

# MANUFACTURING EMPLOYMENT AND COMPENSATION IN CHINA

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“Manufacturing employment in China:”  
<http://www.bls.gov/opub/mlr/2005/07/art2full.pdf>

“Manufacturing earnings and compensation in China:”  
<http://www.bls.gov/opub/mlr/2005/08/art3full.pdf>

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## Preface

This 2005 report is an expanded, updated, refined, and further refereed version of the author's original report, which was posted on the BLS website as of the end of 2004. The first section of the current report, "Manufacturing Employment in China," is a much expanded version of the article of the same name published in the *Monthly Labor Review*, July 2005 issue, and posted separately on this website. The second section of this report, "Manufacturing Earnings and Compensation in China," is a significantly expanded version of the article of the same name published in the *Monthly Labor Review*, August 2005 issue, which is also posted on this BLS website. Material in this report that is not found in the two *MLR* articles includes the Executive Summary and Table of Contents, the section on occupational categories of China's manufacturing employees, the section "Is China's labor supply inexhaustible?", the section discussing the many sources of the competitiveness of China's manufacturing enterprises, a section on factors that hamper China's competitiveness in manufacturing, estimation of the take-home pay of China's manufacturing employees calculated using the purchasing power parity (PPP) exchange rate, and the *Glossary and Definitions* section in the Appendix.

## EXECUTIVE SUMMARY

The goals of this report are to assess the quality and usability of available statistics on China's manufacturing employment and labor compensation for the most recent available year and for the period since 1990 and, if possible, to estimate annual, monthly, and hourly labor compensation for China's manufacturing employees. The report shows that China has released just enough relevant data on annual average wages and labor-related employer expenditures to derive 2002 estimates of annual labor compensation for 30 million city manufacturing employees and 71 million non-city manufacturing employees, that is, those working in village and town enterprises. Combining the published and adjusted labor compensation figures for these two groups results in an approximation of average 2002 labor compensation per manufacturing employee in China. Because China has not systematically collected and reported adequate data on actual hours worked by manufacturing employees in 2002, or for any full year, this report uses published partial information and a set of hypotheses to estimate annual hours worked by city and noncity manufacturing employees, thus calculating reasonable 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 2002 prevailing commercial exchange rate, resulting in the estimate that China's manufacturing employees in 2002 received approximately U.S.\$0.57 in total labor compensation per hour of work. Cash income of China's manufacturing workers is also estimated in international purchasing power parity (PPP) dollars to give a sense of the real purchasing power of the pay of China's manufacturing employees in their own domestic economy.

Much of this report is focused on discussing issues of data quality and serious problems of incompleteness of the available data and excessive focus of published statistics on city manufacturing employees to the near-exclusion of data on the more numerous manufacturing employees working outside the administrative boundaries of cities. Even within the cities, China's Ministry of Labor and Social Security and the National Bureau of Statistics focus their data collection and reporting on the rapidly declining state-owned and urban collective-owned manufacturing enterprises, while not yet adequately expanding their efforts to collect statistics on the thriving, growing, dynamic private manufacturing sector. Outside city boundaries, where most of China's manufacturing employees are working, collection and reporting of statistics seems to be the job of the Ministry of Agriculture and its sub-unit on village and town enterprises (TVE's). This division of statistical responsibility is a holdover from the command economy of the pre-1978 period. It results in the near-absence of reported statistics on the numbers and labor compensation of manufacturing workers in China's industrial parks, suburbs, towns, rural areas, and any other concentrations of manufacturing enterprises and suppliers that are located outside city boundaries.

Data on manufacturing employees and their wages in China come from regular administrative reporting systems that are supposed to cover all employees, rather than from labor surveys as in most developed countries. This report compares these

administrative figures with other sources of data on manufacturing employee numbers and the urban-rural distribution of manufacturing workers, including the 1995 industrial census of China and especially the population census of November 1, 2000. The 2000 census gives the occupational breakdown of PRC manufacturing workers and the distribution of manufacturing workers by number of days worked in the week before the census, which are reported and discussed here.

The author also assesses the probable biases in China's statistics on numbers of manufacturing workers and their wages. The report argues that city manufacturing enterprises in particular have powerful incentives to underreport the number of their manufacturing employees and especially the compensation of any employees whose work is reported. The main purposes of the underreporting of employee numbers, wages, and total labor compensation are avoidance of taxes and minimization of required employer payments to social insurance and employee housing funds administered by urban authorities.

This report demonstrates that manufacturing employment in China increased during the 1980s and early 1990s, peaked in about 1995-1996, declined during the late 1990s until 2000-2001, and increased again in 2002. The genuine declines in China's manufacturing employment in the late 1990s were caused by restructuring and privatization of state-owned and urban collective-owned factories in the cities, which brought about massive layoffs of urban manufacturing workers and sharp increases in manufacturing labor productivity. Private sector manufacturing has thrived in both urban and rural areas in the late 1990s and the early 21<sup>st</sup> century. These factories are more productive than state-owned and collective-owned factories and are competitive in the domestic and global economies. The renewed increase in China's manufacturing employment that began in 2002 or before is fueled by private corporations and businesses, both foreign-funded and domestically-owned.

As demonstrated in this report, the numbers published in the global and U.S. popular media on the low compensation of China's manufacturing workers are in the ballpark of reasonable estimates. The author discusses factors that make China especially competitive in manufacturing for the global market, and some factors that are reducing and hampering China's competitiveness. China is indeed an extremely low-wage manufacturing environment, and China also benefits from other advantages that give this country a competitive edge over many other possible manufacturing locations around the world, including low land prices, big concentrations of low-cost parts suppliers, a relatively stable and safe political situation, tax and regulatory policies that promote foreign direct investment in manufacturing, and China's own huge potential and actual domestic market for manufactured goods.

## **Manufacturing Employment and Labor Compensation in China**

*The scale of manufacturing employment in China dwarfs that in other countries; China's manufacturing sector has shed surplus workers from inefficient state-owned factories, while increasing employment in the private sector. 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; there was wide variation between urban and rural workers.*

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## MANUFACTURING EMPLOYMENT IN CHINA

In recent decades, China has become a manufacturing powerhouse. The country's official data showed 83 million manufacturing employees in 2002, but that figure is likely to be understated; the actual number was probably closer to 109 million. By contrast, in 2002, the Group of Seven (G7) major industrialized countries had a total of 53 million manufacturing workers. In the late 1990s through the year 2000, China saw declining numbers of manufacturing workers, caused by restructuring and the privatization of State-owned and urban collective-owned factories in the cities. Both massive layoffs of urban manufacturing workers and sharp increases in manufacturing labor productivity ensued. Since then, private-sector manufacturing has thrived in both urban and rural areas of China. The reorganized factories are more productive than State-owned and collective-owned factories and are competitive in the domestic and global economies. China's manufacturing employment began to rise again after 2000, regaining the upward trend of the period from 1980 to 1995.

This report begins with an overview of China's statistical system, including a description of the sources of data used in the analysis presented. Three main sources of statistics on China's manufacturing employment are compared and contrasted, and a hybrid data series is derived that helps evaluate Chinese manufacturing employment levels and trends from 1990 through 2002. The probable biases in China's statistics on the country's numbers of manufacturing workers are assessed, both at the national level and in the key export-manufacturing zones.

The analysis emphasizes issues of data quality and the remaining legacies of the command economy reflected in China's labor statistics. Among the factors included is the excessive focus of China's published statistics on city manufacturing employees, to the near exclusion of detailed data on the more numerous manufacturing employees working outside the administrative boundaries of cities. Even within the cities, data collection and reporting remain concentrated on the rapidly declining state-owned and urban collective-owned manufacturing enterprises, giving short shrift to the not yet adequately collected or published statistics on the thriving, growing, dynamic private manufacturing sector. A major reason for China's statistical neglect of the private sector is that the dominance of private and corporate businesses in today's economy does not fit easily into Marxist theory or Mao Zedong's ideology.

Because of the many data limitations, a great deal of uncertainty remains in the work presented here. A more exacting analysis awaits new and better data collection and more detailed metadata from China's statistical system.

The analysis in the current report refers to the People's Republic of China (mainland China; hereinafter, "China") and excludes statistics for Hong Kong, Macao, and Taiwan. Occasionally, Chinese terminology will be used, because the standard English translations of the terms are misleading or ambiguous and in some cases because there is no succinct, accurate English translation of the term. A complete glossary of Chinese terms used in this article with their definitions can be found in the Appendix.

## **Background**

China's statistical system has been greatly strengthened during the most recent quarter century of economic reform.<sup>1</sup> Statisticians in China are steadily learning from international practice as promoted by the World Bank, the Asian Development Bank, the International Monetary Fund, and the United Nations system. China's statistical organizations endeavor to apply best practices from other countries--especially developed countries--to the Chinese economy. Their efforts have been particularly successful in China's population censuses and in some economic and demographic surveys—for example, the annual urban and rural household income and consumption surveys. Nevertheless, China's statistical system is still affected by categories and procedures that were established during the command economy period before 1978 and never revised. Those outdated categories hamper the analysis of levels and trends of economic growth, inflation or deflation, employment, wages, and economic change in the urban and rural economies. In addition, despite expanding its use of censuses and representative sample surveys, China continues to employ the method of regular (usually annual) statistical reporting by all production or administrative units as its primary data collection instrument.

Most statistics in China are recorded and collected under the central guidance of the National Bureau of Statistics (NBS). According to one source, "The NBS carries the responsibility for organizing, directing and coordinating the statistical work throughout the country."<sup>2</sup> However, as will be shown later, other ministries have certain statistical turf that is their particular responsibility for historical or bureaucratic reasons, and there seems to be little coordination among the relevant ministries. For instance, with regard to manufacturing employment statistics, the Ministry of Labor and Social Security (hereinafter, Labor Ministry) gathers data on most components of the city economies, leaving a small, but rapidly growing, segment to the State Administration for Industry and Commerce. However, the collection of data and the reporting of statistics on manufacturing in rural areas and in towns are left to a part of the Ministry of Agriculture.<sup>3</sup>

The analysis that follows is based as much as possible on information in Chinese sources published by official statistical organizations. The most useful sources turn out to be statistical yearbooks from various Government ministries. Later sections of this report compile and compare data on China's manufacturing employment from the 1995 industrial census and the 2000 population census, as well as administrative data collected from manufacturing enterprises and reported annually. The report explains discrepancies among the data sets, to the extent possible, and discusses the effects of definitional changes on the available official series of manufacturing employment statistics. Strengths and weaknesses in the published statistics are highlighted.

## **Recent employment statistics**

Employment figures for China are usually confusing and nonstandard. They reflect, in part, conventions from the Maoist command economy period from 1949 to 1978, as well as new conventions for the semimarket economy of the economic reform period since

1978. The available data also reflect China's attempts to make its economic statistics more internationally comparable. Recent employment statistics are pieced together primarily from annual enterprise data. Each enterprise, economic unit, small business, or self-employed individual or group is supposed to report employment data each year according to its "labor situation" in the previous year and at the previous year's end. The data are then compiled upward in a statistical reporting chain to the national government.

Enterprise data refer to who is working in what kind of work at the end of the relevant year (end of December). The urban enterprise statistical reporting form that is required to be submitted to authorities early in a calendar year and that refers to the previous calendar year asks enterprises for the "labor situation" (in particular, for the "actual situation that year")--and specifically for the numbers of each category of workers at the end of the previous year.<sup>4</sup> Accountants or those who report employment and wage figures on behalf of their enterprises or other work units (at least those enterprises or other work units in urban areas) are given detailed instructions on how to report monthly, quarterly, yearend, and annual average figures on employment and wages. The instructions are based on regulations released by China's NBS, especially in 1990 and with further clarifications in 1998 and 2002, regarding how to report employment and wages.<sup>5</sup>

The annually reported figures on total manufacturing employment in China include all manufacturing employees: production workers, salaried workers, and supervisory workers. China does not show separate data for these groups of workers. Table 1 presents figures from China's annual enterprise reporting system on the numbers of employed manufacturing workers in the country from 1978 through 2002, broken down into the various categories reported (described in the next section).

### **Structure of manufacturing employment**

Chart 1 (based partly on table 1) displays the structure of China's manufacturing employment at the end of 2002, the latest date for which enough statistics are currently available. China's NBS and Labor Ministry published a figure of 83 million manufacturing employees in China, of whom 45 million were called rural and 38 million were classified as urban. But these data do not take full account of the 71 million town and village enterprise (TVE) manufacturing workers reported by the Ministry of Agriculture. The TVE category includes large factories in industrial parks outside cities, as well as suburban, town, and rural factories.<sup>6</sup> On the basis of the reasonable assumption that the 38 million urban and 71 million TVE manufacturing employment categories are mutually exclusive, the total manufacturing employment at yearend 2002 was about 109 million, as shown in Chart 1. (This contradiction and its implications are addressed more fully later in the report.) Furthermore, there is evidence that the official figure of 83 million manufacturing workers excludes millions of migrant manufacturing workers. (See also later.)

Of the 38 million urban manufacturing employees at yearend 2002 indicated in Chart 1, 30 million were employed in so-called urban manufacturing units (*danwei*), and of these, 29 million were on-post (not laid-off or unemployed) staff and workers. Most of these urban manufacturing staff and workers (16 million) were employed by

corporations, joint ventures, and other companies in China's growing private sector. By the end of 2002, manufacturing employment in urban State-owned enterprises had dropped steeply, to 10 million, and in urban collective units had declined to only 3 million. (See table 1.)

There is considerable overlap between the two categories making up the urban manufacturing classification: manufacturing employment in urban units and urban manufacturing staff and workers (*zhigong*). Urban manufacturing staff and workers (all of whom have been on-post workers since 1998) are included by definition in the category of manufacturing employment in urban units.<sup>7</sup> In every year for which both series are available, namely, 1994-2002, the category of manufacturing employment in urban units is slightly (0.5-0.7 million) larger than that of urban manufacturing staff and workers. (See table 1.) The residual half a million to three-quarters of a million workers in urban manufacturing units include urban reemployed former retirees and foreign employees of manufacturing units, as well as employees from Hong Kong, Macao, and Taiwan.<sup>8</sup>

For example, at yearend 2002, China recorded 29.807 million employed in urban manufacturing units and 29.069 million urban manufacturing staff and workers, the difference between the two categories being approximately 738,000. (See table 1 and chart 1.<sup>9</sup>) This residual is accounted for by the category of other urban manufacturing employment, with 738,885 reported for yearend 2002, of whom 150,470 were reemployed and continuing workers of retirement age.<sup>10</sup> Who, then, were the remaining 588,000 employees in urban manufacturing units? The Labor Ministry clearly has collected data on how many of them are foreign personnel, but *China Labor Statistical Yearbook 2003* does not report this information. (The volume does report that, in all sectors of the economy, only 50,045 out of all those in the category of other urban employment, totaling 4.28 million, were "Hong Kong, Macao, Taiwan & Foreign Personnel" at yearend 2002. This small number implies that the great majority of the hundreds of thousands of foreign experts, technical and administrative workers, teachers, managers, and entrepreneurs actually working in China have been classified (or misclassified) as working in rural areas or are not recorded as working at all.) Therefore, only a small proportion of the 0.59 million workers classified as other urban manufacturing employees at yearend 2002 could be recorded in the statistics as foreign personnel. The rest of the "other" urban manufacturing employees work for urban manufacturing enterprises, but are in statistical categories such as employees lent from another company, workers holding a second job, and those working without a contract because they have not completed employment formalities.<sup>11</sup>

The larger urban category of manufacturing employment in urban units included 29.8 million of the 38.0 million total for yearend 2002 urban manufacturing employment. (See table 1 and chart 1.) The other 8.2 million were in relatively small privately owned and privately operated enterprises (*siying qiye*) or were self-employed individual or family enterprises (*geti jiuye*) in urban manufacturing.<sup>12</sup> China's urban (*chengzhen*) manufacturing workforce in 2002 included 2.6 million workers in *getihu* (individual and household enterprises) and 5.6 million working in privately owned *siying qiye*. In the latter category, 0.8 million workers were categorized as "investors" in their own companies, and 4.8 million were called hired laborers or hired hands.<sup>13</sup>

On the basis of China's urban manufacturing employment data (see table 1 and chart 1), 13 million urban manufacturing workers remain in public-sector (state-owned and urban collective-owned) work units. Thus, the private sector now employs 25 million of China's reported 38 million urban manufacturing workers.<sup>14</sup> Private-sector manufacturing workers are counted, and their numbers are reported, but otherwise, far less information is published about the private sector than the public sector.

Because of the city bias of employment statistics in China, there are almost no further readily available details about the 45 million rural or 71 million TVE manufacturing employees. This information gap is the biggest weakness of China's statistics on manufacturing employment. (The report returns to the problematic classifications of urban and rural statistics in a later section.)

### **Reported trends in manufacturing employment**

As shown in table 1, the officially reported number of employed manufacturing workers in China rose dramatically during the post-Mao economic reform period, from 53 million in 1978 to an all-time high of 98 million in 1995, declined sharply to 80 million in 2000, and then rose again to 83 million by yearend 2002. Rural manufacturing employment has risen with few setbacks throughout this 24-year period, peaking at a reported 45 million as of the end of 2002. The difference between China's reported national and rural manufacturing employment should be urban manufacturing employment; but this number was not published for a number of years, and the column in table 1 is derived as a residual calculation. The figures so derived indicate that urban manufacturing employment in China rose from 36 million in 1978 to a high of 58 million in 1994-95 and then dropped to 38 million by yearend 2002. A figure of 38.018 million for urban manufacturing employment is directly reported in a published table.<sup>15</sup> Therefore, the procedure used to derive urban manufacturing employment in table 1 appears to be defensible. Employment in urban manufacturing units reportedly dropped from 55 million in 1994-95 to 30 million by yearend 2002, and total urban manufacturing staff and workers increased from 36 million in 1978 to 55 million in 1992-93, thereafter declining to 29 million by the end of 2002, on the basis of the reported statistics in table 1. These employment trends based on the official data, however, are misleading. The next two sections discuss changes in definition and coverage that affect the available manufacturing employment statistics and the trends in manufacturing employment during 1990-2002 after adjusting for the changes to the extent possible.

### **Change in the definition of urban employed**

What do the preceding numbers mean? In the first place, successive figures are sometimes not comparable due to changes in coverage or redefinition. In particular, the number for implied urban manufacturing employment dropped sharply, from 55.8 million at the end of 1997 to 43.9 million at yearend 1998, an apparent decline of 12 million in 1 year. A similar drop is shown for manufacturing employment in urban units, from 51.3 million at the end of 1997 to 38.3 million at the end of 1998, and thus down 13 million

during 1998. Employment numbers for urban manufacturing staff and workers also declined, from 50.8 million to 37.7 million that year, a drop of 13 million as well. Figures for manufacturing staff and workers in state-owned units decreased by 11 million that year and went down by 5 million in urban collective-owned units, while increasing in by 3 million in “other” ownership units.

What happened to these manufacturing employment statistics during 1998? One reported change was that there was an important shift in the employment statistics coverage in urban areas. Starting in 1998, workers who had been laid off from active employment, but were still connected with their former employment unit, were no longer deemed employed and were thus excluded from the employment figures.<sup>16</sup> Therefore, these laid-off (“off-post” or “not-on-post” in the English translation of China’s statistical yearbooks) urban manufacturing workers are not included in the 1998-2002 numbers for urban manufacturing employment, manufacturing employment in urban units, or urban on-post manufacturing staff and workers.<sup>17</sup> By yearend 2002, the net result of the layoff and rehiring processes was that the number of laid-off urban manufacturing staff and workers totaled 9.13 million.

### **Adjusted trends in manufacturing employment**

In order to gauge trends in manufacturing employment in China, the analyst must adjust for definitional changes and changes in coverage in the urban data. It is important to recognize that before, and even after, the definitional change in 1998, reported urban manufacturing employment figures for China included, and continue to include, millions of surplus workers.<sup>18</sup> By the end of 2002, of those surplus manufacturing workers, 9.13 million were in the laid-off category, but through 1997 they were still nominally employed in their manufacturing work units.

One method for attempting to gauge true trends in manufacturing employment in China is to subtract the reported laid-off manufacturing workers from the pre-1998 total manufacturing employment figures (which still included laid-off employees), in order to get comparable figures for before 1998 and afterwards. There were reported to be 2 million laid-off manufacturing employees still nominally connected to their work units in 1995 and 3 million in 1996. Table 2 shows that, after adjustment of the 1995-96 totals for the reported definitional shift, there still was a steep drop in official total and official urban manufacturing employment between 1996 and 1998 that cannot be explained by the one definitional change that has been reported. This table would appear to indicate that on-post (not laid-off) manufacturing employment in China declined from 96 million in 1995, to 94 million in 1996, to 83 million in 1998, to 81 million in 1999. If on-post manufacturing employment were indeed dropping by 2 million manufacturing workers a year, then the total would have been 92 million in 1997, 90 million in 1998, and 88 million in 1999. So the official figures for total manufacturing employment from 1997 to 1998 had a loss of 7 million workers that is not accounted for by the one reported definitional change.

