely, 53.8 percent, as in table 3, table 4 adjusts the earnings of urban manufacturing workers to derive annual, monthly, and hourly labor compensation for the city manufacturing workers of four leading provinces in China's manufacturing import and export trade. (Actual levels of additional compensation as a percentage of earnings vary by province and by municipality, but data are not available to adjust earnings by using different multipliers for the urban manufacturing workers in different provinces.)

The three provinces of the Yangtze River Delta have a wide range of urban manufacturing earnings and labor compensation. As shown in table 4, Shanghai's 1.3 million city manufacturing

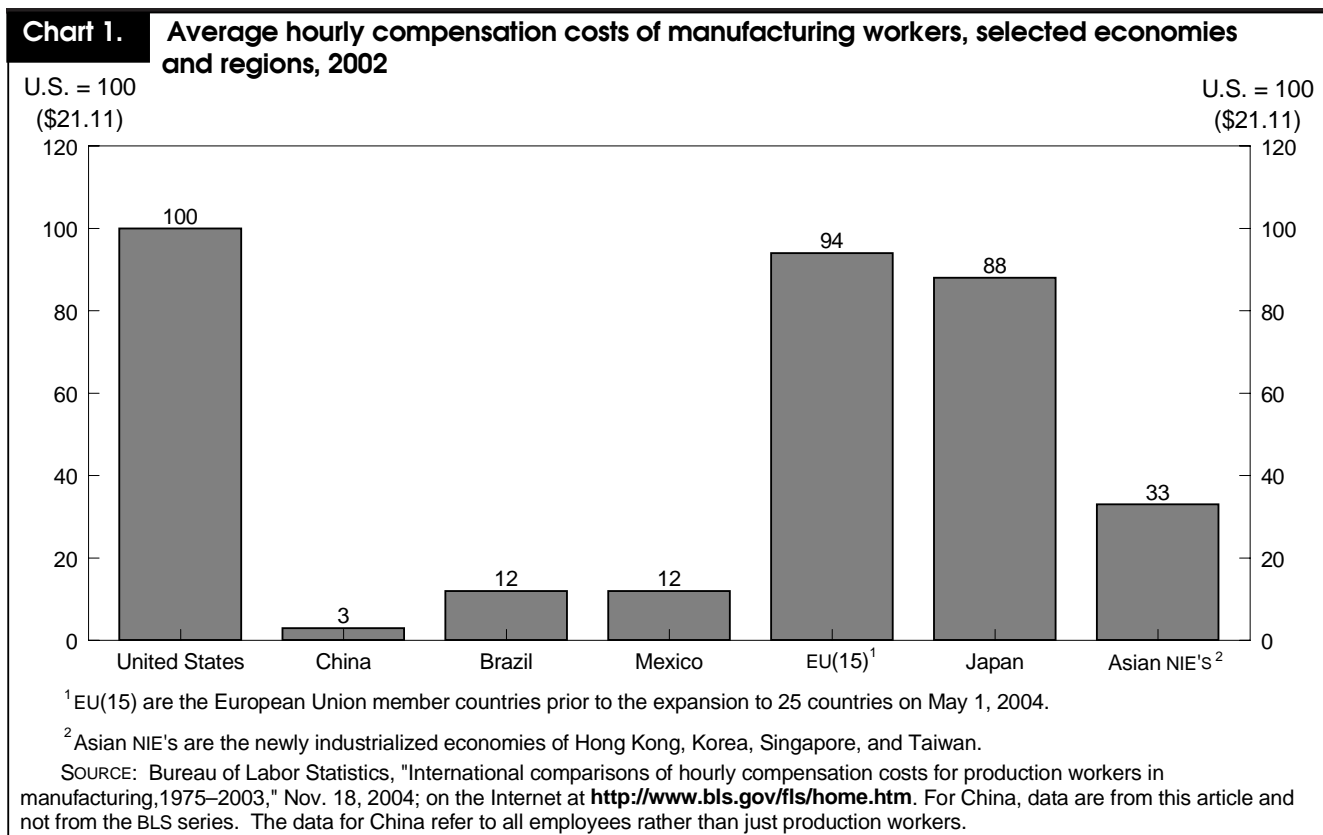


Table 4. Compensation of urban manufacturing employees and TVE¹ industry employees, Yangtze Delta provinces and Guangdong, China, 2002

Province	Annual earnings (yuan)	Adjusted annual labor compensation		Adjusted monthly labor compensation		Adjusted hourly labor compensation	
		Yuan	U.S. dollars	Yuan	U.S. dollars	Yuan	U.S. dollars
Urban manufacturing employees:							
National average	11,152	17,152	\$2,071	1,429	\$173	7.87	\$0.95
Shanghai municipality	21,957	33,770	4,078	2,814	340	15.50	1.87
Zhejiang province	13,435	20,663	2,496	1,722	208	9.48	1.15
Jiangsu province	11,731	18,042	2,179	1,504	182	8.28	1.00
Guangdong province	14,958	23,005	2,778	1,917	232	10.56	1.28
TVE ¹ industry employees:							
National average	6,891	7,442	\$899	574	\$69	3.13	\$0.38
Shanghai municipality	11,939	12,894	1,557	1,075	130	5.86	.71
Zhejiang province	10,188	11,003	1,329	917	111	5.00	.60
Jiangsu province	8,143	8,794	1,062	733	89	4.00	.48
Guangdong province	8,345	9,013	1,088	751	91	4.10	.49

¹TVE's are town and village enterprises.

