

# **MANUFACTURING EMPLOYMENT AND COMPENSATION IN CHINA**

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The opinions, analysis, and conclusions expressed in this report are solely those of the author; any mistakes or errors remain the author's responsibility.

## 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 PRC 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 PRC 2002 labor compensation per manufacturing employee. 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 non-city manufacturing employees, thus calculating rough 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 commercial exchange rate, and also estimated in international purchasing power parity (PPP) dollars to give a sense of the real purchasing power of the compensation of PRC 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 Labour 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 (TVEs). 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 PRC 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 PRC 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 PRC 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 paper, 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. The PRC 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 PRC manufacturing, and China's own huge potential and actual domestic market for manufactured goods.

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## Introduction

The United States Bureau of Labor Statistics (BLS) publishes estimates of hourly compensation in manufacturing for many countries on its web site. Most of the countries are developed countries with reasonably good quality data. Some developing countries are also included. BLS would like to expand this list and the supporting analysis to include more countries, among them the People's Republic of China (PRC, or China) if possible. Standards are high for the quality of statistics to be included in the BLS web site on hourly compensation for manufacturing workers in different countries. PRC data do not yet meet these standards; this project assesses the quality and completeness of those China data that are available.

China's statistical system has been greatly strengthened during the most recent quarter century of economic reform (see also Taylor & Banister, 1989). PRC statisticians are steadily trying to learn from international practice as promoted by the World Bank, Asian Development Bank, International Monetary Fund, and the United Nations system. They endeavor to apply best practices from other countries, especially developed countries, to the Chinese economy. These improvements have been particularly successful in China's population censuses and some economic and demographic surveys, especially 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 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 technique.

Most PRC statistics are recorded and collected under the central guidance of the National Bureau of Statistics (NBS). However, as this report amply shows, 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 and wage statistics, the Ministry of Labour and Social Security (also referred to in this report as "Labour Ministry") gathers statistics on most components of the city economies, leaving a small but growing segment to the State Administration for Industry and Commerce (SAIC). However, collection and reporting of statistics on manufacturing in rural areas and in towns is left to a part of the Ministry of Agriculture (see *Glossary and Definitions* at the end of this report for a list of the ministries involved in the collection and reporting of manufacturing employment and labor compensation in China).

Certain biases also affect China's statistics. For example, the PRC government emphasizes the collecting and reporting of statistics on the steeply declining public sector while seriously neglecting the rapidly growing and dynamic private sector, in part

because the dominance of private and corporate businesses does not fit easily into Maoist theory or Mao Zedong thought.

This report analyzes employment, wage, and labor compensation statistics for China in the manufacturing sector.<sup>1</sup> Published data are included for the economic reform period that began in 1978, but the report emphasizes the period from 1990 to the present, particularly the most recent year for which manufacturing employment and compensation statistics have been released, which is 2002.

This analysis is based as much as possible on information in Chinese sources published by PRC official statistical organizations. The most useful sources turn out to be statistical yearbooks from various government ministries. BLS hopes to be able to replicate the calculation process used here for 2002 to estimate PRC hourly manufacturing labor compensation for 2003 and future years. The research effort behind this report has searched out the few usable statistics that are hidden in a vast sea of published numbers and tangential qualitative reports, thus guiding those who desire to make China manufacturing labor compensation estimates for years after 2002.

The author compiles and compares data on PRC manufacturing employment from the 1995 industrial census, the 2000 population census, and administrative data collected from manufacturing enterprises and reported annually. This report explains discrepancies among the data sets, to the extent possible, and discusses the effects of definitional changes on the available series of manufacturing employment statistics. Strengths and weaknesses in the published statistics are highlighted. Then focusing on 2002, the author tabulates all information she has located on wages, required social benefit payments, and other labor compensation, deriving annual, monthly, and estimated hourly manufacturing labor compensation for urban, village and town enterprise (TVE), and all-China manufacturing employees in the Chinese currency, the yuan or *renminbi*. These estimates are calculated in US dollars at the official exchange rate, and also in international dollars using purchasing power parity (PPP) exchange rates (see *Glossary and Definitions: Currency; PPP; TVEs; Urban and rural*”).