There is no discontinuity between 1997 and 1998 in the official rural manufacturing data series. The definitional shifts appear to be only in urban data, and these shifts come entirely from changed coverage of urban manufacturing staff and

workers. The category of on-post urban manufacturing staff and workers was dropping by about 2½ million from 1995 to 1996 and again from 1998 to 1999. If we were to assume that the trend was continuous from 1995 to 1999, then we would see the following approximate numbers in the staff and worker category: 52.3 million in 1995, 49.7 million in 1996, 47 million in 1997, 44.5 million in 1998, and 42 million in 1999. Instead, the reported 1998 figure was 37.7 million. Therefore, about 7 million workers were dropped from the category between 1997 and 1998, in addition to those workers dropped due to the known definitional shift from including laid-off workers in employment figures to excluding them.

Now consider again the trends in China's manufacturing employment based on official data, keeping in mind the unexplained loss of 7 million manufacturing workers from the numbers up through 1997 to the figures for 1998 and thereafter. In 1995, on the basis of official data, China had 96 million on-post manufacturing workers, and the numbers were dropping through 1997. The reported 1998 official national total was 83 million. If the inexplicably missing 7 million are added back in, then perhaps the total was really 90 million, although that figure still signifies a significant drop in manufacturing employment from 1995 to 1998. By yearend 2000, the reported total was 80.4 million (but the true number could have been more than 87 million if the missing workers were included). No matter how the official data are adjusted, China's total manufacturing employment dropped by around 8.5 million or more from 1995 to 2000. The official total then rose by 2.6 million from yearend 2000 to 2002. So the net loss of manufacturing jobs in China during 1995-2002 was about 6 million. Nevertheless, it is important to note that the trend of declining manufacturing employment in China was apparently reversed after the year 2000.

Below the national level, official figures for rural manufacturing employment rose until 1995-96 and stabilized from 1995 through 1999, thereafter rising every year since 1999. Therefore, on the basis of the official series, all the declines in China's manufacturing employment in the late 1990s happened in urban areas. Many who lost their jobs were laid off while still receiving basic living subsidies from their enterprises, and many others were subjected to mandatory early retirement. Some manufacturing workers in urban China have also become fully recognized as unemployed.<sup>19</sup> Of the yearend-2002 registered unemployed urban workers who were previously employed (2.17 million), 41 percent had lost manufacturing jobs.<sup>20</sup> This reduction in the workforce implies that 0.89 million former urban manufacturing workers were classified as unemployed as of the end of 2002.

Apparently, then, manufacturing employment in China increased vigorously until 1995, declined from that year to 2000, and has risen again since then, regardless of whether the reported data come from the Labor Ministry and the NBS or whether the data are adjusted for changes in coverage or definition. Urban state-owned and collective-owned manufacturing enterprises have lost most of their employed workers since the early 1990s, as shown in table 1. Most of their former workers have been laid off, fired, subjected to early retirement, or retained by their enterprise after it was sold, was privatized, or became a joint Chinese-foreign company in the decade from 1992 to 2002. Meanwhile, rural manufacturing employment reportedly has continued to increase, and in urban areas, manufacturing employment in the category of other ownership units grew rapidly during that decade. This category includes manufacturing enterprises with joint

(Chinese-foreign) ownership, shareholding stock ownership, limited-liability corporations, and foreign-owned enterprises.<sup>21</sup> What these numbers appear to mean is the following:

- China's manufacturing is becoming less bloated with surplus workers over time;
- The number of manufacturing workers (however defined or adjusted) in China has declined somewhat since 1995;
- Urban State-owned and urban collective-owned enterprises have shown steep declines in numbers of manufacturing workers since the mid-1990s;
- So-called rural manufacturing is still growing; and
- Urban private-sector manufacturing employment is expanding.

Research by Thomas Rawski helps us understand what is going on in some parts of China's manufacturing sector. Rawski documented the decline in urban staff and worker manufacturing employment in China from 1993 to 2002. Utilizing detailed data from several engineering sectors producing widely used industrial components, he showed a 52-percent increase in labor productivity (value added per worker) in the short period from 1996 to 2000, while employment in these sectors dropped steeply by the year 2000, to 63 percent of the 1996 numbers, and output was nearly stagnant. According to Rawski, "These data reveal industries in the throes of restructuring rather than dynamic growth."<sup>22</sup> China's manufacturing sector is shedding surplus workers and becoming more productive and competitive. Meanwhile, Rawski pointed out, laid-off manufacturing workers in China and in developed countries such as the United States and Japan are experiencing similar dislocations in their personal and family lives.

The U.S. Conference Board has emphasized that China is losing many more manufacturing jobs than the developed world (including the United States) is--and in many of the same industries in which the developed world has seen the greatest declines.<sup>23</sup> Manufacturing industries in China with the greatest job losses during 1995-2002 were textiles, steel processing, machinery, and nonmetal mineral products.<sup>24</sup> China's manufacturing job losses can be traced to the restructuring of extraordinarily inefficient state-owned and urban collective-owned factories and to rapidly advancing labor productivity.<sup>25</sup>

The next five sections of this study delve more deeply into some of the topics raised in the foregoing analysis. Enterprise employment data are contrasted with data from the 2000 population census, supporting the conclusion that the enterprise reports undercount millions of manufacturing workers. Then the problematic categories of urban and rural manufacturing workers are explored in more detail, leading to a statistical anomaly that goes further into the data on the TVE's. Finally, key export regions are examined and migrant manufacturing workers are discussed, because many of China's manufacturing workers have migrated into the export zones in search of jobs and there is some evidence that they are not well enumerated in China's labor statistics.

## Data discrepancies

This section presents a comparison of manufacturing employment data from the 2000 census of China with the annual enterprise data for the same year and attempts to explain the discrepancies between the two sources. The comparisons here show that the regular administrative reporting system misses many millions of workers, not only in the manufacturing sector, but also in many other sectors of the economy. In addition, a discussion of the census results highlights an apparent tendency on the part of rural households to report household workers as agricultural workers, even if they work in manufacturing part time or for part of the year. Therefore, although the census achieved more complete reporting than did the official annual compilations from enterprises, the census, too, appears to have undercounted manufacturing employment, especially outside the cities and towns.

The 2000 census of China discovered more manufacturing workers than were reported from annual administrative data. Both the 1990 and 2000 censuses asked respondents information about the employment of all persons aged 15 years and older. In the 2000 census, the data were gathered in a long form filled out by about 10 percent of civilian households in every locality and chosen to be representative of the population as a whole. Figures cited in the rest of this report are extrapolated to the entire counted civilian population aged 15 years and older.<sup>26</sup>

Employment data from annual enterprise reporting and from China's 2000 census do not agree with each other. For example, table 3 shows the estimated numbers of employees in each major sector of China's economy at or near the end of the year 2000 from the two major data sources. On November 1, 2000, the census recorded a total employed population of approximately 709.7 million workers. Two months later, administrative compilations of data from enterprises, economic units, and self-employed individuals recorded a total of 629.8 million workers, 80 million fewer than the census. (See table 3.)

What are the sources of the discrepancies between these two sets of data? We can see from table 3 that the census recorded 123 million more workers in agriculture than did annual administrative data. One reason for this large difference is that the census asked about employment only in the last week of October 2000, the week just prior to the date the census was taken. The census surely detected individuals who work in agriculture during peak planting and harvest seasons, but not the rest of the time, and these workers were counted as employed in agriculture during the peak autumn harvest season.

The way employment questions are asked in China's censuses and the instructions for filling out the census forms apparently bias rural household respondents in favor of reporting all household members as agricultural workers, even if some adults in the family actually work in nonagricultural sectors of the economy most of the time.<sup>27</sup> Therefore, the decennial censuses may overreport employment in agriculture and underreport actual employment in many industrial and service sectors of the economy. In particular, the censuses of 1990 and 2000 probably underreported the total number of manufacturing employees in China.

In most other employment categories outside of agriculture, the census also estimated a larger employed population for the latter months of the year 2000 than did enterprise data compiled by the Labor Ministry and the NBS. This may mean that the census detected millions of workers that the administrative reporting system is regularly missing. (See table 3.) For example, in services, the annual reporting system seems to be leaving out millions of workers, perhaps because many service workers are in the informal economy. By contrast, the regular administrative reporting system recorded more workers than the census did in construction, in transport, in the small categories of geological prospecting and water conservancy, and in research and technical services. The annual system also reported 56 million people at yearend 2000 in the category of other unclassified workers, while the census was able to classify most workers into one of its standard employment categories. (See table 3.) Some of these “other” workers may in fact work in two parts of the economy, such as agriculture during peak seasons and manufacturing during another, or even the same, part of the year.

The discrepancy between census and enterprise data on the number of manufacturing workers in China was not large in the year 2000, at least if census data are compared with the total employment figures by sector compiled by China’s Labor Ministry and the NBS and reported in table 3. The two data sets are as close together as they are because the census also likely undercounted rural manufacturing workers. (See later.) The census estimated 88.43 million persons employed in manufacturing during the last week of October 2000. On the basis of the national employment totals published by the NBS and the Labor Ministry, economic units reported that employment in manufacturing totaled 80.43 million at yearend 2000.<sup>28</sup>

What can account for this discrepancy of 8 million manufacturing workers between census data and the officially compiled enterprise data? First, the census counted each part-time worker as an employed worker. Anyone who worked more than 1 hour for pay in the week before the census was counted as one employed worker. Of manufacturing workers counted in the census, 3 percent worked fewer than 4 days in the previous week, and 97 percent worked full time or overtime. More specifically, 39 percent of manufacturing employees worked for income 4 or 5 days in the previous week, and 58 percent worked 6 or 7 days during the 7 days before the census.<sup>29</sup> It is possible that annually reported employment figures tend to neglect those who work less than full time. Therefore, part-time manufacturing workers might explain some of the discrepancy--no more than 2 to 3 million--between the census-based estimate of manufacturing workers in late 2000 and the official NBS-Labor Ministry compilation of yearend-2000 enterprise data on manufacturing employees.

Temporary workers in manufacturing who happened to be at work during the last week of October 2000 would have, or at least should have, been reported by the census as employed in manufacturing. Annual enterprise data also capture some temporary workers. For example, it was reported that, within the category of on-post urban manufacturing staff and workers in state-owned enterprises in 2002, 9.31 million (95 percent) of 9.79 million were in long-term manufacturing employment, while 0.47 million (5 percent) were in temporary manufacturing employment.<sup>30</sup> However, long-term or temporary status is reported only for this 10 million of China’s reported total of 83 million on-post manufacturing workers in 2002. The annual enterprise reporting system classifies all urban on-post employees as either “long-term,” defined as having been

working for 1 or more years, or “temporary, provisional,” defined as having worked for less than 1 year.<sup>31</sup> Many of the latter employees may simply be workers who have not yet been on the job long enough to qualify as long-term workers, even though that is the intent of both employer and employee. It is possible that the census included more of China’s actual temporary manufacturing workers than are included in the annual enterprise reports, although there does not appear to be any proof that such a bias or shortfall exists in enterprise data.

A minor cause of differences in manufacturing employment between census data and annual data is that the censuses of 1990 and 2000 recorded employment of the population aged 15 years and older, whereas compiled annual data are supposed to refer to the population aged 16 years and older.<sup>32</sup> According to 2000 census data, China had a total of 334,000 manufacturing workers who were exactly age 15 in the last week of October 2000.<sup>33</sup> Therefore, 0.33 million of the 8.00 million differential between census and annual enterprise numbers of manufacturing workers in China in 2000 could have been caused by the inclusion of workers aged 15 years in census data and their apparent exclusion from annual employment data.

At the older end of the working ages, the census was supposed to include as employed everyone aged 15 years and older in the long-form sample population who had worked for income either part time or full time in the week before the census, no matter what their age. China’s regular employment statistics define working ages as 16-59 years for men, 16-54 years for women working in white-collar jobs, and 16-49 years for women in blue-collar jobs. In theory, with regard to urban workers, only those in these age groups are included in the category of staff and workers. Employed people who are still working beyond the statutory working ages or who have been rehired after retiring from a job are supposed to be included in the category of “other” urban employment, in a subcategory of retirement-age workers who have been rehired or who have continued working. The aforementioned working ages do not apply to agricultural employment, and it is not clear whether they have any relevance to rural or town manufacturing employment. In theory, annual employment statistics, as well as census employment statistics, should include all those people in their fifties, sixties, and older who are working to earn income. Therefore, at the older working ages, there should be no age cutoff in employment statistics and no definitional difference between census figures and annual enterprise data on manufacturing or other employment.

### **Urban and rural manufacturing workers**

In China’s annual statistics on employment in manufacturing, the categories “rural” (*xiangcun*) and “urban” (*chengzhen*) are profoundly problematic.<sup>34</sup> If these employment statistics followed China’s official statistical definition of urban and rural places and populations, then *urban* would include manufacturing employment in cities (*chengshi* or *cheng*) and in towns incorporated as urban places (*zhen*). The urban manufacturing figures should include actual workers in manufacturing in cities and towns, regardless of whether the workers have or do not have their permanent residence or registration there. If rural villagers are employed full-time in manufacturing in an urban town (*zhen*) or in a

city, then, on the basis of the NBS statistical definition of *urban*, these manufacturing employees should be classified in the data as urban manufacturing workers.

Indeed, China's census of November 1, 2000, reported that the nation had 41.96 million manufacturing workers in cities and 18.41 million in urban towns (*zhen*), for a total of 60.36 million urban manufacturing workers, constituting 68 percent of all the manufacturing workers in China. The census also counted 28.07 million rural (*xiangcun*) manufacturing workers, 32 percent of the enumerated manufacturing workers.<sup>35</sup> As it is, the 2000 census may have underestimated the urban proportion of manufacturing employment because rural workers who had moved to towns or cities within the previous 6 months and who were working in manufacturing there would be counted for the census back in their villages and therefore might be called rural manufacturing workers or even rural agricultural workers.

Table 1 shows, however, that the annual statistics for yearend 2000 recorded urban manufacturing employment at only 39 million (fewer than the 2000 census counted in the cities alone), just 49 percent of the reported national total, while rural manufacturing employment, at 41 million, constituted more than half of China's manufacturing employment. The category of manufacturing employment in urban units was reported at only 33 million that year and that of urban manufacturing staff and workers were reported at 32 million. China's 2000 census used a comparatively careful definition of urban population and employment that has been refined by the NBS during the last two decades. The NBS official statistical definition of urban and rural populations and employment is arguably the best standard for other Chinese statistics. Interestingly, the breakdown of China's annual manufacturing employment statistics into the rural classification and the various urban categories is inconsistent with China's own statistical definitions of *urban* and *rural*.

The inconsistencies between census data and annually reported data on urban and rural manufacturing employment arise in part because annual data are "administrative." The regular statistics are based on administrative geographical boundaries, rather than on statistical distinctions between rural and urban employment. In the administrative data, *urban* encompasses only cities and perhaps also the political county seat (called the "county town") of each county in China, while *rural* denotes everywhere else, including all other towns that are officially established as urban.<sup>36</sup> In the annual manufacturing employment statistics, however, the word *urban* appears to be a misnomer. The data appear to refer to manufacturing employment only in China's cities and perhaps some of their immediate suburbs and the county towns. Apparently, almost all of China's manufacturing employment in urban towns (*zhen*) and rural areas is lumped together as rural manufacturing employment.

In truth, the discrepancy between the annual administrative data and the census data is even greater than the preceding paragraph asserts. According to the NBS, some "urban" data on manufacturing employment include data from units that are not in fact located in any urban area.<sup>37</sup> Specifically, if a state-owned factory is located in a remote rural area, its data might still be included in urban data on employment and wages in manufacturing. This categorization is a legacy of the planned-economy practice of reporting data by administrative subordination rather than geographic locality. In addition, according to the NBS, there is at least one case of a rural county in Guangdong province that was reclassified and established as a city, after which all the factories in the

new “city” continued to be classified and reported as TVE’s; indeed, it may still be that no manufacturing employment or wage data from this new “city” are reported as urban.

Fortunately, of late China has been making a gradual transition to compiling statistical data on the basis of geographic locality rather than administrative subordination.<sup>38</sup> Still, there appears to be no concrete information that can help quantify what proportion of the reported data on “urban” manufacturing employment and wages is actually from rural locations or what proportion of “rural” or “TVE” manufacturing employment or wages actually refers to manufacturing units located in cities.

### **A major statistical anomaly**

China’s statistics on manufacturing employment suffer from an important inconsistency. The Labor Ministry concerns itself primarily with city employment, while the Ministry of Agriculture is responsible for data on rural and town (*zhen*) employment. This division of responsibility is a legacy of the Maoist command-economy era, and it has not yet been corrected. Therefore, the Labor Ministry publication *China Labor Statistical Yearbook* concerns itself almost entirely with city employment and wage statistics; even within cities, the Labor Ministry focuses its data collection and reporting on the rapidly declining urban state-owned and collective enterprises. The Labor Ministry calls these data “urban” statistics. Meanwhile, the Agriculture Ministry collects employment and wage data from the TVE’s, including those engaged in manufacturing, and publishes the data in its own publications. It appears that there is no coordination between the two ministries. For example, in calculating total manufacturing employment in China, NBS and the Labor Ministry seem to ignore the Agriculture Ministry data from the TVE’s.

This problem is illustrated in table 1 and chart 1. The rightmost two columns of the table report Ministry of Agriculture data on employment in industry (*gongye*) TVE’s since 1978. This category is almost all employment in manufacturing. (The rest of “industry” employment comprises the two relatively small categories of mining and the production and supply of electricity, gas, and water.) In 2003, a Ministry of Agriculture publication reported for the first time the number of TVE manufacturing employees (for yearend 2002), and that number constituted 92.4 percent of TVE industry employment. Arbitrarily using that same percentage for the years starting in 1990, the far right column of the table presents estimated TVE manufacturing employment during 1990-2001.

It is important to note that TVE industry employment data had an abrupt definitional shift in 1997 in which the total reported dropped sharply, only to rise again the following year. Part of the jump in the number of TVE manufacturing employees in 1998 may be associated with the unexplained statistical loss of 7 million urban manufacturing staff and workers in 1998 as discussed earlier. In 1998, the NBS reclassified the group of directly reporting enterprises to those with annual sales revenue above a certain amount and exempted smaller enterprises.<sup>39</sup> As reporting requirements were reduced for small and medium-sized enterprises in urban areas, 7 million manufacturing workers inexplicably dropped out of the urban numbers entirely and were not picked up anywhere in the official rural or in the official total manufacturing employment series. However, they may have been added to the TVE employment category, boosting its manufacturing employment numbers in 1998.

It is unclear just what the TVE industry employment numbers actually mean and do not mean or how part-time or part-year employees are treated in the data. Therefore, it is unclear whether TVE industry employee numbers are overstated, understated, or about right. Nevertheless, the TVE data must be considered in evaluating China's manufacturing employment levels and trends, and evidence discussed in the remainder of this article argues for using those data, rather than the official series on rural manufacturing employment, to estimate noncity manufacturing employment in China. In addition, the TVE data provide the only figures on rural wages, and those wages must be used in constructing wage and compensation estimates for all of China.

The column giving data on total manufacturing employment in table 1 does not include all the reported TVE manufacturing employees. How do we know this? The reason is that all or almost all of the reported "urban" manufacturing employees in China are not in TVE's. The category of urban "staff and workers" explicitly excludes all TVE employees.<sup>40</sup> The rules about how to report the "other" urban enterprise employees that, together with staff and workers, constitute "employment in urban units" do not say anything explicit about TVE's.<sup>41</sup>

It may be that some of the residual 8.21 million "urban" manufacturing employees who were self-employed or who worked in private enterprises in 2002 also were called TVE employees, but this overlapping of categories appears unlikely, given the way urban and rural employment data for China are reported.<sup>42</sup> These workers are in cities, whereas TVE manufacturing employees generally work outside the cities, in rural areas and in towns. In fact, instructions for filling out China's labor force survey specifically state, "TVE employees are only those who work in enterprises located in rural townships and villages."<sup>43</sup> Among manufacturing workers in 2002, there were 21.35 million employees in private enterprises (*siying qiye*) or in individual or family enterprises (*geti duzi qiye*). Of these, 8.21 million were in the cities, while 13.14 million were classified as "rural," meaning noncity; it is likely that the latter group was included in 2002 TVE manufacturing employment and wage statistics.<sup>44</sup>

If the 29.81 million manufacturing employees working in urban units at yearend 2002 are subtracted from the total manufacturing employment figure for the same year (table 1), the result is 53 million manufacturing employees who could be working in TVE's. Yet the Agriculture Ministry reported 70.87 million TVE employees in manufacturing that year. (See table 1.)