NOTES: U.S. dollars are calculated at the 2002 prevailing commercial exchange rate: 8.28 yuan = U.S.\$1. Hourly wage estimates for urban workers are calculated under the assumption that urban manufacturing employees perform 2,179 actual hours of work per year and that TVE workers perform 2,200 hours per year. (See text for details.)

SOURCES: Table 3; China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 179, 473; China Ministry of Agriculture, TVE Yearbook Editorial Committee, ed., *China Village and Town Enterprise Yearbook 2003* [in Chinese] (Beijing, China Agriculture Publishing House, 2003), pp. 156, 174.

workers are comparatively highly paid in the Chinese context. Their 2002 labor compensation averaged about U.S.\$4,078, and hourly compensation was approximately U.S.\$1.87. Manufacturing workers in Zhejiang, Jiangsu, and Guangdong had lower labor compensation than Shanghai, but still higher than the national average.

These city manufacturing earnings statistics for China's leading export-manufacturing regions do not yield a true picture of the earnings paid by manufacturing enterprises in those provinces. In the first place, it is not certain that the earnings of most migrant manufacturing workers in the cities of the aforementioned provinces are included in the urban manufacturing earnings data. Second, no wage data are reported for the so-called rural manufacturing workers by province, nor are TVE manufacturing earnings figures reported by province. However, reported earnings statistics are available by province for TVE industry (*gongye*) employees. Nationally, 92.4 percent of TVE industry workers are manufacturing employees, and wages of these manufacturing workers are similar to those of other industry workers. Therefore, TVE industry earnings by province can be used to estimate manufacturing earnings.

Table 4 also reports 2002 TVE industry earnings and derives labor compensation for the same regions. Like their urban counterparts, TVE industry workers in these regions have higher earnings than the national average. Shanghai and Zhejiang TVE industry employees were the highest paid, earning U.S.\$0.71 per hour in the Shanghai suburban and rural

areas and U.S.\$0.60 an hour in Zhejiang Province's rural and industrial zones outside of its cities. Noncity industry workers in Jiangsu and Guangdong Provinces were not as well paid, receiving U.S.\$0.48 and U.S.\$0.49 per hour, respectively.

Earnings of migrant manufacturing workers

In theory, if a worker has migrated from a village to a city and is employed in a manufacturing enterprise, the employer should report the migrant's job and earnings in the "manufacturing staff and worker" category. But in practice, in most cities of China, migrants who do not possess permanent-resident documents are apparently not eligible for urban social insurance and housing benefits:

Contracted rural migrant laborers are supposed to be covered [in the social basic pension system] as well. While the inclusion of rural migrant labor in urban areas would also reduce the dependency ratio because of the concentration of migrant laborers in the young working age groups, present weaknesses in administrative capacity make it questionable whether these workers will ever draw benefits, especially if they return to rural areas or move on to other urban areas. In some cases, the pension contribution is simply an added tax from which the migrant will derive no benefits.⁴⁵

There is increasing informal evidence that published urban earnings data exclude the pay of most migrant workers.⁴⁶ The

earlier companion piece to this article⁴⁷ referred to published 2002 statistics on manufacturing employment in urban units, totaling 29.81 million, that included 4.59 million rural-to-urban migrants whose household registration was still in rural areas. Probably, their reported earnings were part of the published average earnings data for urban manufacturing staff and workers, but very likely, many millions more rural-to-city migrant manufacturing workers were not in the reported urban manufacturing employment or earnings data. There are many possible reasons for such exclusion, including the fact that many cities and municipalities in China do not consider rural-to-urban migrants to be real urban or municipal employees.⁴⁸ It is not known whether these migrant manufacturing workers and their earnings get picked up in the TVE manufacturing data.

It is reasonable to assume that TVE manufacturing employment and earnings data usually include the migrant manufacturing workers in towns and rural areas. The reason is that, because of the much lower ratio of social insurance costs in towns and rural areas, there is almost no incentive to leave these workers out of the data in those areas, in contrast to the situation in cities, where the higher ratio of social insurance costs affords a financial incentive to exclude migrant workers. There is no separate reporting of the earnings of migrant manufacturing workers either in the cities or outside urban areas.

Manufacturing earnings over time

Most of the data in this article relate to the year 2002 only. Although it would be revealing to analyze trends in manu-

facturing earnings over several years, the data required to construct such series over time are sparse. Published data on earnings trends for the manufacturing sector are available solely for urban manufacturing staff and workers. Table 5 presents published information on annual percent changes in average real earnings for this subset of city manufacturing employees. Real living standards have been rising in China's cities, and real earnings have been rising for urban staff and workers in manufacturing.⁴⁹ The "staff and worker" component of urban manufacturing workers is supposed to include manufacturing workers who migrated into cities from rural areas, but the rising wages indicated in table 5 probably exclude data on the earnings of most rural-to-urban migrant manufacturing workers.⁵⁰ Reported urban manufacturing earnings rose rapidly in the early 1990s, slowly in the mid-1990s, and very rapidly at the end of the 1990s and on into the early 21st century. Tables 5 and 6 and chart 2 show that these generalizations about city manufacturing earnings trends also hold for manufacturing employees in state-owned units, collective-owned units, and "other" ownership units (joint ventures, foreign-owned firms, multinational companies, and the like).