## **Recent Employment Statistics for China**

Employment figures for China are usually confusing and non-standard. They reflect, in part, conventions from the Maoist command economy period 1949-1978 as well as new conventions for the semi-market 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 two sources:

1. Annual enterprise data: Each enterprise, economic unit, small business, or self-employed individual or group is supposed to report employment and wage data each year according to its “labor situation” in the previous year and at the

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<sup>1</sup> The analysis in this report refers to the Mainland of the People's Republic of China and excludes statistics from Hong Kong, Macao, and Taiwan.

previous yearend, which are then compiled upward in a statistical reporting chain to the national government.

2. Census data: The 1990 and 2000 censuses of China asked respondents information about employment of all persons age 15 and older. In the 2000 census, the data were gathered in a long form filled out by about 10 percent of civilian households chosen to be representative of the population as a whole.

### **A. China Census and Enterprise Employment Data Discrepancies**

These two sets of employment data for the PRC do not entirely agree with each other. For example, Table 1 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. The census, on November 1, 2000, recorded a total PRC employed population of approximately 709.7 million workers (based on the long form filled out by a sample of about 10 percent of households in every locality, then extrapolated by this author to the whole counted civilian population age 15 and above<sup>2</sup>). 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 (Table 1).

What are the sources of the discrepancies between these two sets of data? We can see from Table 1 that the census recorded 123 million more workers in agriculture than did annual administrative data. One reason for this huge difference is that the census asked about employment only in the last week of October 2000, the week just prior to the census date. The census surely detected individuals who work in agriculture during peak planting and harvest seasons but not the rest of the time, and they 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 non-agricultural sectors of the economy most of the time (Young, 2000, pp. 22-23). 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.

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, referring to the previous

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<sup>2</sup> This calculation procedure for estimating the nationwide employed population from the long form sample completely 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 ages 15 and older in the 2000 census was rather complete, in that it matched the expected adult population as projected from the 1990 census using all available demographic information for the interim period, even though there is controversy about whether or not some young and middle-aged adults were counted in the wrong places. See Zhang & Cui, 2003, 2004; Chan, 2003; Goodkind & Robinson, 2004.



calendar year such as 2000, asks enterprises for the “labor situation” (*laodong qingkuang*), in particular for the “actual situation that year” (*ben nian shiji*), and specifically asks for the numbers of each category of workers at the end of the previous year (*nianmo renshu*). (See *Glossary and Definitions* for relevant Chinese-language terms.) Accountants or those who report employment and wage 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 annual average figures on employment and wages. The instructions are based on regulations released by China’s National Bureau of Statistics, especially in 1990 with further clarifications in 1998 and 2002, regarding how to report employment and wages (Enterprise statistical reporting forms, 2004; Wage reporting instructions, 2004, especially p. 2-1).

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 that were compiled by China’s Ministry of Labour and Social Security (which this report will call “Labour Ministry”) and China’s National Bureau of Statistics (NBS). This may mean that the census detected millions of actual workers that the administrative reporting system is regularly missing (Table 1). 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. On the other hand, the regular administrative reporting system recorded more workers than the census in construction, transport, and the small categories of geological prospecting and water conservancy, and research and technical services. The annual system also reported 56 million people at yearend 2000 in the category “other” unclassified workers, while the census was able to classify most workers in one of its standard employment categories (Table 1). Some of these “other” workers may in fact work in two parts of the economy, such as agriculture during peak seasons and manufacturing during part of the year.

## **B. PRC Manufacturing Employment: Census and Enterprise Data Differences**

The discrepancy between census and enterprise data on the number of manufacturing workers in China was not huge in the year 2000, at least if we compare census data to the total employment figures by sector reported in Table 1 that were compiled by China’s Labour Ministry and NBS. The census estimated 88.43 million persons employed in manufacturing during the last week of October 2000 (extrapolated from the census long form which was filled out by 10 percent of civilian households). Based on the national employment totals published by NBS and the Labour Ministry (China NBS & Labour, 2003, pp. 8-9), economic units reported at yearend 2000 that employment in manufacturing totaled 80.43 million.