Chart 2 graphs two different estimates of total manufacturing employment in China. The "reported" series is that constructed by the NBS and the Labor Ministry and titled "Total manufacturing employment" in table 1. The series titled "Urban and TVE" in the chart assumes that the columns for derived urban manufacturing employment (referring to cities) and TVE manufacturing employment (referring primarily to towns and villages--the rightmost column in the table) are mutually exclusive and do not overlap; the chart series is the sum of those two sets of data. (Data from the two series in Chart 2 are given in table 4.) Both series indicate that (1) total manufacturing employment in China peaked in the mid-1990s; (2) there was a slow decline in Chinese manufacturing employment in the late 1990s; and (3) beginning in 2001 or 2002, there was a slight increase in national manufacturing employment. (Note that there were definitional shifts in TVE industry employment data, and then in urban manufacturing employment data, from 1996 to 1998.)

The “urban-and-TVE” series in chart 2 and table 4 suggests that China had 109 million manufacturing employees by yearend 2002, whereas the officially compiled series reported 83 million, a difference of 26 million. Which series is correct or, at least, more nearly correct?

On the one hand, if the yearend-2000 totals from the two series in the chart and the table are compared with 2000 census-based estimates of manufacturing employment, it becomes evident that the census found about 8 million more manufacturing workers in China than the NBS-Labor Ministry compilation that year (see table 3), but 20 million fewer than the TVE and urban manufacturing employment total for that date. The census number is closer to the official series, which would argue in favor of that series.

On the other hand, the urban-and-TVE series agrees with the results of the 1995 industrial census, which counted 147 million workers in industry (*gongye*) nationwide. China’s official administrative data series for the whole country (not only for TVE’s) reported that, in 1995, 89 percent of all of China’s “industry” employees were in manufacturing. Applying this percentage to the industry employment data from the 1995 industrial census would translate into 131 million manufacturing workers nationwide that year.<sup>45</sup> The total of urban and TVE manufacturing employment for yearend 1995 was 128 million. Therefore, evidence from the 1995 industrial census of China argues for using the urban and TVE series to estimate total manufacturing employment in China.<sup>46</sup>

More information is needed to determine which series is more nearly correct for total manufacturing employment in China during 1990-2002. Tentatively, it would appear that the urban and TVE series on manufacturing employment would be more useful than the official series. One reason is that the NBS and the Labor Ministry have little usable information associated with their figure of 45 million “rural” manufacturing workers. Nothing is published except that one number, and no information is available on how this number was derived or estimated. By contrast, a branch of the Agriculture Ministry has gathered and published some information on the TVE manufacturing employees and on the earnings paid to them. The only regular reporting system that collects detailed data for rural enterprises, including manufacturing enterprises, is the data collection system run by the Township Enterprise Bureau of the Ministry of Agriculture:

The Township Enterprise Bureau of the Agriculture Ministry collects detailed data on township-run and village-run collective enterprises, and basic statistics on co-operative enterprises, private enterprises and individual-owned enterprises. The NBS assists the Township Enterprise Bureau in the design of the statistical reporting forms. The Township Enterprise Bureau collects the data and makes some of them regularly available to the NBS. The NBS relies on the Township Enterprise Bureau’s data and has no independent regular reporting system for rural enterprises.<sup>47</sup>

If the urban and TVE series is the more nearly correct one, then the 2000 census long form may have underestimated the true number of manufacturing workers in China on November 1, 2000, by about 20 million (108,000,000 – 88,000,000). (See tables 3 and 4.) One study has pointed out that the census questionnaire and the instructions for enumerators may tend to bias the responses of rural households in favor of reporting all members as engaged in agricultural employment, even if a family member is working in

manufacturing.<sup>48</sup> Another problem is that when the 2000 census enumerators located migrants, they probably handed them a short census form to fill out, whereas households were sampled to decide which would receive the long form. The result of these procedures might be that employment in industry or service sectors favored by migrants is underestimated by the census long form.<sup>49</sup> Also, in some parts of China, the last week of October is still a heavy harvest season, and the census might have counted as agricultural workers millions of manufacturing employees who were only temporarily diverted into agriculture.

If the urban and TVE manufacturing series is the preferred one, then China reported about 105 million manufacturing employees at yearend 1990, a figure that rose to 128 million at yearend 1995 and 130 million at yearend 1996. (See table 4.) In 1997 and 1998, statistical changes and corrections, as well as redefinitions, in both TVE data and urban employment data resulted in a drop in China's total manufacturing (urban and TVE) employment figure, to approximately 112 million by yearend 1998, of which 44 million were called "urban" and about 68 million "TVE." (See table 1.) Since then, TVE manufacturing employment apparently rose slowly each year, to 71 million at yearend 2002, while on-post (not laid-off) urban manufacturing employment dropped from 44 million to 38 million. Total urban-and-TVE manufacturing employment in China declined by 4 million, from 112 million in 1998 to 108 million in 2000-01, and then rose slightly to 109 million by yearend 2002, as shown in table 4 and chart 2.

### **Occupational categories of China's manufacturing workers**

The most recent available data on the occupations of manufacturing employees in China comes from the 2000 population census, which gives the broad occupational breakdown of those who were working in manufacturing enterprises in the last week of October 2000, based on a 10 percent sample of households in every PRC locality in the 2000 census.<sup>50</sup> (This author has not been able to locate a similar breakdown reported for the annual data on manufacturing workers.) According to the 2000 census, the manufacturing sector included 67 million production, transport, equipment, and related workers; such line workers constituted 76 percent of the 88 million manufacturing employees estimated by the census. The second largest group in manufacturing was 8 million sales and service workers, who made up 9 percent of the total. There were 5 million professional and technical workers, making up 6 percent of manufacturing employees. Clerical workers numbered 4 million, constituting 5 percent of the total. There were 3 million administrators and managers, 3 percent of manufacturing employment.

Census data showed that there was a surprising degree of balance in the total numbers of men and women working in China's manufacturing. Of recorded manufacturing workers in the 2000 census, 54 percent were men and 46 percent women. There were only 3 million more male than female production workers, a total of 35 million men and 32 million women. Men strongly dominated management, as well as sales and service and clerical staff. There were more women than men in the professional/technical category. Within the manufacturing sector, however, factory observations suggest that women do most of the low-paid meticulous hand-assembly of

light industrial products, while men dominate the better-paying jobs as machinists and equipment operators.

### **Manufacturing in key export regions**

Many establishments in China engage in manufacturing that is part of global trade. These manufacturing enterprises import large quantities of components, inputs, raw materials, and machinery, primarily from other Asian countries, and they employ large numbers of nonnative managers and professionals. They export some of their final product to the global market, chiefly the United States, Europe, and developed countries in Asia.<sup>51</sup> The two leading manufacturing regions producing for the global market today are the Pearl River (*Zhujiang*) Delta (near Hong Kong and Macao) of Guangdong Province, which includes 9 cities, and the Yangtze River (*Changjiang*) Delta, which includes 15 cities in Shanghai Municipality, Zhejiang Province, and the southern half of Jiangsu Province.<sup>52</sup> Both areas include many noncity manufacturing centers.

At yearend 2002, on the basis of the NBS and Labor Ministry compilation, these four provinces reported a total manufacturing employment of 2.69 million in Shanghai Municipality, 7.81 million in Zhejiang Province, 7.45 million in Jiangsu Province, and 7.81 million in Guangdong Province.<sup>53</sup> Except in Shanghai Municipality, the majority of the manufacturing employees were classified as rural in these export-oriented provinces. Rural manufacturing employees totaled 1.09 million in Shanghai Municipality, 5.82 million in Zhejiang Province, 4.61 million in Jiangsu Province, and 4.25 million in Guangdong Province.<sup>54</sup> If the Agriculture Ministry were to report the numbers of TVE manufacturing workers by province, the numbers for those four provinces would undoubtedly be much higher than the reported numbers of rural manufacturing employees there. If their TVE manufacturing workers constitute about 92.4 percent of their TVE industry workers, then the four provinces have approximately the following numbers of manufacturing workers outside their cities: Shanghai, 1.50 million; Zhejiang, 8.00 million; Jiangsu, 6.96 million; and Guangdong, 7.61 million, for a total of about 24 million.<sup>55</sup> These numbers are far greater than the numbers of rural manufacturing workers reported by the NBS and the Labor Ministry for those provinces.

Of China's reported 70.9 million TVE manufacturing employees in 2002, only 13.4 million were reported to be producing for export, while 57.5 million were apparently producing only for the domestic market. Most of the TVE employees producing for the export market probably were located in the Pearl River and Yangtze River Deltas.

### **Migrant manufacturing workers**

Where are the migrant manufacturing workers in China's statistics? Most published data on manufacturing employment do not single out migrants. Therefore, it is difficult to discover how many migrant manufacturing workers there are and where they are.

Many of China's urban manufacturing workers, especially in the export-manufacturing zones, have migrated into cities and their suburbs from rural areas. These rural-to-urban in-migrants are supposed to be included in 2000 census figures on urban

manufacturing employees if they have been in the city for 6 months or longer. Also, annual enterprise data for urban manufacturing units are, in theory, required to include workers from rural areas in the category of urban manufacturing “staff and workers.” Specifically, the urban employment classification “on-post staff and workers” includes the category “workers whose population registration is in rural areas”; all these figures are to be reported monthly, quarterly, and annually.<sup>56</sup> According to the NBS, the official series on manufacturing employment in urban units (see table 1) included a total of 4.59 million migrant manufacturing workers (whose household registration was still in rural areas) at yearend 2002. The 4.59 million figure constituted 15 percent of the 29.81 million manufacturing employment in urban units; the number of in-migrant manufacturing workers with rural population registration increased to 5.46 million at yearend 2003, or 18 percent of manufacturing employment in urban units at the end of that year.<sup>57</sup>

Many millions of young rural workers have migrated to China’s export-manufacturing zones in the most recent decade and a half to work in factories. Sometimes these factories are within city administrative boundaries, but often they are located in industrial parks, suburban areas, built-up periurban industrial zones, towns, or rural regions where agricultural land is being taken over for manufacturing zones. Both foreign and domestic employers who are eager to keep down their labor costs and statistical reporting requirements may prefer that their export-processing factories be classified as rural or TVE.<sup>58</sup> Under such a classification, they need meet few, if any, requirements to pay social insurance and other welfare obligations for their hundreds or thousands of production and hand-assembly workers, and, at the same time, data-reporting requirements for their enterprises are minimal. Many of the migrant manufacturing workers in these factories may be counted in China “rural” manufacturing employment figures or in the TVE manufacturing industry employment numbers. (See table 1.)

There is, however circumstantial evidence that not all migrant workers are included in China’s official annual employment data. China’s November 1, 2000, census estimated that there were already 14.60 million migrant rural-to-urban manufacturing workers, constituting 25 percent of all manufacturing workers in cities and urban towns.<sup>59</sup> Worker migration has been increasing since then, especially for manufacturing, so the number likely was larger by the end of 2002.

Other indirect evidence from one province points to the same conclusion. Shanghai Municipality carried out a detailed survey of its “floating population” (*liudong renkou*) as of August 1, 2003.<sup>60</sup> The survey estimated that in-migrants from other provinces who had been in Shanghai Municipality for a day or more totaled 4.99 million. Of these individuals, 3.75 million were employed, yet the *Shanghai Statistical Yearbooks* exclude even long-term in-migrants from their figures on the total population of the municipality and, therefore, probably from the total employment figures (7.43 million at yearend 2002; 8.13 million at yearend 2003) and the manufacturing employment figures as well.<sup>61</sup> Data on manufacturing employment in Shanghai Municipality in the *China Labor Statistics Yearbooks* are based on the data in the *Shanghai Statistical Yearbooks*. Shanghai Municipality reportedly had 2.69 million manufacturing workers at yearend 2002 and about 2.61 million at yearend 2003.<sup>62</sup> As of August 1, 2003, there were 1.27 million floating in-migrant manufacturing workers in Shanghai Municipality. It appears that these migrant manufacturing workers were largely excluded from the official data

series on Shanghai. Unless they were counted in China's official data series as manufacturing workers back in their home provinces, they also were missing from the official national manufacturing employment series that is compiled from provincial data.

### **Is China's labor supply "inexhaustible"?**

China is widely perceived to have an unending supply of poor laborers willing to work for low wages:

Right now China is, in many ways, the centripetal force of globalization— attracting capital and companies at an increasing rate; in the process, given its inexhaustible supply of cheap labor and surprisingly swift ascent up the technological food chain, it is rewriting the economics of scores of industries.<sup>63</sup>

Rawski, for example, refers to "China's growing problems of unemployment and excess labour supply."<sup>64</sup> How big is China's surplus labor force and what are the characteristics of these adults? Are they suitable and readily available to work in China's manufacturing industries, or not?

China has sustained massive layoffs in its urban state-owned and collective manufacturing industries, as indicated by the sharp declines in their employment numbers in Table 1. "The shutdown of inefficient state-owned plants has cost China tens of millions of jobs, with more to go."<sup>65</sup> In addition, government employment has been steeply cut in recent years. The outcome is that in China's urban areas, the unemployed and laid-off workers may be about 6-13 percent of the economically active population,<sup>66</sup> and even higher in some important industrial cities,<sup>67</sup> with some estimates of the true unemployment rate rising to 25 percent as some scholars attempt to include disguised unemployment.<sup>68</sup> In China's rust belt in the northeast, some cities are estimated to have actual unemployment rates approaching 40 percent of the labor force. China's urban surplus workers include millions of middle-aged and older formerly employed workers who may or may not be suitable for the required work in manufacturing. Many have been forced to retire early, have left the labor force, and have lost heart, so they cease looking for work.<sup>69</sup> Some never even tried to look for work because they feel that whatever might be available is beneath them. But there are also millions of young adults with a senior high school or equivalent level of education who are looking for their first or second job. This is a large pool of potential employees who are already in the cities.

The surplus labor force in China's countryside is variously estimated in a huge range of 100-200 million.<sup>70</sup> For example, "The unemployment rate in urban areas is estimated at more than 8 percent; there may be an additional 200 million jobless workers in the countryside."<sup>71</sup> According to some surveys, nearly a third of today's rural labor force is surplus agricultural workers.<sup>72</sup> As agriculture modernizes in China during the coming decades, hundreds of millions of agricultural workers will need other kinds of employment.<sup>73</sup>

Chinese manufacturers have access to an almost unlimited supply of cheap labour. By some estimates, there are almost 200m underemployed workers in rural areas

that could move into industry. This surplus labour may take at least two decades to absorb.<sup>74</sup>

Are China's potential manufacturing employees willing to move from the village, town, or city where they are to wherever there are jobs? In general, the answer appears to be yes:

Now [in China] people are concerned with...can I find a higher paying job, can I move to a different place to get better opportunities? Seven years ago, people were concerned about getting opportunities from where they were. Now they are increasingly asking 'Can I move somewhere else, from the countryside to the city or from this province to another province? And if I am trained properly, can I compete for better jobs and how do I compete?' [Interview with World Bank China Program Director Yukon Huang.]<sup>75</sup>

There are increasing numbers of reports that manufacturing and other industries in the Pearl River Delta (PRD) or other parts of Guangdong Province are experiencing labor shortages in the most recent several years. Fujian and Zhejiang provinces have also been affected. The main reasons for these shortages of manufacturing workers in the booming coastal provinces are:

--Many city governments continue trying to protect urban-born workers from competition for jobs by restricting migration from rural areas. Cities still have labyrinthine and costly systems in place to control and minimize in-migration, including quotas for the number of migrants enterprises can employ, fees that firms have to pay in order to employ a migrant, expensive required migrant identity cards and migrant employment cards and temporary resident cards, and restrictions on giving formal sector jobs to those without local permanent residence registration. Migrants from rural areas are barred from more desirable jobs and subjected to significant wage discrimination in urban areas.<sup>76</sup>

--Continuing hidden barriers to migration, including lack of social security and health care for migrants and inability to get urban residence registration.<sup>77</sup> Policies that continue to dampen labor mobility are keeping China's labor markets segmented.<sup>78</sup>

--In 2004, rural incomes appear to be rising in some areas that normally supply low-paid manufacturing labor to PRD factories, inducing some potential migrants to decide they are better off staying in the countryside nearer their homes.<sup>79</sup> Grain prices and agricultural subsidies have increased, making agricultural work more attractive than before.<sup>80</sup>

--Flat and extremely low pay rates and poor working conditions in PRD factories, which make them less attractive to migrants than east coast factories that pay more and have begun to improve benefits.<sup>81</sup>

--Objectionable practices, such as routine withholding of months of wages by manufacturing employers in order to prevent workers from leaving the factories, are becoming widely known among former, current, and potential migrant laborers, who are realizing that they will not be paid what they are promised. Therefore, fewer workers are willing to migrate, especially to the PRD. The PRC government has passed a new law effective December 1, 2004, to force employers to pay all wages owed and pay on time.<sup>82</sup>

These labor shortages will presumably be solved by policy changes to make migration more desirable and feasible for rural workers, as well as by rising wages and improved working conditions in China's manufacturing enterprises. Trade and non-trade barriers between China's provinces need to be eliminated in order to free up the movement of labor: "While Guangdong's factories are thought to be as much as 2 million workers short, the inland provinces have cheap labour in abundance."<sup>83</sup>

What about the coming decade or two? Will China run out of people willing to work in manufacturing for a low wage by international standards? It is true that the PRC had a steep fall in fertility during the 1970s, when China implemented its forceful family planning program in rural areas and then its one-child policy. Since then during most years, fertility in China has been extraordinarily low by developing country standards. Cohorts of children born from the late 1970s to the late 1980s have already entered labor force ages. China's cities in particular have comparatively small cohorts of young adults because of the success of the one-child policy in cities. So analysts might speculate that China will soon experience shortages of young adult workers, especially in urban areas but nationally as well.

Countering this demographic trend, however, is the massive legacy of surplus labor in China's rural and urban economies that will continue to be felt for some time: "...a sizable surplus of labor still exists in the rural sector (about 150 million) and state-owned enterprises (about 10-11 million)."<sup>84</sup> If there are shortages of city-born young adult workers in some economically booming cities, employers can find eager workers from the vast countryside who can be trained to do most of the jobs, even if their education had stopped after junior middle school. Now and in the coming decades, urban China can draw on rural-to-urban migrants to fill gaps between urban demand for labor and urban-born supply of labor.<sup>85</sup> "Up to 500 million peasants are expected to migrate to cities in search of factory work over the next two decades."<sup>86</sup> Not only that, but productivity in China's manufacturing industries will continue to rise, which will require fewer employees for the same output. China's massive pool of rural labor needing modern jobs is expected to continue to depress manufacturing wages in the PRC:

The United Nations estimates that some 200 million people will move from China's rural areas to cities between 2000 and 2010. Even assuming labor demand from China's factories keeps growing rapidly, there is an almost infinite supply of workers to fill it. That means wages will likely remain low, and employers will have little incentive to listen to complaints about working conditions.<sup>87</sup>

Therefore, for the first decades of the 21<sup>st</sup> century, the PRC has for all practical purposes an unlimited supply of labor, at least of the unskilled and minimally educated variety, and perhaps also of basically literate and numerate hard-working laborers who were born in the countryside.

### **A global perspective**

Table 5 gives BLS compilations of levels and trends of manufacturing employment in the Group of Seven (G7) developed countries; in 2002, these countries had a total of 53 million manufacturing workers. China's official data showed 83 million manufacturing employees that year, but, as mentioned earlier, that figure was likely an understatement, and the true number was probably closer to 109 million. (See table 4.) Most of the countries listed in table 5 have had declining numbers of manufacturing workers, as did China in the late 1990s, because of both rising productivity and increasing global competition in manufacturing.<sup>88</sup>

In addition, the share of manufacturing in total employment has been declining in most of the G7 countries.<sup>89</sup> In 1990, manufacturing employment ranged from 15 percent to 32 percent of total employment in these developed countries, but by 2002, the share was down to 12 percent to 24 percent of total employment. In China, meanwhile, official data showed that manufacturing constituted only 14 percent of total employment in 1990, after which it declined to 12 percent in 2002. The difference between China and the developed countries, of course, is that agriculture still employs a large proportion of the working population in China. Chart 3 shows that, even though manufacturing employs a similar proportion of workers in the United States and China, most other workers in the United States are in services, whereas in China the service sector is comparatively underdeveloped and agriculture continues to employ more workers than services.

Why does China have so many more manufacturing workers than other countries? First, much of China's manufacturing production is still labor intensive rather than capital intensive, so more workers are required in China to produce the same output. Second, China is extremely competitive in the global market for manufactured products and is able to sell its manufactures around the world, not only because it pays low wages, but for many other good reasons as well. Third, the manufacturing sector in China serves the country's own huge domestic market as well as the international market.

### **Summary and conclusions**

This report has collected and assessed the available statistics on manufacturing employment in China. Official data from the China National Bureau of Statistics and the Labor Ministry show a steep drop in urban manufacturing employment in China from 1995 to 2001 and in total manufacturing employment from 1995 to 2000, after which the numbers stabilized or began to rise. The declines in Chinese manufacturing employment in the late 1990s were caused by (1) massive layoffs and early retirements of redundant workers in China's urban state-owned and urban collective-owned manufacturing enterprises, (2) a change in coverage starting in 1998 that has included only on-post (not laid-off) manufacturing workers in the urban employment numbers from 1998 to the

present, and (3) another definitional shift from 1997 to 1998 that has not been explained. The analysis presented here has shown that, even after adjustment for the definitional shifts, China has lost millions of manufacturing workers since the mid-1990s.