Table 6 and chart 2 present trends in real annual earnings (not including required employer payments for social insurance plans or other nonwage labor costs) for urban manufacturing staff and workers in China. In 1990, the 53 million urban manufacturing staff and workers earned an average of 5,058 yuan (in constant 2002 yuan). As the number of urban manufacturing staff and workers shrank to 29 million in 2002, the earnings of those

Table 5. Annual percent change in average real (price-adjusted) earnings of urban manufacturing staff and workers in China, selected years, 1979–2002

Year	Total	Urban state-owned units	Urban collective-owned units	Other urban ownership units
1979	9.1	7.4	4.4	—
1980	5.4	5.2	7.5	—
1985	4.1	3.4	6.9	17.9
1986	7.1	8.6	4.3	7.5
1987	2.2	2.6	.8	7.6
1988	−1	.5	−2.5	14.0
1989	−4.5	−4.4	−5.7	.9
1990	7.7	8.6	5.2	4.4
1991	5.1	4.1	5.4	12.9
1992	6.0	6.2	3.3	5.5
1993	9.4	6.2	5.4	1.1
1994	2.3	1.2	−3	.1
1995	3.3	1.6	3.5	1.8
1996 .....	.3	−4	−9	.8
1997	2.0	.5	−3	2.3
1998	5.1	2.3	2.4	−1.8
1999	11.8	10.5	7.6	10.3
2000	11.4	11.5	6.6	8.5
2001	10.9	11.3	5.7	7.9
2002	13.7	14.6	12.0	9.7

NOTE: Dash indicates data are not available.

SOURCE: China National Bureau of Statistics and China Ministry of Labor,

compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 36, 39, 42, 45.

Table 6. Average annual real earnings of urban manufacturing staff and workers in China, 1990–2002

[In constant 2002 yuan and constant 2002 dollars]

Year	Total		Urban state-owned units		Urban collective-owned units		Other urban ownership units	
	Yuan	U.S. dollars	Yuan	U.S. dollars	Yuan	U.S. dollars	Yuan	U.S. dollars
1990	5,058	\$611	5,599	\$676	4,149	\$501	6,833	\$825
1991	5,316	642	5,828	704	4,373	528	7,714	932
1992	5,635	681	6,189	748	4,517	546	8,138	983
1993	6,165	745	6,573	794	4,761	575	8,228	994
1994	6,307	762	6,652	803	4,746	573	8,236	995
1995	6,515	787	6,759	816	4,913	593	8,384	1,013
1996	6,534	789	6,731	813	4,868	588	8,452	1,021
1997	6,665	805	6,765	817	4,854	586	8,646	1,044
1998	7,005	846	6,921	836	4,970	600	8,490	1,025
1999	7,832	946	7,647	924	5,348	646	9,365	1,131
2000	8,724	1,054	8,527	1,030	5,701	689	10,161	1,227
2001	9,675	1,169	9,490	1,146	6,026	728	10,964	1,324
2002	11,001	1,329	10,876	1,314	6,749	815	12,027	1,453

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

SOURCE: China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 34–45.

remaining averaged 11,001 yuan, more than double the 1990 average earnings. There was a shift in the composition of the “urban manufacturing staff and workers” category over that 13-year period.⁵¹ In 1990, the lowest-paid subgroup, urban collective manufacturing workers, was large (18 million) and held down average real earnings, while the highest-paid subgroup, private-sector enterprises, was minuscule. By 2002, the highest-paid subgroup constituted more than half of urban manufacturing staff and workers. This trend toward the better paid private sector raised average earnings among urban staff and workers in manufacturing.

Estimates of manufacturing employee compensation

Many media and other sources around the world have published very rough estimates of hourly or monthly earnings or total compensation for manufacturing workers in China. A comparison of their estimates with those in this article is instructive. For example, one journal stated that manufacturing wages in China average about 60 cents an hour,⁵² very close to the 57 cents estimated here for total compensation. One newspaper wrote, “A Chinese factory worker earns the equivalent of less than \$1 per hour,”⁵³ a statement supported by the preceding analysis, and one that holds true even for urban manufacturing workers, who are better paid than their counterparts outside the cities.

Regarding particular manufacturing sectors, a newspaper article said that, in China, employees of auto-parts suppliers have average wage costs of 90 cents an hour.⁵⁴ Another author said that employees of big global automakers in China “make the

equivalent of \$1.50 per hour in wages and benefits.”⁵⁵ Table 2 indicates that China’s urban transportation equipment manufacturing workers had average 2002 earnings of 14,409 yuan, which would translate into about 80 cents an hour for earnings alone and \$1.23 per hour for total compensation. Therefore, the overseas reports of the compensation of auto workers in China are compatible with the data presented in this article.