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 one 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 prior week, and 97 percent worked full-time or overtime. Specifically, 39 percent of

manufacturing employees worked 4 or 5 days in the prior week for income and 58 percent worked 6 or 7 days during the 7 days before the census (China NBS, 2002, Vol. 2, pp. 1578-1579). Therefore, part-time manufacturing workers can explain some of the discrepancy, no more than 2-3 million, between the census-based estimate of total manufacturing workers in late 2000 and the official NBS-Labour compilation of yearend 2000 enterprise data on manufacturing employees.

The annual enterprise data are actually not supposed to be reporting individuals but rather “full-time equivalents,” which in China probably makes very little difference since most workers are called full-time even if they are not. But some of those who worked only part-time in manufacturing in late 2000 might have been left out of the yearend reported employment data. Another source of difference could be that people who do piece work at home on contract for manufacturing concerns might report their work in the census but might not be reported as employed in manufacturing by any enterprise or by anyone else in the yearend reporting system.

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, within the category of “on-post urban manufacturing staff and workers” in state-owned enterprises in 2002, it was reported that 9.31 million of 9.79 million (95 percent) were in long-term manufacturing employment, while 0.47 million (5 percent) were in temporary manufacturing employment (China NBS & Labour, 2003, pp. 23, 362). 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 one year or more, or “temporary, provisional” (*linshi*), defined as having worked for less than one year (Wage reporting instructions, 2004, p. 1-2). 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, though this author has no proof that there is any such bias or shortfall in enterprise data.

A minor cause of differences between census data and annual data on manufacturing employment is that the censuses of 1990 and 2000 recorded employment of the population ages 15 and older (Census 2000 long form, columns R17-R22), while compiled annual data are supposed to refer to the population ages 16 and older (China NBS, 2003, p. 181). According to 2000 census data, extrapolated from the long form to the whole population age 15 by this author, the PRC had a total of 334,000 manufacturing workers who were exact age 15 in the last week of October 2000 (China NBS, 2002, Vol. 1, p. 570; Vol. 2, pp. 800, 1269). 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 age 15 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 workers everyone age 15 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 for men, 16-54 for women working in white collar jobs, and 16-49 for women in blue collar jobs. In theory, with regard to urban workers, only those in the legal working ages are included in the reported category "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 "other" urban employment in a sub-category of retirement age workers who have been rehired or who have continued working (*pinyong, liuyong de li tuixiu ren yuan*). The legal working ages do not apply to agricultural employment, and it is not clear if the formal working ages have any relevance for rural or town manufacturing employment. In theory, annual employment statistics as well as census employment statistics should include all those people who are working to earn income in their fifties, sixties, and older. 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.

The annual data that must be used for this report on employment and wages in manufacturing come from the annual yearend statistical reporting system (China's censuses do not ask for wage data). The *China Labour Statistical Yearbook 2003* uses census-derived numbers for total, urban, and rural employment each year, and these numbers are inconsistent with the totals from the enterprise employment data by sector. In manufacturing, the employment totals shown in this report (which are from the annual yearend reporting system) may tend to underestimate or leave out marginal, home-based, temporary, and/or part-time manufacturing employees.

In any particular year, the true number of manufacturing workers in China may be millions larger than the figure compiled and reported by the NBS and Labour Ministry from the regular enterprise reporting system. This caveat should not alter any conclusions we might make about trends in manufacturing employment that are based fully on trends in the annual reported statistics.

## **China Manufacturing Employment**

The annually reported figures on total manufacturing employment in China do, nevertheless, include a large majority of manufacturing workers in China. PRC statistics include all manufacturing employees—production workers, salaried workers, and supervisory workers. BLS, referring to manufacturing employment data from countries around the world, notes that "more and more statistical agencies publish their data on an all employee basis" (personal communication with BLS). China does this also, and does not provide separate data for production line workers. Table 2 shows figures from China's annual enterprise reporting system on the numbers of employed manufacturing workers in the PRC from 1978 through 2002. It is important to note that these numbers

do not include those who have lost their manufacturing jobs and have become formally unemployed.