Published labor statistics for China continue to emphasize data for the declining urban state-owned and collective-owned enterprises, while neglecting the healthiest and most dynamic parts of the economy. This approach means that the employment numbers put out by the Labor Ministry and by the National Bureau of Statistics are becoming ever more irrelevant. In manufacturing, the action has moved to the private sector. In urban statistics, the booming private domestic, foreign-owned, and multinational manufacturing enterprises and corporations are lumped under the umbrella term “other ownership units.” Privately owned and family-owned urban *siying qiye* manufacturing businesses are ignored in the employment data from the Labor Ministry and the NBS, and the same is true of self-employed manufacturing workers in the cities. Yet it is the urban private sector that has seen ever-increasing manufacturing employment. “Other” urban manufacturing ownership units had only 1.35 million employees in 1990, but the number has grown every year since then and reached 15.82 million by yearend 2002. Meanwhile, the residual category of urban manufacturing workers employed in the privately owned *siying qiye* and *getihu* rose from less than 1 million in 1990 to 8.21 million by yearend 2002. It appears that Government statistical and labor agencies do not pay adequate attention to the private-sector manufacturing corporations and the small manufacturing businesses in China’s cities.

China’s employment statistics focus on the cities, while the expanding “rural,” town, suburban, and industrial park manufacturing enterprises all over the country are almost entirely left out of the statistics. Apparently, virtually all of China’s manufacturing enterprises and factories located outside strict city limits are lumped together under the category “town and village enterprises” (TVE’s). This term is a misnomer for all the employers, both private and collective, both domestic and foreign, of the 71 million noncity manufacturing employees in China who are referred to as TVE manufacturing employees. Most TVE’s were privatized by the late 1990s; therefore, the private sector has become important in employing TVE workers as well as urban workers.<sup>90</sup>

In a holdover from the Maoist decades, the Ministry of Agriculture is responsible for supervising and collecting statistics on all the industrial enterprises located outside city limits in China. In 2003, for the first time, one of the agency’s publications, the *China Village and Town Enterprise Yearbook*, published the number of TVE manufacturing employees in China.<sup>91</sup>

Adding together official manufacturing employment numbers for the cities and estimates for the TVE’s suggests that China had about 105 million manufacturing employees in 1990, and the total increased in the early 1990s to a peak of 130 million in 1996. This large number may have included some overreporting of TVE manufacturing employees, along with the surplus urban manufacturing employees not yet deleted from the total urban manufacturing employment figures. After statistical corrections in both urban and TVE data, China was estimated to have approximately 112 million manufacturing employees at yearend 1998. The number declined to about 108 million in 2000-01 and rose slightly to 109 million by yearend 2002. All of these estimates are based on the supposition that there is no overlap between TVE and official urban manufacturing employee figures.

This report has demonstrated that manufacturing employment in China increased during the 1980s and early 1990s, peaked in about 1995-96, declined during the late 1990s until 2000-01, and increased again in 2002.

### **Future research priorities**

The following areas should have high priority for future data collection in China and future research on Chinese manufacturing employment:

1. *Migrant manufacturing workers.* Publicly available data on China's manufacturing employees do not provide enough information about how many migrant manufacturing workers there are in China and where they are working. Yet migrants from the rural areas are fueling the country's manufacturing boom, and there are tens or hundreds of millions more surplus workers in agriculture, some of whom could migrate to join factories in the future. Migrant workers help keep China globally competitive in manufacturing. Further collection and dissemination of information on China's migrant manufacturing workers are needed.
2. *Rural manufacturing employment.* Much better data collection and reporting, and much more research, are needed to try to fill in some of the missing information on rural and town manufacturing employment. Reporting is routinely more thorough for city manufacturing units in China.
3. *Conflicting data.* More work is needed by China's statistical leaders and by analysts of labor force data to reconcile and make sense of the conflicting sets of manufacturing employment data so far released. Communication, coordination, and better statistical oversight are needed among the NBS, the Labor Ministry, the Ministry of Agriculture, and the State Administration for Industry and Commerce and with scholars who utilize China's official labor force statistics.
4. *Labor force surveys.* China needs to design, carry out, and publish results of labor force surveys using international standards and definitions. The surveys should cover the rural as well as the urban labor force. China has been conducting experimental labor force surveys, but most of the results have not yet been released. Reportedly, China will conduct a regular labor force survey in 2006 and begin publishing data from that survey.
5. *National economic census.* During 2005, with reference year 2004, China conducted its first national census of the economy. Results from this census are expected to refine, correct, and update data on who works where in manufacturing. The census "is sure to find that private-sector employment is much higher than currently reported."<sup>92</sup> When results of the economic census become available at the end of 2005, the new information should be used to update research on China's manufacturing sector.<sup>93</sup>

## MANUFACTURING EARNINGS AND COMPENSATION IN CHINA

With by far the world's largest manufacturing workforce, at more than 100 million,<sup>94</sup> 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 data 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, manufacturing labor costs more than 10 times those for China's manufacturing workers; and Mexico and Brazil had manufacturing labor costs about 4 times those for China's manufacturing employees.

This report 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 employees<sup>95</sup> and 71 million noncity manufacturing employees--those working in town and village enterprises (TVE's).<sup>96</sup> 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 manufacturing labor 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 sharply 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 report 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 report 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.

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 many 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. Therefore, this report also includes estimates of the take-home pay of China's manufacturing workers calculated using the purchasing power parity exchange rate between Chinese yuan and U.S. international dollars.

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.

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

## Background

The Bureau of Labor Statistics publishes estimates of hourly compensation costs for production workers in manufacturing for 31 economies on its Web site.<sup>97</sup> 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 1.) This report 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 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.<sup>98</sup>

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 report 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.<sup>99</sup>

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 foregoing section on manufacturing employment in China, in statistical publications on China's labor force data, 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 this report, 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.<sup>100</sup>

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 report 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 workers 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 report 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, in *China Village and Town Yearbook 2003*.<sup>101</sup> 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.<sup>102</sup>

In this report, 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 6 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.<sup>103</sup> 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 7. 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 living subsidy of 2,213 yuan. (See table 6.) This kind of payment might be considered similar to payments of unemployment compensation for laid-off or unemployed workers in developed countries.

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.<sup>104</sup> Average annual earnings per worker are derived in table 6 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.<sup>105</sup> 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.<sup>106</sup> 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 6 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 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. 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, the Bureau also excludes the employees and compensation for these units from its estimates of hourly labor compensation in manufacturing.<sup>107</sup> 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.<sup>108</sup> 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,<sup>109</sup> 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.<sup>110</sup> Legally required payments to government social insurance and employee benefit programs are included in the BLS concept of compensation,<sup>111</sup> 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 percentage 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.<sup>112</sup> 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 6. 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:<sup>113</sup>

<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 8, 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.<sup>114</sup> 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:<sup>115</sup>

<i>Contribution</i>	<i>Changshu City, Jiangsu province</i>	<i>Wuxi City, 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 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.<sup>116</sup> 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.<sup>117</sup> 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.<sup>118</sup> 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 8 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'."<sup>119</sup> 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.<sup>120</sup> 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.

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.<sup>121</sup> 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 enterprises 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 they are 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 8), 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.<sup>122</sup>

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 6 and 8.) After adjusting reported earnings to account for additional indirect and direct remuneration for employees, table 8 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.<sup>123</sup>

### **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 8.) 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.<sup>124</sup> 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 is 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.<sup>125</sup> 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 are actually 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 Spring Festival (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 above estimates for the numbers of hours worked, on average, per year by manufacturing employees in city and noncity factories are 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.<sup>126</sup> 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 9, 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, 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 9 and discussion that follows.) Increasing this figure by 8 percent to adjust for employer 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.<sup>127</sup> 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.<sup>128</sup> 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 8. 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 8, 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.<sup>129</sup>

How does that U.S.\$0.57 compare internationally? Chart 4 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.<sup>130</sup>

### **Purchasing power of take-home earnings for manufacturing workers**

Prices of goods and services vary greatly among countries, and the official exchange rate is not a reliable indicator of the relative difference in prices between China and other countries. Prices for most purchases in China are low, so the dollar figure of U.S.\$0.57 in hourly labor compensation does not adequately capture the purchasing power of the incomes of China's manufacturing workers. To more closely approximate the purchasing power of Chinese manufacturing worker incomes in U.S. dollars, some type of purchasing power parity (that is, the amount of yuan required to purchase the equivalent of \$1 of goods and services in China) is needed. One way to better account for different purchasing power of different currencies is to utilize the "purchasing power parity" (PPP) exchange rate as estimated by the World Bank based on the cost of a comparable "basket" of goods in the two currencies, yuan in China and dollars in the U.S. "PPP rates allow a standard comparison of real price levels between countries."<sup>131</sup>

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 further information see *Glossary and Definitions: Currency; PPP.*)

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

PPP is not appropriate for everything. Trade and capital flows, unlike the bulk of GDP, are actually transacted at market exchange rates, and should be converted into dollars at those rates. PPP is useful in showing how much a country's money is worth in its home market, but it does not measure effective purchasing power across borders. What matters for businesses that trade internationally is China's buying power in current-dollar terms.<sup>132</sup>

This article gives manufacturing earnings and total labor compensation in Chinese domestic currency and in dollars at commercial exchange rates. The cash portion of

income is then calculated in PPP international dollars. These alternative estimates allow us to select the appropriate measures for different purposes.

To use PPP exchange rates, one should estimate the proportion of earnings that employees actually get to spend in the form of take-home pay, net of deferred compensation. (Total labor compensation costs per hour worked do not provide an accurate portrayal of worker income because they include costs that are not paid directly to the worker.) This calculation is complex for urban manufacturing employees, because their take-home pay is composed of part of reported earnings (reported earnings minus deductions for income tax and required employee social insurance payments) plus other cash payments that have been kept out of the earnings category in order to minimize tax and social insurance payments for employer and employee. Statistics are not available on take-home pay as a percent of reported earnings, but in some cases take-home pay is actually much higher than reported earnings because of the non-wage cash payments to employees. For a simple illustration of the purchasing power of the take-home pay of urban manufacturing employees, this author will simply assume that for urban manufacturing workers in 2002, their take-home pay is the same as reported earnings because, after taxes and social insurance payments have been deducted from earnings, the urban manufacturing employees have received other non-taxable cash payments from their employer.

As shown in tables 6 and 8, manufacturing employees in urban units received reported earnings averaging 11,152 yuan for the whole year 2002. Assuming that their actual take-home pay was approximately the same as reported earnings, for reasons discussed above, their cash income for the year was about U.S.\$1,347 based on the commercial market exchange rate, and PPP U.S.\$6,263 in international PPP dollars. (For calculating labor compensation in international dollars, multiply labor compensation in dollars at the official exchange rate times 4.65.)<sup>133</sup> This means that the average city manufacturing employee in China in 2002 could purchase goods and services that gave the worker and family a living standard equivalent to annual take-home pay of about U.S.\$6,300 in the U.S. City manufacturing workers averaged take-home pay of about 929 yuan or U.S.\$112 per month, which is equivalent to PPP U.S.\$522. On an hourly basis, take-home pay of Chinese city manufacturing workers was about 5.12 yuan or U.S.\$0.62, equivalent to PPP U.S.\$2.87. They could purchase about what an American worker could buy with take-home pay of almost \$3 per hour.

Of course the TVE manufacturing employees have much lower living standards. In their case, most of their income is cash, very little if any is deducted for required income tax and social insurance payments, but other non-wage cash benefits are probably modest as well. Again, as an illustration, this author assumes that actual take-home pay is about equivalent to reported earnings. Tables 6 and 8 show that TVE employees averaged earnings of 6,927 yuan for the entire year 2002, which was equivalent to U.S.\$837 and PPP U.S.\$3,890. Therefore, the living standard of China's TVE manufacturing employees was equivalent to that of an American worker with annual take-home pay of less than \$4,000. Monthly take-home pay for TVE manufacturing workers was about 577 yuan or U.S.\$70, with purchasing power equivalent to PPP U.S.\$324. Hourly cash in hand for TVE manufacturing employees in China was approximately 3.15 yuan or U.S.\$0.38, which had purchasing power of about \$1.77 in international PPP dollars.

These PPP figures give us a feel for the purchasing power of the take-home pay of China's manufacturing employees. Urban manufacturing workers in China are getting cash in hand that almost U.S.\$3 per hour in cash would buy in the U.S., while China's rural and town manufacturing workers receive less than U.S.\$2 in international purchasing power parity dollars. Overall equivalent buying power of cash income for China's manufacturing workers is about PPP U.S.\$2.10 per hour of work.

### **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 8, table 9 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 9, Shanghai's 1.3 million city manufacturing 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 9 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.

What is the purchasing power of take-home pay for the manufacturing workers in these exporting provinces? In international dollars, TVE industry workers have the

equivalent of PPP U.S.\$2.08 per hour of work to spend in Jiangsu province, \$2.13 in Guangdong province, \$2.60 in Zhejiang and \$3.05 in Shanghai Municipality. The city manufacturing workers take home on average the equivalent of PPP U.S.\$3.02 in Jiangsu province, \$3.46 in Zhejiang province, \$3.86 in Guangdong province, and \$5.66 in the city districts of Shanghai, in terms of the purchasing power of their cash income. We can therefore summarize that rural (noncity) manufacturing workers in China's main export regions receive take-home pay that is equivalent in purchasing power to about 2-3 U.S. dollars per hour of work, while city manufacturing workers in the main exporting provinces earn the purchasing power equivalent of 3-6 U.S. dollars per hour.

### **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.<sup>134</sup>

In principle rural migrants and other contract workers who work in urban enterprises should have social insurance coverage. In fact, enforcement is weak. As rural migrants have few legal rights, they do not report this abuse. In addition, given their uncertain length of tenure in the area, they face a risk of not getting benefits due. These groups may prefer higher wages over a tenuous insurance contract.<sup>135</sup>

There is increasing informal evidence that published urban earnings data exclude the pay of most migrant workers.<sup>136</sup> The first section of this report<sup>137</sup> 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.<sup>138</sup> 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**

One of the many goals of this research project for the US Bureau of Labor Statistics was to derive a time series of hourly manufacturing labor compensation for China for the period 1990-2002, if possible. If it is not possible to present such a series for all manufacturing employees in China, then a time series of real earnings or total compensation of some subgroup of manufacturing workers would still be useful.

This article has shown that it is a major challenge just to estimate hourly manufacturing labor compensation for China in one recent year. The only reasons that this is even possible for the year 2002 are:

- a) For the year 2002, the Agriculture Ministry released for the first time figures on the total number of China TVE manufacturing workers and the total amount of earnings paid out to them during the year.
- b) The Labor Ministry carried out a large survey of city enterprises for the year 2002 and published a book that included data on actual labor costs in urban manufacturing units above and beyond reported earnings (see *Glossary and Definitions: China labor force market wage survey*”).
- c) This author, after much searching, was fortunate to even locate the above volumes of information, but has not found such information for prior years.

Because these data are not available for previous years, the creation of a defensible time series of manufacturing labor compensation in China for 1990-2002 is not possible until and unless such data are released, if they were even collected.

Most of the data in this article relate to the year 2002 only. Although it would be revealing to analyze trends in manufacturing 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 10 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.<sup>139</sup> 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 10 probably exclude data on the earnings of most rural-to-urban migrant manufacturing workers.<sup>140</sup> 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 10 and 11 and chart 5 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 11 and chart 5 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 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.<sup>141</sup> 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,<sup>142</sup> 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,”<sup>143</sup> 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.<sup>144</sup> Another author said that employees of big global automakers in China “make the equivalent of \$1.50 per hour in wages and benefits.”<sup>145</sup> Table 7 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.”<sup>146</sup> 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 7 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 agreed that low earnings and low total labor compensation costs make manufacturing production in China competitive in the international market. One of the leading reasons that some of China's own domestic manufacturing industries can sell their products at home and abroad, and that multinational and other foreign companies are moving their manufacturing operations to China, is the low cost of employing manufacturing workers there. Here is a sampling of statements to this effect from a variety of sources and perspectives:

China's emergence as one of the world's leading export nations is driven by a huge disparity in the cost of producing goods, caused primarily by hourly wages that are a fraction of those in the United States and Western Europe. This is not news.<sup>147</sup>

China's textile industry: China has become the largest fiber production and export nation in the world...China's garment and other industries are relatively competitive. The comprehensively large size of the industry and the low labor cost enable China to take a comparatively large international market share with low value-added production.<sup>148</sup>

Juergen Peters, president of Germany's IG Metall union and IMWF [International Metalworkers Federation] president, told a conference in Dearborn, Michigan, that the rapid development of the Chinese auto industry, coupled with the low wages paid to Chinese workers, make it inevitable that China will become a net exporter of vehicles.<sup>149</sup>

The truly low cost of labor makes China particularly competitive in a number of manufacturing industries, including labor-intensive, assembly, and reprocessing industries; industries with low value added; those with simple repetitive steps in the manufacturing process; and food-processing industries. As one source puts it, "China has become an essential link in the global production chain for many labor-intensive products...a manufacturing hub for the rest of the world in low-end labor-intensive goods."<sup>150</sup> Labor productivity (output per employee) is low by world standards in these kinds of Chinese factories, and earnings are correspondingly low.<sup>151</sup> In the 1990s and beyond, China's employees experienced widening earnings inequality, as earnings rose for city-born workers, but basically stagnated for the least skilled and least educated workers.<sup>152</sup> China is not particularly competitive in capital-intensive and materials-intensive industries.

However, China is beginning to compete successfully in some kinds of moderately skills-intensive kinds of manufacturing. Large proportions of China's young

adults now have at least a lower middle school education and therefore are basically literate and numerate. Also, millions of young and middle-aged workers from rural areas are eager to get out of the countryside and therefore willing to work hard in a disciplined manner for pay that is low by international standards, but higher than they can earn in agriculture. China also has many millions of university-educated young adults who are especially competitive because they are good in engineering and technical fields, are hard-working and motivated, and work for a fraction of the salaries received by equally capable young adults in developed countries. 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.<sup>153</sup> 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."<sup>154</sup>

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 10 and 11 and chart 5.<sup>155</sup>

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.<sup>156</sup> 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.<sup>157</sup> Rigidities in urban labor markets also have forced earnings upward and impeded competition.<sup>158</sup> 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 labor markets."<sup>159</sup> 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."<sup>160</sup>

In addition to the earnings bill, required payments for other urban employee benefits have increased.<sup>161</sup> 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.<sup>162</sup> 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.<sup>163</sup>

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: “The massive influx of investment and rapidly improving standard of living has driven up labor costs in Shanghai, almost high enough to price Shanghai out of the market.”<sup>164</sup> Many businesses are now locating elsewhere. “Companies moving from Shanghai to neighboring Anhui Province report that they can cut costs by 50%. Few multinationals can resist those kinds of savings.”<sup>165</sup> Cities throughout China are much more expensive for manufacturing than even their nearby suburbs: “Henry Tan, chief executive of Luen Thai, Hong Kong’s largest garment business with 20,000 employees, says he can save a third in power costs and half in wage bills just by relocating a factory half an hour’s drive from Guangzhou, the capital of Guangdong.”<sup>166</sup> 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.<sup>167</sup> Of course, China remains highly competitive globally because of its relatively low labor costs and many other favorable factors, but rising labor compensation in China has begun to erode the country’s manufacturing price advantage.