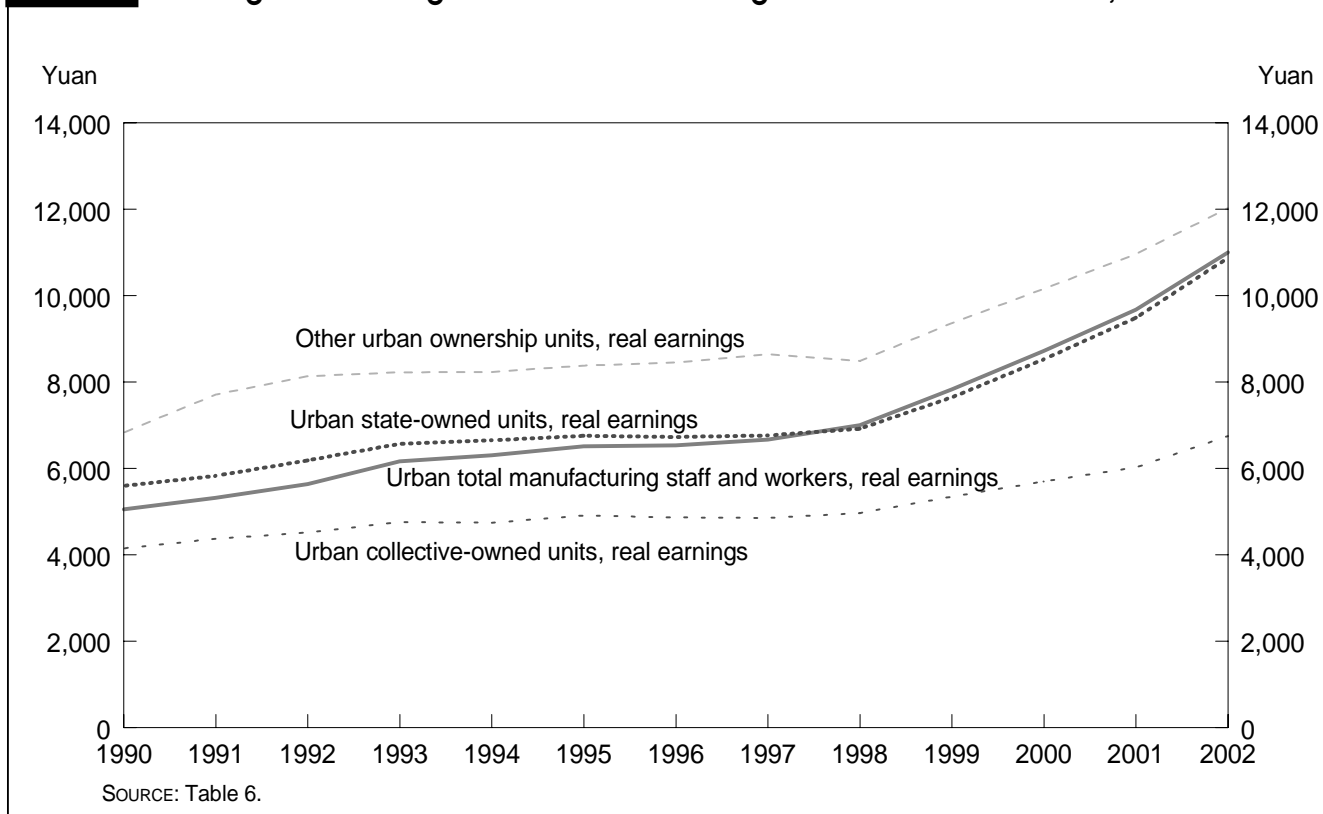
One journal wrote, “China is already by far the biggest garment exporter in the world, with average wages in the industry of 40 cents an hour.”⁵⁶ That figure is close to the 41 cents an hour that the foregoing analysis has posited for the compensation of China’s TVE manufacturing employees. Garment workers outside the cities are paid less than that, because they are among the lower paid manufacturing employees in China. Table 2 indicated that urban garment workers average 9,066 yuan per year, or approximately 50 cents per hour, in earnings; their total compensation might be about 77 cents an hour. If so, then the estimate of 40 cents per hour is too low for China’s urban garment workers, but correct for noncity employees in garment manufacturing.

In general, global media-published estimates of manufacturing earnings or compensation in China are in the ballpark of reasonable estimates.