### **A. Reported Trends in PRC Manufacturing Employment**

As shown in Table 2, the officially reported total 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, then reportedly declined sharply to 80 million in 2000, then rose again to 83 million by yearend 2002. Reported “rural” manufacturing employment has risen throughout this 24-year period with few setbacks, peaking at a reported 45 million as of the end of 2002. The difference between reported PRC national and “rural” manufacturing employment should be urban manufacturing employment; but this number is not published for a series of years, and the column is derived in Table 2 as a residual calculation. The figures so derived seem to say that “urban” manufacturing employment in the PRC rose from 36 million in 1978 to a high of 58 million in 1994-1995, 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 (China NBS & Labour, 2003, p. 10). Therefore, this procedure that this author has used in Table 2 for deriving urban manufacturing employment seems to be defensible.

The urban or primarily urban component of PRC manufacturing employment is directly reported in the latest *China Labour Statistical Yearbook* in two ways (Table 2): as China’s manufacturing “employment in urban units” (*chengzhen danwei jiuye ren yuan*) and as PRC urban manufacturing “staff and workers” (*zhigong*); the latter category is completely included in and constitutes almost all of the group called “manufacturing employment in urban units.” Employment in urban manufacturing units reportedly dropped from 55 million in 1994-1995 to 30 million by yearend 2002, and total urban “staff and workers” in manufacturing increased from 36 million in 1978 to 55 million in 1992-1993, thereafter declining to 29 million by the end of 2002, based on the reported statistics in Table 2.

### **B. Change in the Definition of Urban Employed Population**

What do these numbers mean? In the first place, successive figures are sometimes not comparable due to 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 one year. A similar drop is shown for manufacturing “employment in urban units,” from 51.3 million (end 1997) to 38.3 million (end 1998), down 13 million during 1998. Urban manufacturing “staff and workers” employment numbers declined from 50.8 million to 37.7 million that year, also a drop of 13 million. Figures for manufacturing “staff and workers” in state-owned (meaning government-owned) units decreased by 11 million that year, and in urban collective-owned units went down by 5 million, while increasing in “other ownership units” by 3 million.

What happened to these manufacturing employment statistics during 1998? 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 called “employed,” and were excluded from the employment figures (China NBS & Labour, 2003, p. 20). Therefore, these “off-post” 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. The PRC works vigorously to promote the reemployment of laid-off (“not-on-post”) urban workers; each year, many are laid off and many are rehired. By yearend 2002, the net result of the layoff and rehiring processes was that the total number of “not-on-post” urban manufacturing staff and workers totaled 9.13 million (China NBS & Labour, 2003, p. 243).

### C. Urban Manufacturing Employment Categories

Figure 1 shows the structure of manufacturing employment in China, including urban manufacturing employment. There is enormous overlap between the two categories “manufacturing employment in urban units” and “urban manufacturing staff and workers.” All “urban manufacturing staff and workers” (who have been only “on-post” workers since 1998) are included by definition in the category “manufacturing employment in urban units.” In every year for which both series are available, 1994-2002, the grouping “manufacturing employment in urban units” is slightly larger (0.5-0.7 million larger) than the category “urban manufacturing staff and workers” (Table 2). The residual half a million to three-quarters of a million workers in urban manufacturing units include urban reemployed retirees and foreign, Hong Kong, Macao, and Taiwan employees of manufacturing units, among others (China NBS & Labour, 2003, p. 638).

For example, at yearend 2002, the PRC recorded 29.807 million total employment in urban manufacturing units, and 29.069 million urban manufacturing staff and workers, the difference between them being approximately 0.738 million (Table 2; Figure 1; China NBS & Labour, 2003, pp. 13, 230). This residual is accounted for by “Other urban manufacturing employment” of 738,885 reported for yearend 2002, of whom 150,470 were reemployed and continuing workers of retirement age (China NBS & Labour, 2003, p. 249). Who were the remaining 588,000 employees in urban manufacturing units? The Labour Ministry clearly has collected data on how many of these are foreign personnel, but the *China Labour Statistical Yearbook 2003* does not report this information. (The volume does report that only 50,045 out of all the “Other urban employment” in all sectors of the economy, totaling 4.28 million, were “Hong Kong, Macao, Taiwan & Foreign Personnel” at year-end 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 the PRC 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 “Other” 0.59 million 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,

holding a second job, or working without a contract because they have not completed employment formalities (Enterprise statistical reporting forms, 2004; Wage reporting instructions, 2004).