Some businesses are moving from the city to the poorer inland province of Anhui.<sup>168</sup> 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.<sup>169</sup>

### **Additional sources of China’s competitiveness in manufacturing**

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

#### **China’s Domestic Market**

Of the world’s total population, 21 percent live in China. They provide a far larger domestic market for manufactures than any other developing country today with the possible exception of India.<sup>170</sup> Though China is still a lower middle income country, ordinary people buy some manufactured goods, providing a ready market for the least expensive manufactured products. More important, China has a growing middle class and a small luxury class, especially in cities. The numbers of such consumers are variously estimated as follows:

And Mr. Xie [Andy Xie, Chief Economist for Asia-Pacific at Morgan Stanley Dean Witter] estimates that in China today, about 50 million people can be generally considered middle class or on the way there very soon.<sup>171</sup>

China's emerging middle class, people with net income of at least \$3,000 a year, numbers nearly 100 million and is growing about 20 percent yearly.<sup>172</sup>

...China's swelling middle class (the 120 million who now have disposable income of up to \$8,000 per year, a group that could, according to Morgan Stanley, grow to nearly half a billion by 2010)...<sup>173</sup>

Consumers of luxury products now account for 13% of the total population in China and are continuing to increase.<sup>174</sup>

China now has high penetration rates for a wide range of consumer goods—that is, today many more Chinese consumers buy many more goods. There are color television sets in almost every urban home, refrigerators and washing machines in more than four out of five, videodisc players and air conditioners in half of them, microwave ovens in almost a third, and computers in one out of five...Close to 90 percent of urban Chinese now own a home.<sup>175</sup>

Because of its huge consumer base, China is already the world's biggest market for television sets, refrigerators, and mobile phones, and China ranks third after the U.S. and Japan in sales of personal computers.<sup>176</sup> No matter how China's luxury class or middle class consumer base is defined or calculated, it is clear that the growing domestic market is a factor drawing manufacturers to China. Indeed, multinational corporations from the most developed countries and economic blocs—the U.S., Western Europe, and Japan—aim their foreign direct investment (FDI) into China primarily at capital-intensive, technology-intensive, and skill-intensive products and services aimed at China's domestic market, in contrast to the FDI from Hong Kong, Taiwan, Singapore, and South Korea into China, which is concentrated on labor-intensive, relatively low-technology manufactured goods to be exported to the international developed country market.<sup>177</sup>

### **Convenient logistics in coastal regions of China**

In certain coastal regions of China, especially the Pearl River Delta region of Guangdong Province near Hong Kong and Macao, the Yangtze River Delta region including Shanghai and Zhejiang and southern Jiangsu Provinces, the Fujian Province coastal areas across from Taiwan, the Beijing-Tianjin region, and other coastal cities including Qingdao and Dalian, the local infrastructure supports comparatively low-cost and efficient manufacturing production. Huge networks of component suppliers have concentrated in these places, providing manufacturers with many choices for basic parts and with the ability to pit vendors against one another.<sup>178</sup> “The critical mass of factories, subcontractors, and specialized vendors has created a manufacturing environment with which few can compete.”<sup>179</sup> Transportation and telecommunications networks are adequate in these areas. Improving infrastructure has been an important factor bringing

FDI to China's coastal regions.<sup>180</sup> Also in the booming coastal cities, there are large numbers of educated and bilingual or multilingual local Chinese to staff the professional and managerial layers of manufacturing concerns, and they are willing to work for moderate salaries.

### **Low Price of Land**

Many domestic manufacturing concerns in China never had to buy the land for their factories. Land was simply allocated to state-owned or collective-owned enterprises during the Maoist command economy period before 1978. During the economic reform period, many such factories still inhabit the free land. If they form a joint venture or are bought out by a foreign company, the assigned or negotiated value of that land is part of what they bring to the deal, but first the land must be converted from "allocated" to "granted" for a large fee. Today, the value of land in urban or rural China is only partly market driven; much of whatever price emerges is still arbitrary and command economy driven: "There is still little transparency in transfers of land-use rights in China, with most transactions set in bilateral agreements between buyers and sellers."<sup>181</sup> Current land values in different urban areas of China vary enormously. Property prices have risen dramatically in Shanghai, sparking fears of a "bubble" and the possible future collapse of real estate and land prices.<sup>182</sup> The cities with the most expensive land in the PRC today are, in order from the most expensive: Beijing, Shanghai, Hangzhou (capital of Zhejiang Province), Nanjing (capital of Jiangsu Province), Chengdu, Tianjin, Guangzhou (capital of Guangdong Province), Chongqing, and Shenzhen which is in the Pearl River Delta of Guangdong. Land prices in the Yangtze River Delta have now surpassed those in the Pearl River Delta.<sup>183</sup> However, one economist reported that in China: "Land prices have declined by about 70% in major urban areas since 1993."<sup>184</sup>

### **Incentive policies to promote foreign investment in China**

During the 1980s and 1990s, China gave special financial incentives, land use benefits, foreign currency exchange preferences, tax holidays, and other tax incentives to foreign companies willing to invest and set up factories in its coastal regions, primarily 4 (now 5) special economic zones (SEZs) and 14 opened cities located in Guangdong, Shanghai, Jiangsu, Fujian, and other coastal provinces; therefore foreign direct investment (FDI) poured into China in general and into these Chinese coastal areas in particular.<sup>185</sup> In addition, China's regulatory climate has improved in some ways that promote entrepreneurship, new businesses, and flexibility of hiring workers. The cost of starting a business in China is higher and the time required to do so is longer than in developed countries, but these measures are more favorable in China than the East Asia/Pacific average; and in order to promote the hiring of more workers, China has slashed regulatory burdens associated with hiring.<sup>186</sup> Chinese policies in the 1990s and today encourage foreign direct investment, particularly in manufacturing, with the result that a little over half of FDI has been in the manufacturing sector:

Not only does China place few restrictions on foreign ownership of manufacturing firms, through its tariff and other policies it allows foreign firms

that produce for the export market to operate at international prices. Machinery and equipment that goes into foreign joint ventures and wholly foreign-owned firms is entirely exempt from import duties. And the foreign-sourced parts and components that are assembled into finished goods are also exempt from all import duties when they are re-exported in the form of finished goods. Moreover, manufacturers are eligible for a rebate of almost all domestic value-added taxes they have paid for any content in their exported goods that is sourced from within China.<sup>187</sup>

### **Relatively stable political situation**

If a company located in an economy with high labor costs wishes to move its manufacturing operations to a lower-cost environment, why would it choose China? Many other poor countries have extremely low costs of labor as well. But many developing or poor countries are not attractive because they have unstable political, economic, and financial situations. China is not a perfect manufacturing environment by any means, but there is relatively low terrorist risk, civil unrest does not destabilize the economy, there are few public safety concerns for multinationals' property and personnel, and the economy and financial system are functioning—not supremely well but at least adequately. Multinational firms are thought to allocate their investment among countries so as to maximize their risk-adjusted profit.<sup>188</sup> China compares rather well with other less developed countries when both risk and costs of production are considered.

### **What hampers China's competitiveness in manufacturing?**

From an international perspective, China is very competitive in producing most manufactured products. However, certain aspects of conditions in China deter some companies from moving their manufacturing to China or induce companies to put their production operations elsewhere instead. One reason is that labor costs are rising in China, especially in the cities, as discussed earlier, leaving some other developing countries with lower manufacturing labor compensation than China today. Some other such considerations are as follows:

#### **China is easy to enter but very difficult to leave**

China's policies attract foreign companies to enter and invest there, but sometimes make it hard to succeed in China and even harder to back out again. China's legal system is very slow and ineffective at enforcing legal contracts; it is also subject to corruption and arbitrary rulings. China has been found wanting with regard to creditor rights and credit information; China has no private credit bureaus and the existing public credit registry covers only about 3 potential borrowers per 1,000. Therefore, entrepreneurs, first-time borrowers, and repeat borrowers with good credit history cannot prove their credit-worthiness and borrow for business development. Bankruptcy proceedings are slow. China has the least flexibility in the Asia/Pacific region with regard to firing workers; therefore, laying off redundant workers and streamlining operations is still difficult.<sup>189</sup>

Finally, China mandates that foreign companies bring in large amounts of convertible currency when setting up there, but severely restricts taking profits out of China.

### **Electric power shortages**

China's economy has been booming for so long that power shortages have become a problem. In 2004, electric power outages, blackouts, shortfalls, and rationing hit manufacturers in the Pearl River Delta and Shanghai. Power was cut 1-3 days a week in many factories in Guangdong. "Demand nationwide is exceeding capacity for a third year, causing shortages in at least 24 of 31 provinces, the State Electricity Council said. It has been fueled by industrial output that surged 17 per cent nationwide last year and 22 per cent in Guangdong."<sup>190</sup>

### **Raw material shortages**

China's rapidly growing and possibly overheated economy is causing domestic and, in some cases, global shortages of certain raw materials and construction materials needed for manufacturing production or expansion. For example, China's sharp increase in exports of textiles and clothing in 2004 drove up domestic prices of cotton and other fibers.<sup>191</sup>

### **Lack of patent, trademark, and copyright protection**

China has serious deficiencies in enforcing the protection of intellectual property.<sup>192</sup> Patents and copyright, both domestic and foreign, are ignored with impunity in China's manufacturing sector.<sup>193</sup> Trademark/brand theft is epidemic and very expensive and slow to attempt to correct.<sup>194</sup> Production processes, brand names, and innovations are stolen by domestic Chinese producers and churned out at a cheap price for the home and global markets. China's government has made occasional attempts to stop this intellectual piracy under intense international pressure, but only with temporary success: "China's thriving industry in product piracy routinely violates copyrights, trademarks and patents on movies, designer clothes and other goods, despite promises by Beijing to crack down."<sup>195</sup> Many multinational companies have entered joint ventures with Chinese partners, often because Chinese government controls prevent them from entering China any other way, only to discover that the "partner" has stolen all the foreign company's proprietary information and set up a competing production center illegally producing the product patented by the multinational. Globally, based on Security Management's Intellectual Property Security Survey conducted in April 1998, Chinese entities carried out 41 percent of the theft of American-owned technology; China treats such technology piracy as merely a minor civil or administrative matter rather than the crime that it is.<sup>196</sup> Because of this problem of systematic theft of intellectual property in China, many foreign companies avoid entering China and choose to continue producing in developed countries or move to countries that protect intellectual property.

## Conclusions

This report has collected and assessed the available statistics on manufacturing labor compensation in China. Because non-city earnings data became available for the first time for the year 2002, it finally became possible to estimate all-China manufacturing labor compensation. The Ministry of Agriculture is responsible for supervising and collecting statistics on all the industrial enterprises located outside city limits in China. For the year 2002, one of their publications, the *China Village and Town Enterprise Yearbook 2003*, published, for the first time, two relevant numbers for the purposes of this report, the total number of TVE manufacturing employees in China for 2002, and the total earnings costs for 2002 for all those employees.

This report 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 city 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 an average labor compensation of approximately U.S.\$0.57 per hour of work for 101 million manufacturing workers in China.

Because living costs are so low in China, this report also calculates the estimated take-home pay of manufacturing employees in international purchasing power parity dollars. China's manufacturing workers in 2002 got cash income that would be similar to U.S. employees receiving take-home pay of just over U.S.\$2 per hour in terms of what the money would purchase. China's TVE manufacturing employees got cash income equivalent to less than U.S.\$2 purchasing power and urban manufacturing employees received the equivalent take-home pay of almost U.S.\$3 in terms of what they could buy.

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.

## Endnotes

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<sup>1</sup> See Jeffrey R. Taylor and Judith Banister, *Statistical Reliability in China* (U.S. Census Bureau, 1989).

<sup>2</sup> Carsten A. Holz, *The Institutional Arrangements for the Production of Statistics*, Statistics Directorate, OECD-China Governance Project. OECD Statistics Working Paper STD/DOC(2005), 1 (Paris, Organization for Economic Cooperation and Development, 2005), p. 5.

<sup>3</sup> See “Ministries” in the “Glossary and Definitions” section of the Appendix for a list of the ministries involved in the collection and reporting of manufacturing employment in China.

<sup>4</sup> For relevant Chinese language terms, see “actual situation,” “labor situation,” and “yearend number of workers” which are defined in the “Glossary and Definitions” section of the Appendix.

<sup>5</sup> Copies of the enterprise statistical reporting form (*laodong qingkuang biao*, or “labor situation form”) for 2004 were submitted to urban authorities by the end of February 2004 and reported 2003 data for urban companies and work units; wage-reporting instructions (*laodong gongzi--tongji taizhang*, or “labor wages--statistical accounts”) for 2004 were from the Beijing Municipality Statistical Bureau. (See especially p. 2-1 of the latter.)

<sup>6</sup> The TVE’s were originally 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 practice allows the modernization of China’s vast countryside without necessitating massive migration from 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. Now the TVE category, in addition to encompassing small local enterprises, can include very large factories in industrial parks outside cities, as well as suburban, town, and rural factories. Indeed, companies have incentives to have their factories classified as TVE’s because mandatory social insurance payments are very low, statistical reporting requirements are

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minimal, and many legal and taxation benefits accrue to TVE's. See *Glossary and Definitions*, "TVE's," in the Appendix.

<sup>7</sup> See the "Glossary and Definitions" section of this report for the Chinese characters and definitions of these terms.

<sup>8</sup> China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), p. 638.

<sup>9</sup> See also *China Labor Statistical Yearbook 2003*, pp. 13, 230.

<sup>10</sup> *Ibid.*, p. 249.

<sup>11</sup> Enterprise statistical reporting forms, 2004; wage-reporting instructions, 2004.

<sup>12</sup> *China Labor Statistical Yearbook 2003*, p. 169.

<sup>13</sup> China State Administration for Industry and Commerce, *Zhongguo gongshang xingzheng guanli nianjian 2003 [Yearbook of the Industry and Commerce Administration of China 2003]* (Beijing, China Industry and Commerce Press, 2003), pp. 583, 587.

<sup>14</sup> See also Ming Lu, Jianyoung Fan, Shejian Liu, and Yan Yan, "Employment restructuring during China's economic transition," *Monthly Labor Review*, Aug. 2002, pp. 25-31; on the Internet at <http://www.bls.gov/pub/mlr/2002/08/art3full.pdf>.

<sup>15</sup> *China Labor Statistical Yearbook 2003*, p. 10.

<sup>16</sup> *Ibid.*, p. 20.

<sup>17</sup> *Ibid.*, p. 243. The terms "laid-off staff and workers," "not-on-post staff and workers," "off-post staff and workers," and "on-post staff and workers" are defined in the "Glossary and Definitions" section of the Appendix.

<sup>18</sup> Ray Brooks and Ran Tao, "China's labor market performance and challenges," IMF Working Paper WP/03/210 (Beijing, International Monetary Fund, Nov. 2003); on the Internet at <http://www.imf.org/external/pubs/ft/wp/2003/wp03210.pdf>; see also Robert H. McGuckin and Matthew Spiegelman, *China's Experience with Productivity and Jobs* (New York, The Conference Board, 2004), p. 12.

<sup>19</sup> The term "unemployment rate" is defined in the "Glossary and Definitions" section of the Appendix.

<sup>20</sup> *China Labor Statistical Yearbook 2003*, pp. 96, 126.

<sup>21</sup> *Ibid.*, p. 637.

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<sup>22</sup> Thomas G. Rawski, *Recent Developments in China's Labor Economy* (Geneva, International Labor Office, Nov. 2003), revised from a report prepared in January 2002.

<sup>23</sup> McGuckin and Spiegelman, *China's Experience*, p. 5.

<sup>24</sup> See Changming Li, *China Industrial Development Report 1997* (Beijing, Economic Management Press, 1997), especially Chapter 11, "China's textile industry: From size to strength"; also in Christopher Howe, Y. Y. Kueh, and Robert Ash (eds.), *China's Economic Reform: A Study with Documents* (London, RoutledgeCurzon, 2003), pp. 165-75.

<sup>25</sup> McGuckin and Spiegelman, *China's Experience*, pp. 4-5, 11-13, 17.

<sup>26</sup> The calculation procedure for estimating the nationwide employed population from the long-form sample sidesteps the problem that there was a severe undercount of children below age 10 or so in the 2000 census. The count of the population aged 15 years and older in the 2000 census was quite complete, in that it matched the expected adult population as projected from the 1990 census and taking into account all available demographic information for the interim period, even though there is controversy about whether some young and middle-aged adults were counted in the wrong places. (See Weimin Zhang and Hongyan Cui, "Dui Zhongguo 2000 nian renkou pucha zhunque xing de guji" ["Estimates of the accuracy of China's 2000 population census"], *Renkou yanjiu (Population Research)*, vol. 27, no. 4, 2003, pp. 25-35; Kam Wing Chan, "Chinese census 2000: New opportunities and challenges," *The China Review*, Fall 2003, pp. 1-12; Daniel Goodkind and Gregory Robinson, "Intercensal evaluations of year 2000 censuses: Issues and surprises in the United States and China," paper presented at the International Seminar on China's 2000 Population and Housing Census, Beijing, April 2004.)

<sup>27</sup> Alwyn Young, *Gold into Base Metals: Productivity Growth in the People's Republic of China during the Reform Period*, NBER Working Paper Series no. 7856 (Cambridge, MA, National Bureau of Economic Research, 2000), pp. 22-23.

<sup>28</sup> *China Labor Statistical Yearbook 2003*, pp. 8-9.

<sup>29</sup> China National Bureau of Statistics, *Tabulation on the 2000 Population Census of the People's Republic of China*, vol. 2 [in Chinese] (Beijing, China Statistics Press, 2002), pp. 1578-79.

<sup>30</sup> *China Labor Statistical Yearbook 2003*, pp. 23, 362.

<sup>31</sup> Wage reporting instructions, 2004, p. 1-2.

<sup>32</sup> Compare "Di wu ci quanguo renkou pucha biao chang biao" ("The fifth national population census form, long form) (Beijing, China National Bureau of

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Statistics, 2000), columns R17-R22, with China National Bureau of Statistics, *China Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), p. 181.

<sup>33</sup> China National Bureau of Statistics, *Tabulation on the 2000 Population Census of the People's Republic of China*, vol. 1, p. 570; vol. 2, pp. 800, 1269.

<sup>34</sup> The terms “urban” and “rural” are defined in the “Glossary and Definitions” section of the Appendix.

<sup>35</sup> *Tabulation on the 2000 Population Census of the People's Republic of China*, vol. 2, pp. 888, 942, 996, 1050.

<sup>36</sup> 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), p. 27.

<sup>37</sup> Most of the information that follows is from an interview with NBS statistics officials in Beijing Jan. 10, 2005.

<sup>38</sup> Holz, *The Institutional Arrangements*, p. 12.

<sup>39</sup> Holz, *The Institutional Arrangements*, p. 17.

<sup>40</sup> *China Statistical Yearbook 2003*, p. 181.

<sup>41</sup> Enterprise statistical reporting forms, 2004; wage-reporting instructions, 2004, pp. 1-1 to 1-2.

<sup>42</sup> *China Statistical Yearbook 2003*, p. 123; Loraine A. West, discussant, BLS seminar, Washington, DC, Nov. 8, 2004.

<sup>43</sup> “2004 nian chengzhen laodongli diaocha zhidu” [“The 2004 Urban Labor Force Survey System”] (China National Bureau of Statistics, Nov. 17, 2004), p. 20.

<sup>44</sup> *China Statistical Yearbook 2003*, pp. 146-47.

<sup>45</sup> *China Labor Statistical Yearbook 2003*, p. 8.

<sup>46</sup> Young also showed that the official NBS and Labor Ministry compilation of national manufacturing employment in 1995 was highly inconsistent with the 1995 industrial census results. (See Young, *Gold into Base Metals*, 2000, p. 22 and table XI.)

<sup>47</sup> Holz, *The Institutional Arrangements*, pp. 15-16.

<sup>48</sup> Young, *Gold into Base Metals*, 2000, pp. 22-23.

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- <sup>49</sup> Daniel Goodkind, personal communication, Nov. 8, 2004.
- <sup>50</sup> *Tabulation on the 2000 Population Census*, vol. 2, p. 1569. Figures on the occupational breakdown of China's manufacturing employees are based on census long form data from a 10% sample of households, extrapolated by this author to the total civilian population of China at ages 15 and older.
- <sup>51</sup> 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>.
- <sup>52</sup> Zhong Wu, "Guangdong keeps foreign trade lead," *The Standard, Greater China's Business Newspaper*, May 18, 2004.
- <sup>53</sup> *China Labor Statistical Yearbook 2003*, p. 8.
- <sup>54</sup> *Ibid.*, p. 26.
- <sup>55</sup> Ministry of Agriculture, China TVE Yearbook Editorial Committee, ed., *China Village and Town Enterprise Yearbook 2003* [in Chinese] (Beijing, China Agriculture Publishing House, 2003), pp. 156, 174.
- <sup>56</sup> Wage-reporting instructions, 2004; enterprise statistical reporting forms, 2004.
- <sup>57</sup> Personal communication NBS officials, Jan. 10, 2005; table 1, this report; China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2004* (Beijing, China Statistics Press, 2004), p. 9.
- <sup>58</sup> Fox and Zhao, "China's labor market reform," pp. 13-14.
- <sup>59</sup> "Chengzhen jiuye yu shiye wenti yanjiu--2000 nian di wu ci quanguo renkou pucha shuju fenxi" ["Research on Urban Employment and Unemployment Problems--Analysis of Year 2000 5th National Census Data"] (Beijing, Chinese Academy of Social Sciences, CASS Population and Labor Economics Research Institute, 2003), p. 47.
- <sup>60</sup> "Shanghai Shi 2003 nian wailai liudong renkou diaocha--shuju shouce" ["Survey of the Floating Population of Shanghai in 2003--Data Handbook"] (Shanghai, Shanghai Municipal Statistics Bureau, 2004).
- <sup>61</sup> *Shanghai tongji nianjian 2003* [*Shanghai Statistical Yearbook 2003*] (Beijing, Shanghai Municipal Statistics Bureau, China Statistics Press, 2003), p. 62; *Shanghai Statistical Yearbook 2004* database; *China Statistical Yearbook 2003*, p. 98.

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<sup>62</sup> *China Labor Statistical Yearbook 2003*, p. 8; *Shanghai Statistical Yearbook 2003*, pp. 78-81; *Shanghai Statistical Yearbook 2004* database.