Labor compensation costs and China’s competitiveness

It is widely agreed⁵⁷ that low earnings and low total labor compensation costs make manufacturing production in China competitive in the international market. One of the leading

Chart 2. Average real earnings of urban manufacturing staff and workers in China, 1990–2002



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 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.”⁵⁸ Labor productivity (output per employee) is low by world standards in these kinds of Chinese factories, and earnings are correspondingly low.⁵⁹ In the 1990s and beyond, China’s employees experienced widening earnings inequality, as earnings rose for city workers, but basically stagnated for the least skilled and least educated workers.⁶⁰ China is not particularly competitive in capital-intensive or 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. China now produces at least half of the world’s cameras and photocopiers and one-quarter of the world’s television sets and washing machines.⁶¹ Indeed, China “is the new workshop of the world, producing two-thirds of all photocopiers, microwave ovens, DVD players, and shoes, over half of all digital cameras, and around two-fifths of personal computers.”⁶²

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 earnings per manufacturing worker. Real living standards have been rising in China’s cities, and real earnings have been rising for urban staff and workers in manufacturing, as shown in tables 5 and 6 and chart 2.⁶³

Why are urban manufacturing earnings rising rapidly in China? Some scholars argue that because labor productivity is

rising rapidly in China's city factories, we would expect city manufacturing earnings also to rise.⁶⁴ Among the forces driving the increase in urban manufacturing earnings 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.⁶⁵ Rigidities in urban labor markets also have forced earnings upward and impeded competition.⁶⁶ Other experts contend that the huge supply of surplus urban and rural workers ought to keep their earnings down: "The coincidence of rising mass unemployment and rapid increases in real wages in the late 1990s appears contrary to the predictions of competitive labour markets."⁶⁷ The range of earnings in Chinese manufacturing has indeed widened, and the least educated unskilled workers have experienced near stagnation in their real earnings "under the twin pressures of heavy migration from China's villages and [the] intense pursuit of cost advantage from overseas buyers of labor-intensive goods."⁶⁸

In addition to the earnings bill, required payments for other urban employee benefits have increased.⁶⁹ 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.⁷⁰ In some cities, the mandated payments are still rising rapidly. For example,

Average labor costs in Shanghai rose by 15% last year due to increases in welfare payments, healthcare subsidies, and housing subsidies. On average local companies paid 10,849 yuan in fixed and optional welfare fees, up 22.4% [from the year before]. This rise was significantly higher than in cities such as Kunshan, Nanjing, Hangzhou, Suzhou, or Ningbo.⁷¹

As earnings 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.⁷² Some businesses are moving from the city to the poorer inland province of Anhui.⁷³ 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.⁷⁴ Indeed, 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.⁷⁵ Of course, China remains highly competitive globally because of its relatively low labor costs and many other favorable factors,⁷⁶ but rising labor compensation in China has begun to erode the country's manufacturing price advantage.

THIS ARTICLE HAS COMBINED EMPLOYMENT AND EARNINGS DATA for China's urban manufacturing workers and for the noncity TVE manufacturing workers in order to derive approximations of annual, monthly, and hourly labor compensation for urban, noncity, and all-China manufacturing employees. Reported earnings and labor compensation data have been adjusted separately to yield urban data and TVE data. As of 2002, the latest year for which adequate earnings data are available, average labor compensation for 30 million of China's urban manufacturing employees was approximately U.S.\$0.95 per hour, while the reported 71 million manufacturing employees in TVE's outside the cities averaged about U.S.\$0.41 in labor compensation per hour of work. Combining the labor compensation of manufacturing workers in cities and in TVE's to derive an all-China estimate results in average labor compensation of approximately U.S.\$0.57 per hour of work for 101 million manufacturing workers in China.

The following items should have high priority for future data collection in China and future research on hourly labor compensation in China's manufacturing sector:

1. *Data on hours worked.* For the important goal of calculating average hourly labor compensation in manufacturing in China, a high priority is to get better data on actual hours worked by employees in the manufacturing sector. China's government could itself gather and publish more systematic data on this important measure, and scholars should also emphasize gathering information on it.
2. *National economic census.* During the year 2005, with reference year 2004, China conducted its first national census of the economy. This undertaking is expected to refine, correct, and update data on labor compensation received in manufacturing. When results of the economic census become available starting in late 2005, the new information should be used to update the estimates in this article.
3. *Noncity manufacturing labor compensation.* Much more data collection and analytical research are needed to fill in some of the missing information on rural and town manufacturing earnings and total compensation.

4. *Labor force surveys.* China needs to design, carry out, and publish results of labor force surveys using international standards and definitions. Such surveys should cover the whole country and should collect

and publish data on earnings and total compensation. China reportedly will begin a regular labor force survey in 2006, the results of which will subsequently be published. □

Notes

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¹ The companion piece to this article, "Manufacturing employment in China" (*Monthly Labor Review*, July 2005, pp. 11–29), noted that China's official statistics reported 83 million manufacturing employees at yearend 2002, but a variety of other available statistics strongly indicated that the actual number was more than 100 million.

² Banister, "Manufacturing employment in China," noted that China's official statistics reported 38 million city manufacturing employees at yearend 2002. Data on earnings are not available for 8.2 million manufacturing workers in the cities; of these workers, 2.6 million are self-employed. The Bureau of Labor Statistics does not include the self-employed in its comparative estimates of hourly compensation costs, which relate only to production workers. China's data cover both production and nonproduction workers.