The larger urban category of “manufacturing employment in urban units” included only 29.8 million of the 38.0 million total for yearend 2002 “urban manufacturing employment” (Table 2 and Figure 1). The other 8.2 million were in relatively small privately owned and privately operated enterprises (*siying qiye*) and self-employed individual or family enterprises (*geti jiuye*) in urban manufacturing (China NBS & Labour, 2003, p. 169). China’s urban (*chengzhen*) manufacturing workforce in 2002 included 2.6 million workers (*congye ren yuan*) 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 (*touzizhe renshu*) and 4.8 million were called hired laborers or hired hands (*gugong renshu*) (China SAIC, 2003, pp. 583, 587). (For more detail see *Glossary and Definitions*: Employed; Hired laborers; Investors; Manufacturing economic organizations—urban; Private enterprises; Self-employed enterprises.)

Many of China’s urban manufacturing workers have migrated into cities and their suburbs from rural areas. These rural-to-urban in-migrants, if they had been in the city for 6 months or longer, were supposed to be included in 2000 census figures on urban manufacturing employees. 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” (*zai gang zhigong*) includes the category “workers whose population registration is in rural areas” (*hukou zai nongcun de ren yuan*); all these figures are to be reported monthly, quarterly, and annually (Wage reporting instructions, 2004; Enterprise statistical reporting forms, 2004). Even though both census data for the cities and regular administrative data from manufacturing enterprises in the cities are supposed to include rural-to-urban migrant workers, many of the workers themselves may avoid being counted in the city during the census, and employers may minimize the numbers of migrant workers they include in their routine reporting to the authorities.

## **Trends in PRC Manufacturing Employment**

In order to gauge trends in manufacturing employment in China, we must adjust for the change of definition 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 (Brooks & Tao, 2003; McGuckin & Spiegelman, 2004, p. 12). 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. Therefore, one way to estimate true trends in manufacturing employment in China is to add the not-on-post (laid-off) workers to the employed workers in the most recent year, and compare this total to the employment figures for the mid-1990s that included the surplus or laid-off workers in the reported employment total and did not report how many had been laid off:

China, Employed + Surplus Laid-off Manufacturing Workers, 1992-1996 and 2002

Year	PRC official manufacturing employment + off-post laid-off-workers	PRC “rural” manufacturing employment	PRC “urban” manufacturing employment + off-post laid-off workers	Manufacturing “Employment in urban units” + off-post laid-off workers	Manufacturing urban “staff and workers” + off-post laid-off workers
1992	91.06	34.68	56.38		55.08
1993	92.95	36.59	56.36		54.69
1994	96.13	38.49	57.64	54.92	54.34
1995	98.03	39.71	58.32	54.93	54.39
1996	97.63	40.19	57.44	53.44	52.93
2002	83.07 + 9.13 =	45.06	38.02 + 9.13 =	29.81 + 9.13 =	29.07 + 9.13 =
	92.2		47.15	38.94	38.2

Sources: Table 2 and text.

As calculated in the above summary table, total PRC “urban” manufacturing employed and surplus (including laid-off) workers peaked at 58 million in 1994-1995 and dropped to 47 million (38 + 9 million) by yearend 2002, a decline of 11 million. Manufacturing employment and surplus workers in “urban” units dropped from 55 million in 1994-1995 to 39 million (30 + 9 million) in 2002, a drop of 16 million. “Urban” manufacturing (including surplus) staff and workers peaked at 55 million in 1992-1993 and declined to 38 million (29 + 9 million) in 2002, a decline of 17 million. Reported official total PRC manufacturing employment including surplus and laid-off manufacturing workers declined from 98 million in 1995-1996 to 92 million (83 + 9 million) in 2002, dropping 6 million for China as a whole, based on the NBS and Labour Ministry compilation of PRC manufacturing employment in Table 2.

Some manufacturing workers in urban China have also become fully recognized as “unemployed” (see *Glossary and Definitions*: Unemployment rate). Of the yearend 2002 registered unemployed urban workers who were previously employed (2.17 million), 41 percent had lost manufacturing jobs (China NBS & Labour, 2003, pp. 96, 126). This implies that 0.89 million former “urban” manufacturing workers were classified as unemployed as of the end of 2002.