<sup>63</sup> Bill Powell, "China's great step forward," *Fortune Magazine*, vol. 144, issue 5, Sept. 17, 2001, pp. 128-142.

<sup>64</sup> Rawski, *Recent Developments in China's Labor Economy*, p. 1.

<sup>65</sup> 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.

<sup>66</sup> Hu Angang. *Jiuye yu fazhan: Zhongguo shiye wenti yu jiuye zhanlue [Employment and Development: China's Unemployment Problem and Employment Strategy]*. (Shenyang, Liaoning People's Press, 1998); Rawski, *Recent Developments in China's Labor Economy*; Fang Cai, "The consistency of China statistics on employment: Stylized facts and implications to public policies," presented at the International Research Conference on Poverty, Inequality, Labour Market and Welfare Reform in China, Australian National University, Canberra, Aug. 2004.

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"China, no right to work," *Economist*, Sept. 11, 2004, pp. 27-28.

<sup>67</sup> Fang Cai, Yaowu Wu, John Giles, and Albert Park. "Jingji chongzu ruhe yingxiang chengshi zhigong de jiuye he fuli" ["How economic restructuring has affected the employment and welfare of city staff and workers"], *Zhongguo laodong jingjixue [China Labor Economics]*, 2004, vol. 1, no. 1, July, pp. 1-32.

<sup>68</sup> Aimin Chen and Edward N. Coulson, "Determinants of urban migration: Evidence from Chinese cities," *Urban Studies*, vol. 39, no. 12, Nov. 2002, pp. 2189-2197.

<sup>69</sup> 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, p. 265; Fang Cai and Meiyang Wang, "Zhongguo chengzhen laodong canyulu de bianhua ji qi zhengce hanyi"

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[“Changing labor force participation rate in urban China and its implications”], *Zhongguo shehui kexue* [Social Sciences in China], 2004, issue 4, July, pp. 68-79, 207, esp. p. 79.

<sup>70</sup> “China, no right to work,” *Economist*, p. 28.

<sup>71</sup> David Hale and Lyric Hughes Hale, “China takes off,” *Foreign Affairs*, vol. 82, no. 6, Nov./Dec. 2003, pp. 36-53.

<sup>72</sup> Cai et al., 2002, p. 321; Knight and Xue, “How high is urban unemployment in China?” p. 2.

<sup>73</sup> McGuckin and Spiegelman, *China’s Experience*, p. 27.

<sup>74</sup> “The halo effect: How China’s expansion will affect growth and jobs elsewhere,” *Economist*, Sept. 30, 2004.

<sup>75</sup> Binglan Xu, “‘Unique’ China defies world’s predictions,” *China Daily*, June 21, 2004, p. 11.

<sup>76</sup> John Knight, Lina Song, and Huaibin Jia, “Chinese rural migrants in urban enterprises: Three perspectives,” *Journal of Development Studies*, vol. 35, no. 3, Feb. 1999, pp. 73-104; Zhong Zhao, “Migration, labor market flexibility, and wage determination in China: A review,” China Center for Economic Research, Peking University, 2004.

<sup>77</sup> “Amazingly, China has labour shortages,” *Economist*, Oct. 7, 2004.

<sup>78</sup> Fox and Zhao, “China’s labor market reform,” pp. 1-5, 25, 30-38.

<sup>79</sup> “China, no right to work,” *Economist*, p. 28.

<sup>80</sup> Mei Fong, “A Chinese puzzle: Surprising shortage of workers forces factories to add perks,” *Wall Street Journal*, Aug. 16, 2004, p. B1.

<sup>81</sup> *Ibid.*; Peter S. Goodman, “In China’s cities, a turn from factories,” *Washington Post*, Sept. 25, 2004.

<sup>82</sup> “China tackles labor problems with new laws,” *Washington Times*, Nov. 16, 2004.

<sup>83</sup> “String of pearls: China’s development,” *Economist*, Nov. 20, 2004, pp. 43-44.

<sup>84</sup> Brooks and Tao, “China’s labor market,” pp. 1-3.

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<sup>85</sup> Knight and Xue, “How high is urban unemployment in China?”, p. 18; Knight and Yueh, “Urban insiders versus rural outsiders.”

<sup>86</sup> Forney, “Tug-of war over trade,” p. 34.

<sup>87</sup> Ben Dolven, “Take our workers, please,” *Far Eastern Economic Review (Hong Kong)*, Feb. 27, 2003, pp. 24-26.

<sup>88</sup> For manufacturing productivity trends in the advanced industrial countries, see *International Comparisons of Manufacturing Productivity and Unit Labor Cost Trends, Revised Data for 2003* (Bureau of Labor Statistics, Feb. 25, 2005), on the Internet at <http://www.bls.gov/news.release/pdf/prod4.pdf>; and *International Comparisons of Manufacturing Productivity and Unit Labor Cost Trends, Supplementary Tables* (Bureau of Labor Statistics, Feb. 25, 2005), on the Internet at <http://www.bls.gov/fls/prodsupptabletoc.htm>.

<sup>89</sup> *Comparative Civilian Labor Force Statistics, Ten Countries, 1960-2004* (Bureau of Labor Statistics, May 13, 2005), Table 6; on the Internet at <http://www.bls.gov/fls/flslforc.pdf>.

<sup>90</sup> Fang Cai, Albert Park, and Yaohui Zhao, “The Chinese labor market,” paper presented at the Conference on China’s Economic Transition: Origins, Mechanisms, and Consequences, Pittsburgh, Pennsylvania, Nov. 2004, p. 17.

<sup>91</sup> *China Village and Town Enterprise Yearbook 2003*; data were for 2002.

<sup>92</sup> “China, no right to work,” *Economist*, pp. 27-28.

<sup>93</sup> Most of the foregoing section of this report was published separately as “Manufacturing employment in China,” in the July 2005 *Monthly Labor Review* (pp. 11-29), on the Internet at <http://www.bls.gov/fls/#publications>.

<sup>94</sup> As discussed in the foregoing section of this report, 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.

<sup>95</sup> China’s official statistics reported 38 million city manufacturing employees as of 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 to paid production workers only. China’s data cover both production workers and nonproduction employees.

<sup>96</sup> See note 6 above for historical and current information about TVE’s in China.

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<sup>97</sup> *International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing* (Bureau of Labor Statistics), on the Internet at <http://www.bls.gov/news.release/ichcc.toc.htm>.

<sup>98</sup> See the first section of this report on “Manufacturing employment in China” for further background information about China’s statistical system.

<sup>99</sup> 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.

<sup>100</sup> *China Statistical Yearbook 2003*, pp. 66, 84, 87, 90.

<sup>101</sup> *China Labor Statistical Yearbook*, published annually; *China Village and Town Enterprise Yearbook 2003*, pp. 130-31.

<sup>102</sup> *China Labor Statistical Yearbook 2003*, pp. 630, 638.

<sup>103</sup> 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.

<sup>104</sup> *China Village and Town Enterprise Yearbook 2003*, pp. 130-31.

<sup>105</sup> Wage-reporting instructions, 2004, p. 2-4.

<sup>106</sup> 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.

<sup>107</sup> Sparks, Bikoi, and Moglia, “U.S. and foreign compensation costs,” p. 49.

<sup>108</sup> 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).

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<sup>109</sup> “*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.

<sup>110</sup> Wage-reporting instructions, p. 2-5.

<sup>111</sup> *BLS Handbook*, pp. 114-15; Sparks, Bikoi, and Moglia, “U.S. and foreign compensation costs,” p. 37.

<sup>112</sup> 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.

<sup>113</sup> *Ibid.*, p. 379.

<sup>114</sup> Loraine A. West, “Pension reform in China: Preparing for the future,” *Journal of Development Studies*, Feb. 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 FIE 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.)

<sup>115</sup> 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>.

<sup>116</sup> *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.

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<sup>117</sup> Fox and Zhao, “China’s labor market reform;” Qiao, *China’s Aging and Social Security*.

<sup>118</sup> 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, Aug. 2004, Table 1, pp. 28-29; on the Internet at <http://econrsss.anu.edu.au/pdf/china-abstract-pdf/Dongpaper.pdf>.

<sup>119</sup> Kim Woodard and Anita Qingli Wang, “Acquisitions in China: A View of the Field,” *China Business Review*, Nov.-Dec. 2004, pp. 34-38, and “Acquisitions in China: Closing the Deal,” *China Business Review*, Jan.-Feb. 2005, p. 35.

<sup>120</sup> See Fox and Zhao, “China’s labor market reform.”

<sup>121</sup> 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.

<sup>122</sup> Hale and Hale, “China takes off,” p. 46; Lardy, “United States-China ties;” and Henny Sender, “Self-interest may lead China to revalue yuan,” *Wall Street Journal*, Apr. 19, 2004, p. A2.

<sup>123</sup> Knight and Yueh, “Urban insiders versus rural outsiders.”

<sup>124</sup> Jianchun Yang, “China working time statistics,” on the Internet at [http://www.insee.fr/en/nom\\_def\\_met/colloques/citygroup/pdf/China-general.pdf](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.

<sup>125</sup> Yang, “China working time statistics,” p. 1.

<sup>126</sup> See “Excessive overtime in Chinese supplier factories: Causes, impacts, and recommendations for action,” Verité Research Paper, Sept. 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.

<sup>127</sup> See the first section of this report, “Manufacturing employment in China,” subsection on “A major statistical anomaly,” text and endnote 48.

<sup>128</sup> *China Village and Town Enterprise Yearbook 2003*, p. 219.

<sup>129</sup> Employment weights are used to calculate an estimate of national total labor compensation in manufacturing.

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<sup>130</sup> 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.

<sup>131</sup> World Bank. *World Development Report 2004: Making Services Work for Poor People* (Washington, DC: World Bank, 2003), p. 265.

<http://econ.worldbank.org/wdr>

The purchasing power parity exchange rate is a relative price indicator that refers to all the goods and services that go into the GDP.

<sup>132</sup> “Economic weight-watching; China’s economy is larger than it looks,” *Economist*, Sept. 30, 2004.

<sup>133</sup> World Bank, *World Development Report 2004*, pp. 252-253).

<sup>134</sup> West, “Pension reform in China,” p. 172.

<sup>135</sup> Fox and Zhao, “China’s labor market reform,” p. 37.

<sup>136</sup> Thomas G. Rawski, personal communication, May 28, 2004.

<sup>137</sup> Section on “Manufacturing employment in China,” subsection on “Migrant manufacturing workers.”

<sup>138</sup> Shanghai municipality, for example, excludes from its employment statistics data on in-migrant workers from other provinces, as discussed in the first section of this report, “Manufacturing employment in China,” subsection on “Migrant manufacturing workers.”

<sup>139</sup> 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>.

<sup>140</sup> Rawski, personal communication, May 28, 2004; Fox and Zhao, “China’s labor market reform,” pp. 3, 22.

<sup>141</sup> See the first section of this report, “Manufacturing employment in China,” table 1.

<sup>142</sup> “Is the wakening giant a monster?” *The Economist*, Feb. 15, 2003, pp. 63-65.

<sup>143</sup> George Stalk and Dave Young, “How China gets our business,” *Washington Post*, Mar. 7, 2004, p. B3.

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<sup>144</sup> Norihiko Shirouzu, “China drives auto-parts shift,” *Asian Wall Street Journal*, June 10, 2004, p. A5.

<sup>145</sup> 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>.

<sup>146</sup> “Is the wakening giant a monster?” p. 63.

<sup>147</sup> Stalk and Young, “How China gets our business,” p. B3.

<sup>148</sup> 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.

<sup>149</sup> Szczesny, “China an exporter by 2007?”

<sup>150</sup> Hale and Hale, “China takes off,” p. 46.

<sup>151</sup> Lardy, “China’s abusive labor practices.”

<sup>152</sup> Fox and Zhao, “China’s labor market reform.”

<sup>153</sup> 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.

<sup>154</sup> “The dragon and the eagle,” *The Economist*, Sept. 30, 2004.

<sup>155</sup> See also Lardy, “China’s abusive labor practices.”

<sup>156</sup> Nicholas R. Lardy, discussant, BLS seminar, Washington, DC, Nov. 8, 2004.

<sup>157</sup> See Fox and Zhao, “China’s labor market reform.”

<sup>158</sup> Knight and Yueh, “Urban insiders versus rural outsiders.”

<sup>159</sup> 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/chinaconfabstracts.htm>.

<sup>160</sup> Thomas G. Rawski, “Recent developments in China’s labor economy,” revised Nov. 2003 from a report prepared for the International Labor Office in Jan. 2002, p. 17;

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see also Fox and Zhao, “China’s labor market reform,” pp. 3, 22; and the entire Rawski article.

<sup>161</sup> 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).

<sup>162</sup> 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>.

<sup>163</sup> Paul French, “Welcome to bubble town,” *Asian Wall Street Journal*, May 27, 2004, p. A7.

<sup>164</sup> Iain McDaniels, “A critical eye on Shanghai: Will the city’s extraordinary growth continue?” *China Business Review*, Jan.-Feb. 2004, pp. 8-9, especially p. 8.

<sup>165</sup> French, “Welcome to bubble town,” p. A7.

<sup>166</sup> “String of pearls: China’s development,” *Economist*, Nov. 20, 2004, pp. 43-44.

<sup>167</sup> 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](http://www.ycwb.com/gb/content/2004-04/28/content_683077.htm).

<sup>168</sup> French, “Welcome to bubble town.”

<sup>169</sup> “String of pearls,” *Economist*, p. 44.

<sup>170</sup> See also McGuckin and Spiegelman, *China’s Experience*, pp. 4, 23.

<sup>171</sup> China Radio International, “Economist predicts rise in China’s middle class,” 7/30/2001.

<sup>172</sup> Craig S. Smith, “China, a billion-person market in transition,” *International Herald Tribune*, July 17, 2002, p. 2.

<sup>173</sup> Powell, “China’s great step forward.”

<sup>174</sup> *Xin kuai bao* [*New Express*] web site, June 1, 2004. “Caifu: Zhongguo zhuangda de shechipin xiaofei qunti” [“Wealth: China’s growing luxury consumption groups”]. From Jinyang Wang [Guangdong Jinyang Network & Information Company, Ltd.], May 31, 2004: [http://www.ycwb.com/gb/content/2004-05/31/content\\_699899.htm](http://www.ycwb.com/gb/content/2004-05/31/content_699899.htm).

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- <sup>175</sup> Hale and Hale, “China takes off.”
- <sup>176</sup> Smith, “China, a billion-person market in transition,” p. 2; Evan Ramstad, “Proview assembles its success by keeping costs to a bare minimum,” *Asian Wall Street Journal*, May 10, 2004, p. A9.
- <sup>177</sup> Kevin Honglin Zhang, “What attracts foreign multinational corporations to China?” *Contemporary Economic Policy*, Vol. 19, No. 3, July 2001, pp. 336-346.
- <sup>178</sup> Ramstad, “Proview assembles its success,” p. A9; Stalk and Young, “How China gets our business.”
- <sup>179</sup> Jeffrey E. Garten, “When everything is made in China,” *Business Week*, June 17, 2002, p. 20.
- <sup>180</sup> Zhang, “What attracts foreign multinational corporations to China?”
- <sup>181</sup> Hsuju Ho, “Beijing, Yangtze delta land most expensive,” *The Standard, Greater China’s Business Newspaper*, Apr. 1, 2004.
- <sup>182</sup> McDaniels, “A critical eye on Shanghai,” p. 9; French, “Welcome to bubble town,” 2004, p. A7.
- <sup>183</sup> Ho, “Beijing, Yangtze delta land most expensive.”
- <sup>184</sup> Andy Xie, “China: The third growth anchor,” *Financial Times Information*; reproduced in “Shanghai Securities News: Total of 200m people in China to become middle class within coming 5 years,” *China Intelligence Wire*, London, July 25, 2001.
- <sup>185</sup> Zhang, “What attracts foreign multinational corporations to China?”
- <sup>186</sup> Winter Wright, “Doing business in China,” *AmCham China [American Chamber of Commerce in China] Brief*, vol. 12, no. 5, June 2004, pp. 11-13, 26.
- <sup>187</sup> Lardy, “United States-China ties.”
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- <sup>189</sup> Wright, “Doing business in China,” p. 13.
- <sup>190</sup> Bloomberg, “Factory owners left in dark over power crisis,” *The Standard, Greater China’s Business Newspaper*, July 1, 2004.
- <sup>191</sup> Bloomberg, “Commerce Ministry eyes raising taxes to cool textile exports,” *The Standard, Greater China’s Business Newspaper*, June 1, 2004.

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<sup>192</sup> American Chamber of Commerce in China, “Intellectual property rights in China: A spiraling problem,” and “AmCham publishes its 6<sup>th</sup> *White Paper*,” *AmCham China Brief*, Vol. 12, No. 8, Oct. 2004, pp. 5, 17, 23-24.

<sup>193</sup> French, “Welcome to bubble town.”

<sup>194</sup> Bing Ho and Hal Fiske, “Legal brief; Branding lost (and found) in translation,” *AmCham China Brief*, Vol. 12, No. 5, June 2004, pp. 9, 24.

<sup>195</sup> Associated Press, “U.S. to press China on trade case,” *International Herald Tribune*, June 23, 2004. <http://www.ihf.com/articles/526132.html>  
Donald Evans (U.S. Secretary of Commerce), “U.S.-China economic relations,” presentation at AmCham-China, Beijing, June 23, 2004.

<sup>196</sup> S. Richard Snodey, “Intellectual property security in China’s rapidly expanding commerce,” *China Briefing; The Practical Application of China Business*, Vol. 5, No. 5, June 2004, pp. 6-8.

**Table 1. Official reported manufacturing employment in China, yearend 1978-2002**

Year	Manufacturing employment			Manufacturing employment in urban units			Urban manufacturing staff and workers				Town and village enterprises (TVE's)	
	Total	Rural	Derived urban <sup>1</sup>	Total	Men	Women	Total	State-owned units	Urban collective-owned units	Other ownership units	Industry	Manufacturing <sup>2</sup>
1978.....	53.32	17.34	35.98	--	--	--	35.95	24.49	11.46	--	17.34	--
1980.....	58.99	19.42	39.57	--	--	--	39.47	26.01	13.46	--	19.42	--
1985.....	74.12	27.41	46.71	--	--	--	46.20	29.75	16.08	.37	41.37	--
1986.....	80.19	31.39	48.80	--	--	--	48.20	30.96	16.80	.46	47.62	--
1987.....	83.59	32.97	50.62	--	--	--	49.88	32.09	17.24	.58	52.67	--
1988.....	86.52	34.13	52.39	--	--	--	51.49	33.27	17.45	.77	57.03	--
1989.....	85.47	32.56	52.91	--	--	--	52.06	33.44	17.54	1.08	56.24	--
1990.....	86.24	32.29	53.95	--	--	--	53.04	33.95	17.73	1.35	55.72	51.50
1991.....	88.39	32.68	55.71	--	--	--	54.43	34.82	17.82	1.80	58.14	53.73
1992.....	91.06	34.68	56.38	--	--	--	55.08	35.26	17.47	2.36	63.36	58.56
1993.....	92.95	36.59	56.36	--	--	--	54.69	34.44	15.95	4.30	72.60	67.10
1994.....	96.13	38.49	57.64	54.92	30.31	24.61	54.34	33.21	15.15	5.98	69.62	64.34
1995.....	98.03	39.71	58.32	54.93	30.11	24.82	54.39	33.26	14.17	6.96	75.65	69.92
1996.....	97.63	40.19	57.44	53.44	29.52	23.92	52.93	32.18	13.46	7.28	78.60	72.65
1997.....	96.12	40.32	55.80	51.30	28.44	22.86	50.83	30.11	12.44	8.27	76.149	75.684
1998.....	383.19	39.29	343.90	38.26	--	--	37.69	31.883	7.42	311.44	73.34	67.79
1999.....	81.09	39.53	41.56	35.54	20.12	15.42	34.96	16.48	6.22	12.25	73.95	68.35
2000.....	80.43	41.09	39.34	33.01	18.75	14.25	32.40	14.15	5.19	13.06	74.67	69.01
2001.....	80.83	42.96	37.87	30.70	17.52	13.18	30.10	11.94	4.25	13.91	76.15	70.38
2002.....	83.07	45.06	38.02	29.81	16.98	12.83	29.07	9.79	3.46	15.82	76.68	70.87

<sup>1</sup> Derived urban manufacturing employment is calculated as national manufacturing employment minus rural manufacturing employment.

<sup>2</sup> TVE manufacturing employment was reported officially only for 2002, when it constituted 92.4 percent of TVE industry employment; figures for other years are estimated, using the same percentage.

<sup>3</sup> Break in series.

NOTES: Dash indicates data not available. All figures refer to the mainland provinces of China, not including Hong Kong, Macao, or Taiwan. The data are from China's annual yearend reporting system, not from census data, and are not adjusted to agree with census data.

SOURCES: China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 8, 10, 13, 16, 21, 23-26, 171, 473; China Ministry of Agriculture, China TVE Yearbook Editorial Committee, ed., *China Village and Town Enterprise Yearbook 2003* [in Chinese] (Beijing, China Agriculture Publishing House, 2003), p. 130.