³ TVE's originally were established as collective economic units run by local governments in rural areas and towns. The purpose of TVE's was, and still is, to employ small farmers and rural laborers in industrial or service occupations in locations not far from their family homes. This effort allows China's vast countryside to become modernized without necessitating massive migration from the villages to cities. In the 1980s, and especially from the 1990s to today, TVE's shifted from public toward private ownership, and many foreign-funded enterprises became classified as TVE's. Nowadays, in addition to including small local enterprises, the TVE category can include very large factories in industrial parks outside cities, as well as suburban, town, and rural factories. Companies have incentives to have their factories classified as TVE's because required social insurance payments are low, statistical reporting requirements are minimal, and the companies receive many legal and tax benefits.

⁴ 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) would be needed. Although purchasing power parities provide a better measure of differences in relative price levels than do commercial exchange rates, there are still important limitations in using them to construct comparisons of worker income. For

example, the purchasing power parities used may not accurately reflect the actual purchasing patterns of manufacturing workers, and the price data used to construct the parities may not correctly approximate the relative prices of many goods and services. For a discussion of the purchasing power of Chinese manufacturing worker incomes, see Judith Banister, "Manufacturing Employment and Compensation in China," on the Internet at <http://www.bls.gov/fls/#publications>.

⁵ The analysis presented herein applies to the mainland of the People's Republic of China and excludes statistics for Hong Kong, Macao, and Taiwan.

⁶ Banister, "Manufacturing employment in China."

⁷ Banister, "Manufacturing Employment and Compensation in China."

⁸ "International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing," on the Internet at <http://www.bls.gov/news.release/ichcc.toc.htm>.

⁹ See Banister, "Manufacturing employment in China," for further background information about China's statistical system.

¹⁰ Examples are available of statistical reporting forms and instructions issued to city enterprises to use to report employment and earnings data for the calendar year 2003. A "labor situation form" [*Laodong qingkuang biao*] was to be submitted to authorities by the end of February 2004. Wage-reporting instructions were in the publication *Laodong gongzi; tongji taizhang* [*Labor wages; statistical accounts*] (Beijing, Beijing Municipality Statistical Bureau, 2004), especially p. 2-1.

¹¹ China National Bureau of Statistics, *China Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 66, 84, 87, 90.

¹² China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook* (Beijing, China Statistics Press, published annually); China Ministry of Agriculture, TVE Yearbook Editorial Committee, ed., *China Village and Town Enterprise Yearbook 2003* [in Chinese] (Beijing, China Agriculture Publishing House, 2003), pp. 130–31.

¹³ *China Labor Statistical Yearbook 2003* (Beijing, China National Bureau of Statistics and China Ministry of Labor, compilers; China Statistics Press, 2003), pp. 630, 638.

¹⁴ Chinese sources did not report earnings data for another 8 million urban manufacturing employees: self-employed individual manufacturing workers and the investors and workers in relatively small private manufacturing concerns. It is not known whether this group of city manufacturing employees earns more or less than the "manufacturing employees in urban units." However, some of the employers of these 8 million workers pay lower social insurance payments or none at all to city governments.

¹⁵ *China Village and Town Enterprise Yearbook 2003*, pp. 130–31.

¹⁶ Wage-reporting instructions, 2004, p. 2-4.

¹⁷ See *BLS Handbook of Methods* (Bureau of Labor Statistics, 1997), Chapter 12, "Foreign labor statistics," pp. 114–15; and Chris Sparks, Theo Bikoi, and Lisa Moglia, "A perspective on U.S. and foreign

compensation costs in manufacturing,” *Monthly Labor Review*, June 2002, pp. 36–50, especially p. 49.

¹⁸ See Banister, “Manufacturing employment in China.”

¹⁹ Sparks, Bikoi, and Moglia, “U.S. and foreign compensation costs,” p. 49.

²⁰ Xiaochun Qiao, *China’s Aging and Social Security of the Elderly: With Reference to Japan’s Experiences*, Japan External Trade Organization, IDE-JETRO Visiting Research Fellow Monograph Series No. 388 (Chiba, Japan, Institute of Developing Economies, 2004).

²¹ “*Shehui baoxianfei zheng jiao zanxing tiaoli*” (“Provisional regulations for payment of social insurance fees”), in *Laodong he shehui baoxian zhengce xuanchuan cailiao* (*Materials on social insurance policy announcements*), Beijing, Haidian District Labor and Social Security Office, regulation number 259, promulgated Jan. 22, 1999.

²² Wage-reporting instructions, p. 2-5.

²³ *BLS Handbook*, pp. 114–15; Sparks, Bikoi, and Moglia, “U.S. and foreign compensation costs,” p. 37.

²⁴ All data in this paragraph are from China Ministry of Labor, *Zhongguo laodongli shichang gongzi zhidao jiawei (2003 nian)* [*China Labor Force Market Wage Guide 2003*] (Beijing, China Labor Social Security Press, 2004), p. 379.

²⁵ *Ibid.*, p. 379.

²⁶ Loraine A. West, “Pension reform in China: Preparing for the future,” *Journal of Development Studies*, February 1999, p. 165. In some cities, the social benefit payment that the enterprise is required to pay the government is not strictly a percentage of whatever the total gross salary bill is. For example, in Shanghai for 2003, enterprises had to pay 43.5 percent of the total wage bill, subject to the following constraints: if the reported total wage bill divided by the reported number of employees averaged less than 60 percent of Shanghai’s average monthly salary for the first half of 2003, the enterprise still had to pay 43.5 percent of that minimum salary threshold; the maximum payment the enterprise was required to remit was 43.5 percent of the total wage bill that would represent 3 times the average 2003 Shanghai wage. (See Lulu Zhang, “Shanghai region: Updates on Shanghai social benefit affecting monthly overheads,” *China Briefing; The Practical Application of China Business*, June 2004, p. 10.) This procedure is supposed to be applied nationwide, based on State Council Document Number 6. See also Loraine A. West and Daniel Goodkind, *Pension Management and Reform in China*, NBR Executive Insight Series No. 15 (Seattle, National Bureau of Asian Research, 1999), p. 3.

²⁷ Data for Changshu City are from *Qiye shenbao shehui baoxian jiaofei yewu zhinan* (*Business guide to enterprises on social insurance payments*), Jan. 15, 2004; on the Internet at <http://www.changshu.gov.cn/H/content/HQA0000000000002837.htm>. Data for Wuxi City are from *Shehui baoxianfei jiaofei bili mingxi biao* (*Table of detailed comparisons of required social insurance payments*), 2858 *fuwuwang* (2858 service Internet site) at <http://www.wx2858.com/XCBST/jyzn/shehuibaoxian.asp>.

²⁸ *China Labor Statistical Yearbook 2003*, pp. 471, 575–81. China had 21.3 million TVE’s of all kinds in 2002, but only 85,000 of them had any rural old-age pension insurance. By yearend 2002, a cumulative total of 54.6 million people had ever contributed to any rural social pension insurance scheme, but during 2002, only 4.1 million contributed to such a system.

²⁹ Louise Fox and Yaohui Zhao, “China’s labor market reform: Performance and prospects,” background paper for the *China 2002 Country Economic Memorandum* (Washington, DC, World Bank, 2002); Xiaochun Qiao, *China’s Aging and Social Security*.

³⁰ Xiao-yuan Dong, “The Changing Wage-Structures in the 1990s: A Comparison between Rural and Urban Enterprises in China,” paper presented at the International Research Conference on Poverty,

Inequality, Labor Market and Welfare Reform in China, Australian National University, Canberra, Australia, August 2004, Table 1, pp. 28–29; on the Internet at <http://econrsss.anu.edu.au/pdf/china-abstract-pdf/Dongpaper.pdf>.

³¹ Kim Woodard and Anita Qingli Wang, “Acquisitions in China: A View of the Field,” *China Business Review*, November–December 2004, pp. 34–38, and “Acquisitions in China: Closing the Deal,” *China Business Review*, January–February 2005, p. 35.

³² See Fox and Zhao, “China’s labor market reform.”

³³ See Judith Banister, “Manufacturing employment in China,” *Monthly Labor Review*, July 2005, pp. 11–29, for a further explanation of the underreporting of manufacturing employment and its consequences.

³⁴ Richard Jackson and Neil Howe, *The Graying of the Middle Kingdom* (Washington, DC, Center for Strategic and International Studies and Prudential Foundation, 2004), p. 14.

³⁵ David Hale and Lyric Hughes Hale, “China takes off,” *Foreign Affairs*, November–December 2003, p. 46; Nicholas R. Lardy, “United States-China ties: reassessing the economic relationship,” testimony presented before the House Committee on International Relations, U.S. House of Representatives, Oct. 21, 2003; on the Internet at <http://www.iie.com/publications/papers/lardy1003.htm>; and Henny Sender, “Self-interest may lead China to revalue yuan,” *Wall Street Journal*, Apr. 19, 2004, p. A2.

³⁶ John Knight and Linda Yueh, “Urban Insiders Versus Rural Outsiders: Complementarity or Competition in China’s Urban Labour Market?” paper presented at the International Research Conference on Poverty, Inequality, Labour Market and Welfare Reform in China, Australian National University, Canberra, Australia, August 2004; on the Internet at <http://econrsss.anu.edu.au/chinaconfabstracts.htm>.

³⁷ Jianchun Yang, “China Working Time Statistics,” on the Internet at http://www.insee.fr/en/nom_def_met/colloques/citygroup/pdf/China-general.pdf; *China Labor Statistical Yearbook 2004*, p. 111; personal communication with NBS officials.

³⁸ Yang, “China Working Time Statistics,” p. 1.

³⁹ See “Excessive Overtime in Chinese Supplier Factories: Causes, Impacts, and Recommendations for Action,” Verité Research Paper, September 2004, on the Internet at <http://www.verite.org/Excessive%20Overtime%20in%20Chinese%20Factories.pdf>; and Leslie T. Chang, “At 18, Min finds a path to success in migration wave,” *Wall Street Journal*, Nov. 8, 2004, p. A1.

⁴⁰ See earlier in this article, pp. 27–29.

⁴¹ Banister, “Manufacturing employment in China.”

⁴² *China Village and Town Enterprise Yearbook 2003*, p. 219.

⁴³ Employment weights are used to calculate an estimate of national total labor compensation in manufacturing.