**Table 2. Manufacturing employment excluding surplus laid-off manufacturing workers in China, yearend 1995-2002**

[In millions]						
Year	Total manufacturing employment <sup>1</sup>	Surplus laid-off manufacturing workers	Rural manufacturing employment	Derived urban manufacturing employment <sup>1</sup>	Manufacturing employment in urban units <sup>1</sup>	Manufacturing urban staff and workers <sup>1</sup>
1995.....	95.90	2.13	39.71	56.19	52.80	52.26
1996.....	94.40	3.23	40.19	54.21	50.21	49.70
1997.....	--	--	--	--	--	--
1998 <sup>2</sup> .....	83.19	(3)	39.29	43.90	38.26	37.69
1999.....	81.09	(3)	39.53	41.56	35.54	34.96
2000.....	80.43	(3)	41.09	39.34	33.01	32.40
2001.....	80.83	(3)	42.96	37.87	30.70	30.10
2002.....	83.07	(3)	45.06	38.02	29.81	29.07

<sup>1</sup> Excludes surplus laid-off manufacturing workers. Data for 1995-96 are calculated from the reported figures, shown in table 1, minus the number of surplus laid-off manufacturing workers. Data for 1998-2002 are the reported figures.

<sup>2</sup> Break in series.

<sup>3</sup> Data are not shown because surplus laid-off manufacturing workers are not included in total manufacturing employment after 1997. Only 1995 and 1996 data are used to calculate estimates presented in this table.

NOTE: Dash indicates data not available.

SOURCES: Table 1; China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 1996* (Beijing, China Statistics Press, 1996), p. 409; and *China Labor Statistical Yearbook 1997* (Beijing, China Statistics Press, 1997), p. 405.

**Table 3. Employment in China: comparison of census and enterprise data, 2000**

[In millions]	Sector	Census data	Enterprise data	Difference <sup>1</sup>
	Total employment.....	709.71	629.78	79.93
	Farming, forestry, animal husbandry, and fisheries.....	456.89	333.55	123.34
	Mining and quarrying.....	7.41	5.97	1.44
	Manufacturing.....	88.43	80.43	8.00
	Production and supply of electricity, gas, and water.....	4.44	2.84	1.60
	Construction.....	19.05	35.52	-16.47
	Geological prospecting and water conservancy.....	0.90	1.10	-0.20
	Transport, storage, post, and telecommunications.....	18.30	20.29	-1.99
	Wholesale and retail trade and catering services.....	47.48	46.86	0.62
	Finance and insurance.....	4.19	3.27	0.92
	Real estate trade.....	1.64	1.00	0.64
	Social services.....	15.27	9.21	6.06
	Health care, sports, and social welfare.....	7.53	4.88	2.65
	Education, culture and arts, radio, film, and television.....	18.16	15.65	2.51
	Scientific research and polytechnical services.....	1.59	1.74	-0.15
	Government and party agencies and social organizations.....	16.69	11.04	5.65
	Others.....	1.74	56.43	-54.69

<sup>1</sup> Difference is census figure minus enterprise figure.

NOTES: Enterprise data are for yearend 2000; census data are from November 1, 2000, which was 2 months earlier. Therefore, the numbers from the two sources are not expected to be exactly the same. Census figures are derived by the author from the census long-form sample and refer to the population aged 15 years and older.

SOURCES: Census data are from China National Bureau of Statistics, *Tabulation on the 2000 Population Census of the People's Republic of China*, vol. 2 [in Chinese] (Beijing, China Statistics Press, 2002), pp. 1569-70. Enterprise data are from China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 8-9.

**Table 4. Manufacturing employment in China: two alternative series, yearend 1990-2002**

[In millions]

<b>Year</b>	<b>Urban and TVE<sup>1</sup> manufacturing employment</b>	<b>Official reported manufacturing employment</b>
1990.....	105.45	86.24
1991.....	109.44	88.39
1992.....	114.94	91.06
1993.....	123.46	92.95
1994.....	121.98	96.13
1995.....	128.24	98.03
1996.....	130.09	97.63
1997.....	112.64	96.12
1998.....	111.69	83.19
1999.....	109.91	81.09
2000.....	108.35	80.43
2001.....	108.25	80.83
2002.....	108.88	83.07

<sup>1</sup> Town and village enterprises.

SOURCE: Calculated from table 1.

**Table 5. Manufacturing employment in G7 countries, 1995-2002**

[In thousands]										
Year	G7 <sup>1</sup> total	United States	Canada	Japan	France	Germany	Italy	United Kingdom		
1995.....	59,825	20,493	1,907	14,520	4,115	9,017	4,831	4,942		
1996.....	59,437	20,518	1,926	14,420	4,073	8,643	4,781	5,076		
1997.....	<sup>2</sup> 59,567	<sup>2</sup> 20,835	2,016	14,390	4,035	8,521	4,746	5,024		
1998.....	<sup>2</sup> 59,204	<sup>2</sup> 20,733	2,102	13,790	4,047	8,688	4,820	5,024		
1999.....	<sup>2</sup> 58,024	<sup>2</sup> 20,070	2,202	13,410	4,031	<sup>2</sup> 8,591	4,820	4,900		
2000.....	<sup>2</sup> 57,353	<sup>2</sup> 19,644	2,254	13,180	4,081	8,646	4,796	4,752		
2001.....	55,606	18,434	2,230	12,800	4,127	8,626	4,774	4,615		
2002.....	53,321	17,233	2,291	11,990	4,059	8,491	4,814	4,443		

<sup>1</sup> The G7 countries are the United States, Canada, Japan, France, Germany, Italy, and the United Kingdom.

<sup>2</sup> Break in series. For the United States, all breaks are due to updated population controls. Furthermore, data for 2000 forward for the United States are based on the 2002 North American Industry Classification System; data for earlier years are based on the 1987 Standard Industrial Classification. The 1999 break for Germany reflects the incorporation of an improved method of data calculation and a change in coverage to persons living in private households only.

NOTE: The data in this table are obtained mainly from household surveys, such as the Current Population Survey for the United States. Household surveys are more comparable across countries than are establishment surveys.

SOURCE: *Comparative Civilian Labor Force Statistics, Ten Countries, 1960-2004* (Bureau of Labor Statistics, May 13, 2005); on the Internet at <http://www.bls.gov/fls/flsforc.pdf>.

**Table 6. 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	<sup>2</sup> 29.98	11,152	--
On-post urban manufacturing staff and workers.....	321.90	29.07	29.26	11,001	--
Other urban manufacturing employment.....	--	0.74	--	17,237	--
Laid-off urban manufacturing staff and workers.....	--	9.13	--	--	2,213
Manufacturing TVE's <sup>1</sup> .....	489.22	70.87	<sup>2</sup> 70.62	<sup>2</sup> 6,927	--
Large-scale manufacturing TVE's <sup>1</sup> .....	168.94	19.05	<sup>2</sup> 18.98	<sup>2</sup> 8,899	--

<sup>1</sup> TVE's are town and village enterprises.

<sup>2</sup> Derived from other numbers reported in the table or in the sources.

NOTES: Dash indicates data 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 7. 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.

SOURCE: 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.

**Table 8. 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 <sup>1</sup> .....	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	0.95
On-post urban manufacturing staff and workers.....	29.26	11,001	16,920	2,043	1,410	170	7.76	0.94
Other urban manufacturing employment.....	0.72	17,237	26,511	3,202	2,209	267	12.17	1.47
Manufacturing TVE's <sup>1</sup> .....	70.62	6,927	7,481	904	623	75	3.40	0.41
Large-scale manufacturing TVE's <sup>1</sup> .....	18.98	8,899	9,611	1,161	801	97	4.37	0.53

<sup>1</sup> TVE's are town and village enterprises.

NOTES: Total labor compensation for urban workers is 1.538 times earnings and for TVE workers is 1.08 times earnings. US dollars 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 that TVE workers perform 2,200 hours per year. (See text for details.)

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.

Table 9. Compensation of urban manufacturing employees and TVE<sup>1</sup> 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
<b>Urban manufacturing employees:</b>							
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
<b>TVE<sup>1</sup> industry employees:</b>							
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	0.71
Zhejiang province.....	10,188	11,003	1,329	917	111	5.00	0.60
Jiangsu province.....	8,143	8,794	1,062	733	89	4.00	0.48
Guangdong province.....	8,345	9,013	1,088	751	91	4.10	0.49

<sup>1</sup> TVE'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 8; 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.

**Table 10. Annual percent change in average real (price-adjusted) earnings of urban manufacturing staff and workers in China, selected years, 1979-2002**

[In percent]

Year	Urban manufacturing staff and workers			
	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	0.8	7.6
1988.....	-0.1	0.5	-2.5	14.0
1989.....	-4.5	-4.4	-5.7	0.9
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	-0.3	0.1
1995.....	3.3	1.6	3.5	1.8
1996.....	0.3	-0.4	-0.9	0.8
1997.....	2.0	0.5	-0.3	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 11. Average annual real earnings of urban manufacturing staff and workers in China, 1990-2002**

[In constant 2002 yuan and constant 2002 dollars]

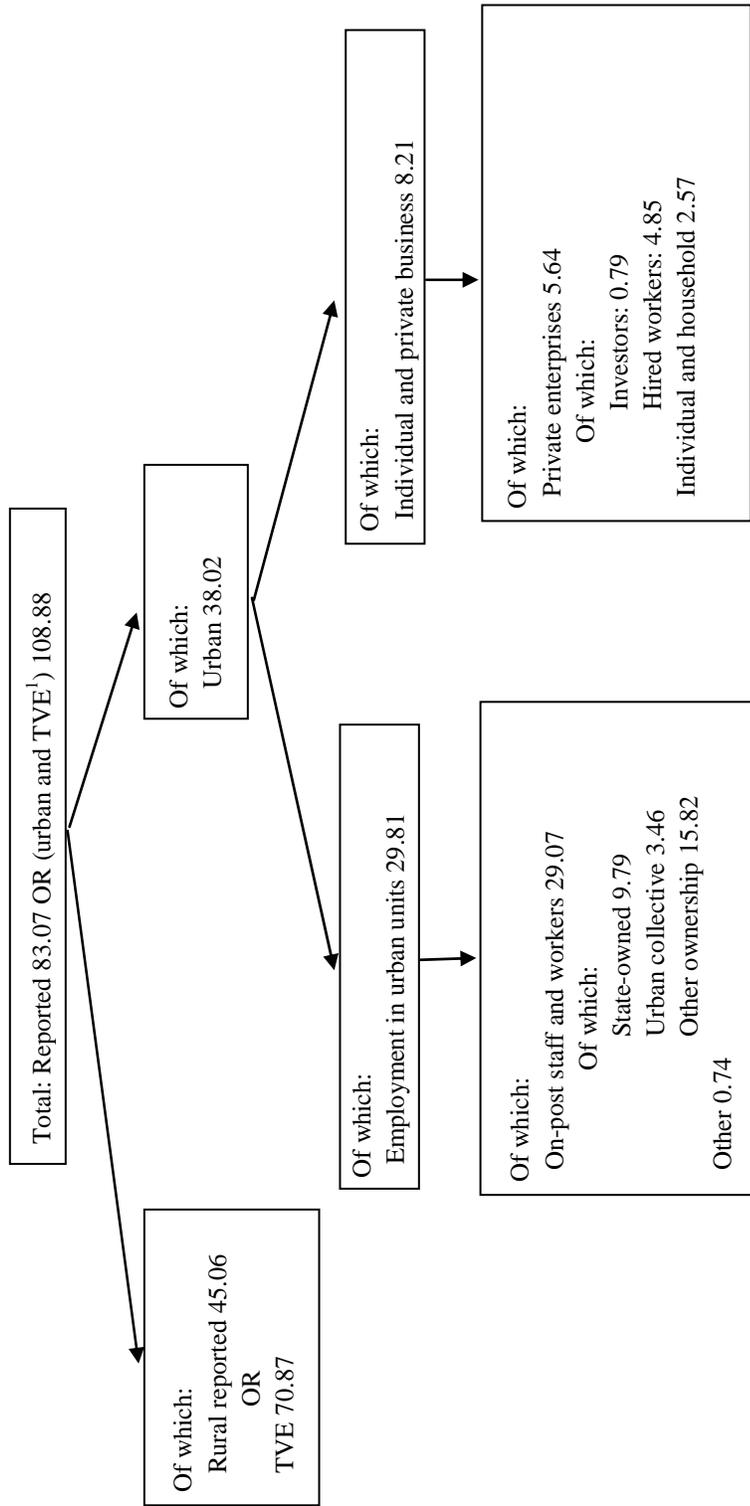
Year	Urban manufacturing staff and workers							
	Total		Urban state-owned units		Urban collective-owned units		Other urban ownership units	
	Yuan	U.S. dollars	Yuan	U.S. dollars	Yuan	U.S. dollars	Yuan	U.S. dollars
1990.....	5,058	\$611	5,599	\$676	4,149	\$501	6,833	\$825
1991.....	5,316	642	5,828	704	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.

**Chart 1. Structure of manufacturing employment in China, yearend 2002**

(Numbers in millions)

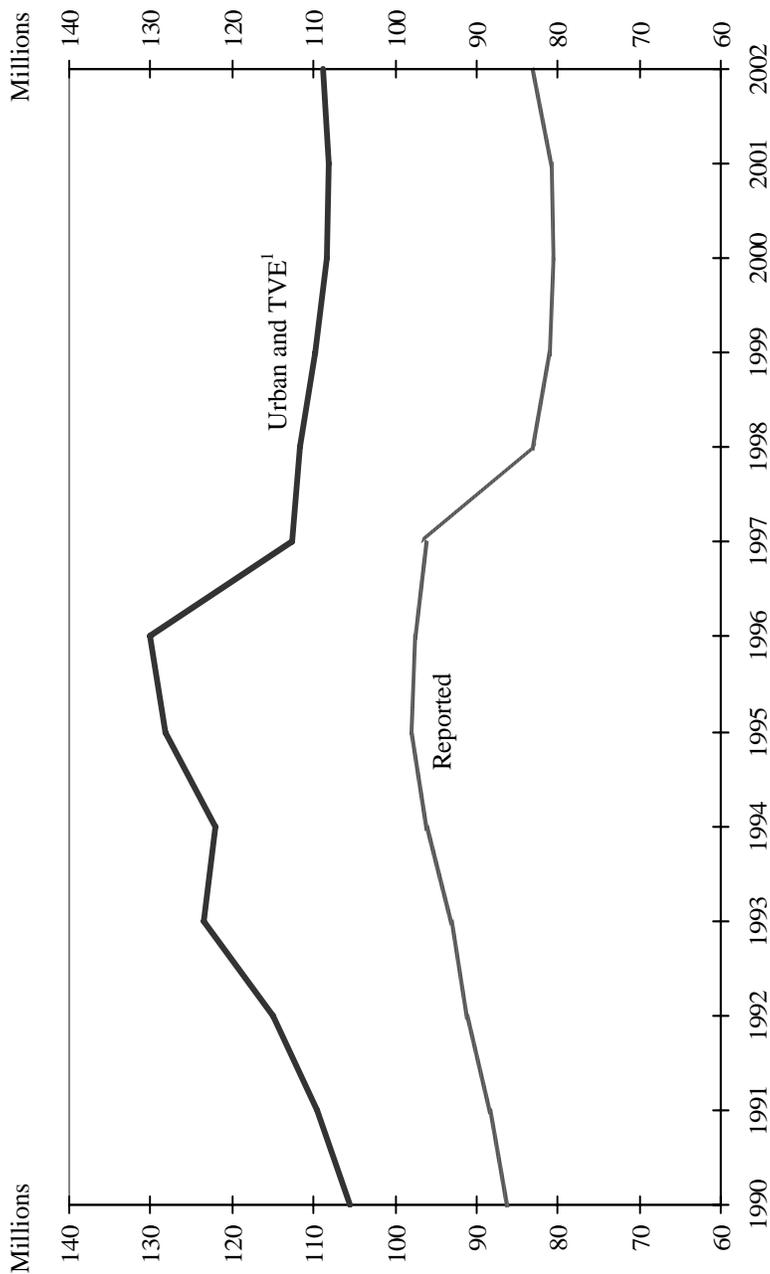


<sup>1</sup> Town and village enterprises.

NOTE: Official total yearend 2002 manufacturing employment in China was 83.07 million, of which 38.02 million was urban and 45.06 million was rural. But if non-urban manufacturing employment was best represented by TVE employment of 70.87 million, then the total yearend 2002 China manufacturing employment was 108.88 million.

SOURCES: Table 1 and text.

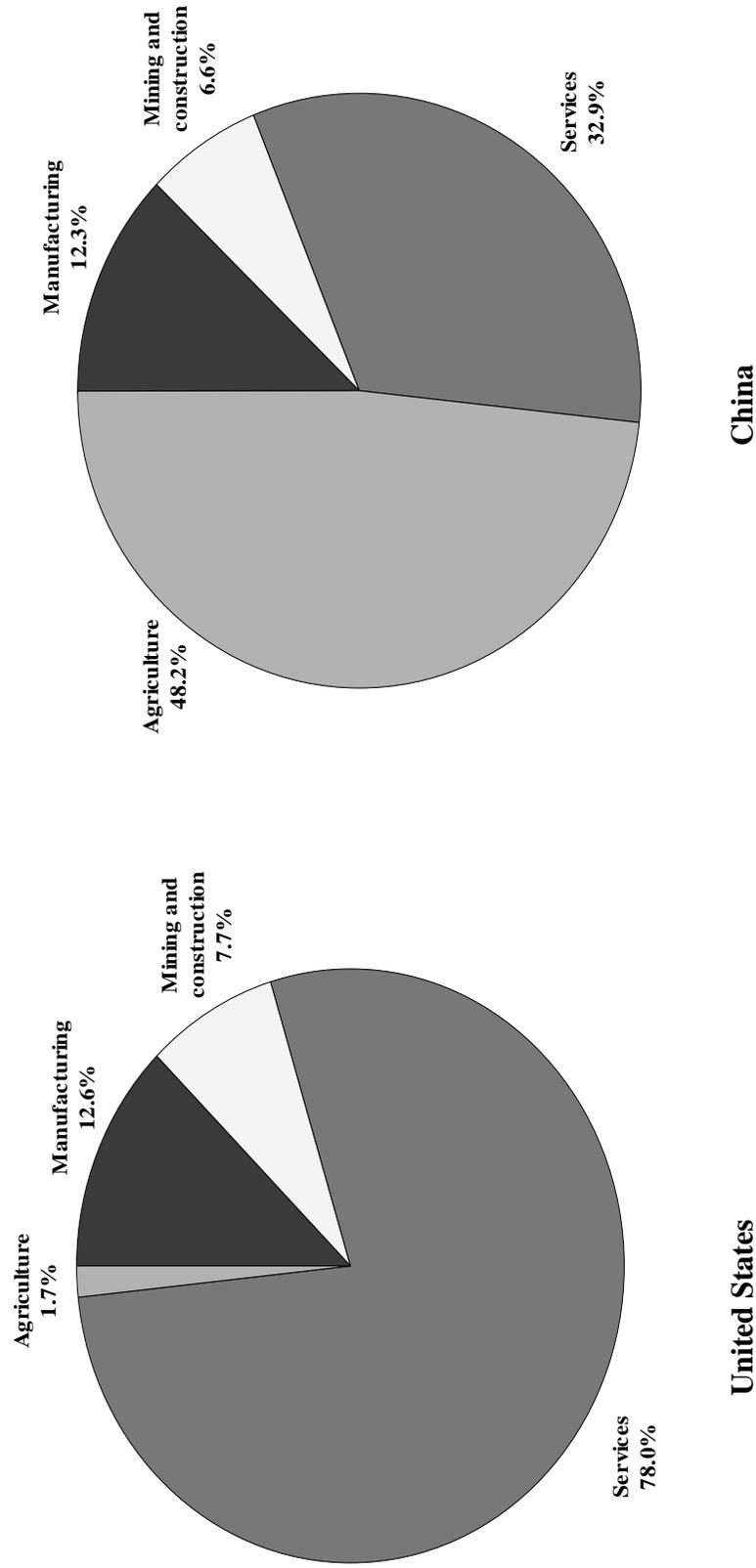
**Chart 2. Manufacturing employment in China, yearend 1990-2002**



<sup>1</sup>Town and village enterprises; manufacturing employment in this sector is derived from reported TVE industry employment.

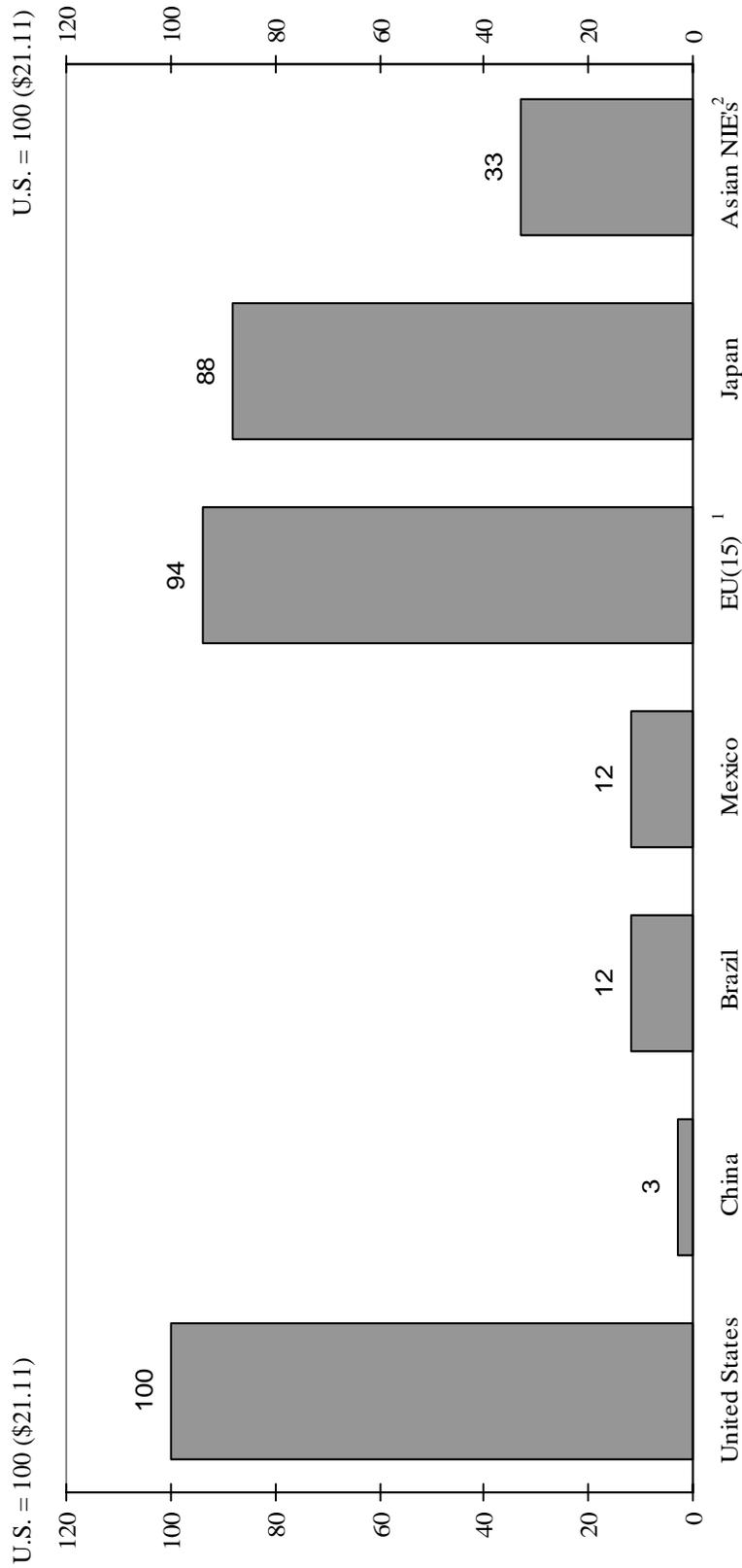
SOURCES: Calculated from table 1.

**Chart 3. Employment by sector in the United States and China, 2002, in percent**



SOURCES: U.S. data are from *Comparative Civilian Labor Force Statistics, Ten Countries, 1960–2004* (Bureau of Labor Statistics, May 13, 2005); on the Internet at <http://www.bls.gov/fls/flsforc.pdf>. Chinese data are from official yearend enterprise reports as published in *China Statistical Yearbook 2003* (Beijing, China Statistics Press, 2003), pp. 128–29.

**Chart 4. Average hourly compensation costs of manufacturing workers, selected economies and regions, 2002**

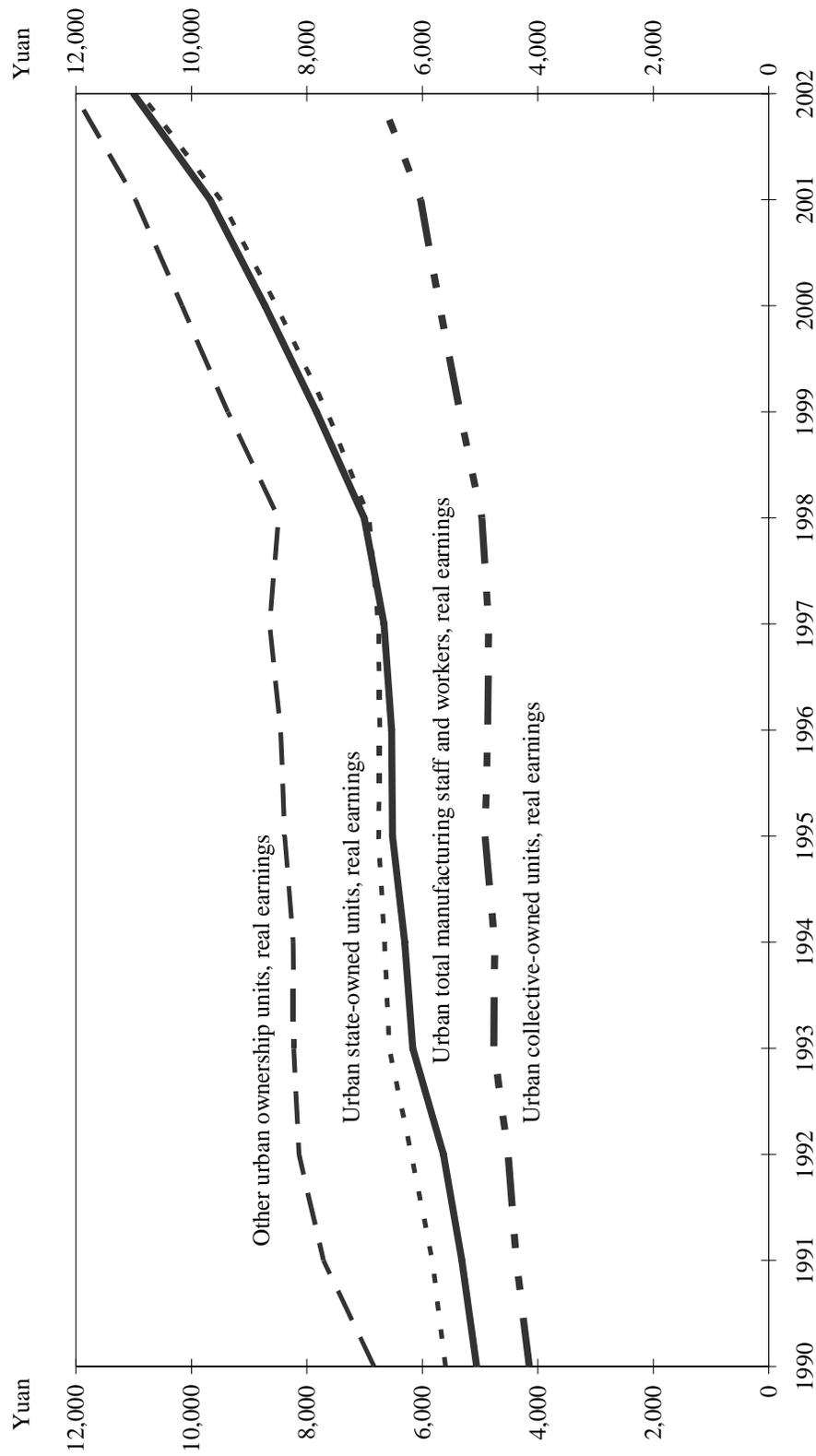


<sup>1</sup> EU(15) are the European Union member countries prior to the expansion to 25 countries on May 1, 2004.

<sup>2</sup> Asian NIE's are the newly industrialized economies of Hong Kong, Korea, Singapore, and Taiwan.

SOURCES: Bureau of Labor Statistics, "International comparisons of hourly compensation costs for production workers in manufacturing, 1975-2003," Nov. 18, 2004; on the Internet at <http://www.bls.gov/fls/home.htm>. For China, data are from this article and not from the BLS series. The data for China refer to all employees rather than just production workers.

**Chart 5. Average real earnings of urban manufacturing staff and workers in China, 1990-2002**



SOURCE: Table 11.

## 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)
- Earnings during on-the-job training, probationary period
- Employee income paid on an irregular basis
- Hourly payment for work performed
- Piecework payment for work performed
- Bonus payments
- Incentive, performance-based payments
- Overtime pay
- Hardship, danger pay
- 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
- Housing subsidy (dormitory provided, or directly subsidized rent or purchase of housing)
- Individual income tax deducted from earnings and paid directly by enterprise to government
- 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
- Money for rent and utilities (electricity, water)
- Money given for fixed line or mobile phone
- Clothing subsidy
- Subsidy compensating workers for lack of vacation time
- 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)
- Anything that has the nature or spirit of labor earnings, even if it is not spelled out in the regulations

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

## Glossary and Definitions

Actual situation that year – *ben nian shiji*

本年实际

Average earnings – *pingjun laodong baochou*

平均劳动报酬

Average number of employees – *pingjun jiuye renshu*

平均就业人数

China labor force market wage survey –

*Zhongguo laodongli shichang gongzi diaocha*

中国劳动力市场工资调查

This survey was conducted by the Ministry of Labour and Social Security in 2003 with reference to calendar year 2002 data. The survey was carried out in 51 large and medium-sized cities and surveyed 11,704 enterprises, 37% of which were manufacturing enterprises. Staff and workers of all the surveyed enterprises totaled 860,000, of which 48% were in manufacturing industries.

Cities – *chengshi* or *cheng*

城市 or 城

Compensation of employees or laborers remuneration –

*laodongzhe baochou*

劳动者报酬

Compensation survey – see “China labor force market wage survey”

Currency, PRC – *yuan, renminbi*

元，人民币

Earnings or remuneration or compensation – *laodong baochou*

劳动报酬

Employed, employment – Means currently working and being paid for the work (even if promised pay is in arrears). All these terms mean the same thing:

*jiuye*

就业

*congye*

从业

*zaiye*

在业

Employed workers, employees – *congye ren yuan*      *jiuye ren yuan*

从业人员

就业人员

Employment in urban units – *chengzhen danwei jiuye ren yuan*

城镇单位就业人员

*Fuli feiyong* or *fuli fei* – see “Welfare fund”

Government ministries – see Ministries

Hired laborers or hired hands – *gugong renshu*

雇工人数

Housing fund — a fund in which money is set aside for each worker by name—money that the worker can use to help buy an apartment  
*zhufang gong jijin*

住房公积金

*Hukou* — see “Population residence registration”

Individual and household enterprises — see also “Self-employed individual or family enterprises” and “Manufacturing economic organizations – urban”

*getihu*

个体户

Industry — *gongye*

工业

Investors — *touzizhe renshu*

投资者人数

Labor compensation, total labor compensation — *laodongzhe baochou*

劳动者报酬

Labor situation — *laodong qingkuang*

劳动情况

Laid-off staff and workers – *xiagang zhigong*

## 下岗职工

Manufacturing economic organizations – urban

Most manufacturing employees in cities are employed by workplaces and factories organized as work units (*danwei*); their employees totaled 30 million at yearend 2002. These manufacturing work units may be state-owned enterprises, urban collectives, or private sector enterprises.

Smaller in size than the work units are the “private enterprises” (*siying qiye*), which had a total of 5.64 million manufacturing investors and employees in China’s cities in 2002. The definition of a *siying qiye* is that it is an economic organization that is privately owned and privately operated and has 8 or more employees. There are three types of *siying qiye*:

*duzi qiye* – exclusive investment, solely owned by a single investor

### 独资企业

*hehuo qiye* – partnership

### 合伙企业

*youxian zeren qiye* – limited liability enterprise that has 2-30 investors

### 有限责任公司

Smaller than the *siying qiye* are the individual and family-owned enterprises called *getihu*, which totaled 2.57 million manufacturing workers in China’s cities in 2002. A *getihu* has fewer than 8 employees.

Manufacturing employment in urban units –

*chengzhen danwei zhizaoye jiuye renyuan*

### 城镇单位制造业就业人员

See also “Manufacturing economic organizations – urban”

Medical insurance fund – *yiliao baoxian*

医疗保险

Migrant, migration, to migrate – *yimin* 移民

*qianyi* 迁移

*qianxi* 迁徙

*yiju* [literally, to migrate and change residence]

移居

*qianju* [literally, change one's dwelling place]

迁居

The above Chinese words for “migration” imply long-term or permanent migration involving a move and a permanent change of residence and perhaps, in the Chinese case, a change of *hukou* or permanent population residence registration.

*liudong* [literally flowing, as with water]

流动

The term *liudong* is used for population or worker movement when the moves are not expected to be permanent or policy dictates that the move will not be permanent.

Migrant workers – *liudong laogong*

流动劳工

[literally, flowing or floating workers]

Ministries involved in the collection and reporting of statistics on manufacturing employment and labor compensation in China:

China National Bureau of Statistics-  
*Zhonghua renmin gongheguo guojia tongjiju*

中华人民共和国国家统计局

Responsible for overseeing all statistics gathering in China.

China Ministry of Labour and Social Security-  
*Zhongguo laodong he shehui baozhangbu*

中国劳动和社会保障部

Responsible for gathering and reporting statistics on city work units and their employment and wages, city social insurance funds, workers laid-off from city work units, and unemployment and re-employment in cities.

China Ministry of Agriculture -  
*Zhongguo nongyebu*

中国农业部

Responsible for gathering and reporting statistics on employment and labor compensation in China's towns and rural areas.

China State Administration for Industry and Commerce –  
*Zhonghua renmin gongheguo guojia gongshang xingzheng guanli zongju*

中华人民共和国国家工商行政管理总局

Responsible for gathering and reporting statistics on self-employed workers, small family-owned businesses, and small privately owned and privately operated enterprises outside of agriculture.

Not-on-post staff and workers – *bu zaigang zhigong*

不在岗职工

Off-post staff and workers – see “not-on-post staff and workers”

“laid-off staff and workers”

Old-age pension fund, pension insurance – *yanglao baoxian*

## 养老保险

On-post staff and workers – *zai gang zhigong*

## 在岗职工

On-post staff and workers, as distinct from laid-off (off-post, not-on-post) staff and workers, as distinct from unemployed workers:

These categories refer to workers in cities and not to workers in rural areas or towns. “On-post staff and workers” includes those adults in the legal working ages who are currently employed in urban work units (*danwei*) and who are being paid, or at least are supposed to be paid (though wage payments may be in arrears). “Laid-off” (or off-post or not-on-post) staff and workers are those employees in the working ages who have been formally laid off by their work units, but who still keep a formal tie with the former work unit, often for some of the following reasons: to keep their subsidized housing, for medical benefits, to keep other subsidies or benefits, so they can get a subsistence allowance, to get retraining and job-search assistance, or so that they will be called back if the work load of the enterprise picks up. “Unemployed” workers are those adults in cities who are listed as “urban registered unemployed” (see “unemployment rate”).

Pearl River Delta (in Guangdong province) –

*zhujiang sanjiaozhou* or *zhusanjiao*

珠江三角洲                  珠三角

Population residence registration – *hukou*

## 户口

In practice, in China, it is difficult for someone born in a rural area or town to get permission to shift residence registration to a city. A rural-to-urban migrant with rural *hukou* might live in a city for years or decades without ever being granted a city permanent residence registration.

Temporary residence permit – *zan zhu zheng*

### 暂住证

A migrant who moves to a city to work is supposed to register with local authorities and get a temporary residence permit.

PPP – purchasing power parity, international purchasing power parity

A method used by the World Bank for comparing the real purchasing power of a national currency with the cost of the same “basket” of goods on the international market or in the United States.

Privately owned and privately operated enterprises – *siying qiye*

### 私营企业

See also “Manufacturing economic organizations – urban”

Retirement age workers who have been rehired or who have continued working  
-- *pinyong, liuyong de li tuixiu ren yuan*

### 聘用，留用的离退休人员

Rural – *xiangcun nongcun* See also “Urban and rural”

### 乡村 农村

Self-employed individual or family enterprises –

see also “Individual and household enterprises”  
*geti jiuye*

### 个体就业

Social insurance payments from the work unit —

*danwei shehui baoxian fukuan*

单位社会保险付款

Staff and workers — *zhigong*

职工

Statistics ministries — see Ministries

Temporary, provisional — *linshi* 临时

A temporary or provisional worker in a city enterprise has worked at that enterprise for less than one year.

Total wage — *gongzi zong'e*

工资总额

Total wage bill, wages and related income — *gongzi ji gongzixing shouru*

工资及工资性收入

Towns — *zhen* 镇

TVEs — village and town enterprises

*xiangzhen qiye*

乡镇企业

Often called “township and village enterprises,” the TVEs were originally established as collective economic units run by local governments in rural areas and towns. The purpose of TVEs was and is to employ rural peasants outside of agriculture in industrial or service occupations, and in locations not far from their village family homes. This allows modernization of China’s vast

countryside without necessitating massive migration from the villages to cities. In the 1980s and especially the 1990s to today, TVEs shifted from public toward private ownership, and many foreign-funded enterprises became classified as TVEs. Now the TVE category, in addition to including small local enterprises, can also 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 TVEs, because required social insurance payments are very low, statistical reporting requirements are minimal, and there are many legal and taxation benefits.

Unemployment insurance fund – *shiye baoxian*

### 失业保险

Unemployment rate: *shiye lu* 失业率

The calculation of the unemployment rate in China is non-standard. The rural unemployed are completely ignored in the calculation. China's unemployment rate is based on city data only and does not include the unemployed in towns that have been established as urban places. The figure used in the numerator for calculating the unemployment rate is so-called "urban registered unemployment."

### *chengzhen dengji shiye* 城镇登记失业

These are adults living in cities whose permanent population registration (*hukou*) is located in that city where they live, who are in the legal working ages of 16-59 for men and 16-54 for female white-collar workers and 16-49 for female blue-collar workers, and who are formally registered as unemployed. "Urban registered unemployment" does not include laid-off workers who are still associated in any formal way with their former work unit, and does not include workers who have been forced to retire early, and does not include in-migrants whose permanent population registration is outside that city.

The denominator of the unemployment rate is the sum of employed workers in legal working ages whose permanent population registration is in the city where they live plus the urban registered unemployed.

Urban – *chengzhen*

See also “Urban and rural”

城镇

Urban and rural –

*chengzhen* and *xiangcun nongcun*

城镇

乡村

农村

The terms “urban” and “rural” are defined differently in China depending on the source of statistics. At all times, the city districts of cities are classified as urban, while villages are classified as rural. The differences are in how towns are classified, and how suburban districts around cities are classified. For population and housing censuses, NBS defines cities, their suburban districts, and all towns that have been established as urban places as “urban,” while the rest of the country is called “rural.” But in administrative data, other ministries use a narrow definition of “urban” that includes only city districts and perhaps some close peri-urban areas and maybe the town that serves as the administrative center of each county; the large residual is all designated “rural.” Statistical sources and publications usually use the terms “urban” and “rural” without ever defining them, so users have to infer what definitions are being used in that statistics volume, and sometimes even for each individual table in a volume of statistics.

Urban manufacturing staff and workers –

*chengzhen zhizaoye zhigong*

城镇制造业职工

Wages – *gongzi*

工资

Welfare fund – *fuli feiyong* or *fuli fei*

### 福利费用 or 福利费

The *fuli fei* is a fund that is supposed to be set up and used by enterprises to benefit employees. The fund can pay costs of a common worker space for leisure use, such as a gym, or where employees can buy foods and other needed items. Expenses of a labor union or of labor representatives could be covered by the welfare fund. This fund also pays for employees to go visit their parents or spouse if these close relatives live in a different place. The fund covers funeral expenses if an employee dies. The *fuli fei* also gives money to employees in financial difficulty due to big medical expenses, and may be used to give subsistence payments to laid-off workers or those on long-term leave for health reasons or to the spouse of a deceased employee. The welfare fund can also pay medical expenses for retirees. It can be used to pay monthly subsidies to couples with one child who have signed the one-child certificate agreeing to have only one child. A typical use for the *fuli fei* fund is to pay for outings, parties, ceremonies, or gifts to all employees. The fund may also be used to help purchase, maintain, and repair worker dormitory housing. The fund can also pay for special food subsidies. Even though, in theory, some of these expenses are supposed to be reported as part of the wage, employers and employees generally prefer not to include them as wage, but rather to pay for them from the welfare fund.

Workers' compensation fund – *gongshang baoxian*

### 工伤保险

Workers whose population registration is in rural areas –

*hukou zai nongcun de ren yuan*

户口在农村的人员

Workforce, workers, employed workers – *congye ren yuan*

### 从业人员

See also “Employed, employment” and “Employed workers, employees”

Yangtze River – *changjiang*

长江

Yangtze River Delta – *changjiang sanjiaozhou* or *changsanjiao*

长江三角洲                      or    长三角

Yearend number of workers – *nianmo renshu*

年末人数