⁴⁴ Note again that the data for China refer to all employees, while the figures for the United States and other countries refer to production workers. Employees have higher compensation than production workers, so the data for China are overstated to an unknown degree for these comparisons.

⁴⁵ West, “Pension reform in China,” p. 172.

⁴⁶ Thomas G. Rawski, personal communication, May 28, 2004.

⁴⁷ Banister, “Manufacturing employment in China,” p. 23.

⁴⁸ Shanghai municipality, for example, excludes from its employment statistics data on in-migrant workers from other provinces. (See Banister, “Manufacturing employment in China.”)

⁴⁹ See Nicholas R. Lardy, “Do China’s Abusive Labor Practices Encourage Outsourcing and Drive Down American Wages?” testimony presented before the Senate Democratic Policy Committee Hearing, Mar. 29, 2004; on the Internet at <http://democrats.senate.gov/dpc/hearings/hearing14/lardy.pdf>.

⁵⁰ Rawski, personal communication, May 28, 2004; Fox and Zhao, “China’s labor market reform,” pp. 3, 22.

⁵¹ Banister, “Manufacturing employment in China,” table 1.

⁵² “Is the wakening giant a monster?” *The Economist*, Feb. 15, 2003, pp. 63–65.

⁵³ George Stalk and Dave Young, “How China gets our business,” *Washington Post*, Mar. 7, 2004, p. B3.

⁵⁴ Norihiko Shirouzu, “China drives auto-parts shift,” *Asian Wall Street Journal*, June 10, 2004, p. A5.

⁵⁵ Joseph Szczesny, “China an exporter by 2007? Will too many cars force Chinese automakers to begin selling outside the Middle Kingdom?”; on the Internet at <http://www.thecarconnection.com/index.asp?article=7233>.

⁵⁶ “Is the wakening giant a monster?” p. 63.

⁵⁷ For a few examples, see Stalk and Young, “How China gets our business”; Szczesny, “China an exporter by 2007?”; and Chinese Academy of Social Sciences, Industry Economic Research Institute, *Zhongguo gongye fazhan baogao* [China’s Industrial Development Report] (Beijing, Economic Management Press, 2001), pp. 109, 547.

⁵⁸ Hale and Hale, “China takes off,” p. 46.

⁵⁹ Lardy, “China’s Abusive Labor Practices.”

⁶⁰ Fox and Zhao, “China’s labor market reform.”

⁶¹ Matt Forney, “Tug-of-war over trade: As China becomes the world’s factory, U.S. and European manufacturers are hurting,” *Time International* (Europe Edition), Feb. 23, 2004, p. 34.

⁶² “The dragon and the eagle,” *The Economist*, Sept. 30, 2004.

⁶³ See also Lardy, “China’s Abusive Labor Practices.”

⁶⁴ Nicholas R. Lardy, discussant, BLS seminar, Washington, DC, Nov. 8, 2004.

⁶⁵ See Fox and Zhao, “China’s labor market reform.”

⁶⁶ Knight and Yueh, “Urban insiders versus rural outsiders.”

⁶⁷ Simon Appleton and Lina Song, “The evolution of wage structure in urban China during reform and retrenchment,” paper presented at the International Research Conference on Poverty, Inequality, Labor Market and Welfare Reform in China, Australian National University, Canberra, August 2004, p. 2; on the Internet at <http://econrsss.anu.edu.au/chinaconfababstractshtm>.

⁶⁸ Thomas G. Rawski, “Recent developments in China’s labour economy,” revised November 2003 from a report prepared for the International Labor Office in January 2002, p. 17; see also Fox and Zhao, “China’s labor market reform,” pp. 3, 22; and the entire Rawski article.

⁶⁹ Jianchun Yang, “2002 nian zhongguo jiuye qingkuang” [“China 2002 employment situation”], *Zhongguo renkou tongji nianjian 2003* [China Population Statistics Yearbook 2003] (Beijing, China Statistics Press, 2003).

⁷⁰ Rawski, “Recent developments,” p. 27; see also Bureau of Labor Statistics, “International comparisons of hourly compensation costs for production workers in manufacturing, 1975–2003”; on the Internet at <http://bls.gov/fls/home.htm>.

⁷¹ Paul French, “Welcome to bubble town,” *Asian Wall Street Journal*, May 27, 2004, p. A7.

⁷² Iain McDaniels, “A critical eye on Shanghai: Will the city’s extraordinary growth continue?” *China Business Review*, January–February 2004, pp. 8–9, especially p. 8.

⁷³ French, “Welcome to bubble town.”

⁷⁴ “String of pearls: China’s development,” *The Economist*, Nov. 20, 2004, p. 44.

⁷⁵ Mu Xin and Zhenpeng Liang, “Mei caigou shang xuejian Zhongguo fangzhi dingdan” [“U.S. purchasers have cut textile orders from China”], *Xin kuai bao* [New Express], Apr. 28, 2004; on the Internet at http://www.ycwb.com/gb/content/2004-04/28/content_683077.htm.

⁷⁶ See Banister, “Manufacturing Employment and Compensation,” for further information on China’s many competitive advantages in manufacturing.