Therefore, manufacturing employment in China increased vigorously until 1995 and has declined since then, whether we rely on the reported data as compiled by the Labour Ministry and the NBS or try to adjust for definitional change. “Urban” state-owned and collective-owned manufacturing enterprises have lost most of their employed

workers since the early 1990s, as shown in Table 2. The majority of their former workers have been laid off, fired, subjected to early retirement, or retained by their enterprise as it was sold, privatized, or became a joint Chinese-foreign company in the last decade 1992-2002. Meanwhile, “rural” manufacturing employment reportedly has continued to increase, and in “urban” areas, manufacturing employment in “other ownership units” has grown rapidly in this decade. This category includes manufacturing enterprises with joint (Chinese-foreign) ownership, share-holding stock ownership, limited liability corporations, and foreign-owned enterprises (China NBS & Labour, 2003, p. 637). What these numbers appear to mean is the following:

- PRC manufacturing is becoming less bloated with surplus workers over time,
- The total number of manufacturing workers (however defined) 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 better what is going on in some parts of the PRC manufacturing sector. He documented the decline in urban staff and worker manufacturing employment in China from 1993 to 2002. Using detailed data from several engineering sectors producing widely-used industrial components, Rawski 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 only 63 percent of the 1996 numbers and output was nearly stagnant. He noted: “These data reveal industries in the throes of restructuring rather than dynamic growth” (Rawski, 2003). 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 U.S. and Japan are experiencing similar dislocations in their personal and family lives.

The Conference Board of the U.S. has emphasized that China is losing many more manufacturing jobs than the developed world (including the United States)—and in many of the same industries where the developed world has seen the greatest declines. PRC manufacturing industries with the greatest job losses during 1995-2002 were textiles, steel processing, machinery, and non-metal mineral products. China’s manufacturing job losses can be traced to restructuring of extraordinarily inefficient state-owned and urban collective-owned factories and to rapidly advancing labor productivity (McGuckin & Spiegelman, 2004, pp. 4-5, 11-13, 17).

### **Urban and Rural Manufacturing Workers**

In China’s annual statistics for employment in manufacturing, the categories “rural” (*xiangcun*) and “urban” (*chengzhen*) are severely problematic (see *Glossary and Definitions: Urban and rural*). If these employment statistics followed the PRC official statistical definition of “urban” and “rural” places and populations, then “urban” would



include manufacturing employment in cities (*chengshi* or *cheng*) and in towns that have been incorporated as urban places (*zhen*). The urban manufacturing figures should include actual workers in manufacturing in cities and towns no matter whether the workers have their permanent residence registration there or not. If rural villagers are employed full-time in manufacturing in an urban town (*zhen*) or in a city, then based on 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 (extrapolating from the long form sample to the whole civilian population ages 15 and above) that China had 41.96 million employed manufacturing workers in cities and 18.41 million employed manufacturing workers in urban towns (*zhen*), for a total of 60.36 million urban manufacturing workers, constituting 68 percent of all the manufacturing workers in China based on census data; the census counted 28.07 million rural (*xiangcun*) manufacturing workers, 32 percent of the enumerated manufacturing workers (China NBS, 2002, Vol. 2, pp. 888, 942, 996, 1050). As it is, the 2000 census may have underestimated the urban proportion of PRC manufacturing employment because rural workers who had moved to towns or cities within the previous 6 months and were working in manufacturing there would be counted back in their village for the census, and therefore might be called rural manufacturing workers or even rural agricultural workers.

Table 2 shows, however, that the annual statistics for yearend 2000 recorded urban manufacturing employment of only 39 million (fewer than the 2000 census counted in the cities alone), merely 49 percent of the reported national total, while manufacturing employment of 41 million, more than half of PRC manufacturing employment, was classified as rural. Worse, manufacturing "employment in urban units" was reported as only 33 million that year, and merely 32 million urban manufacturing "staff and workers" were reported then. 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 PRC statistics to follow. The breakdown of PRC annual manufacturing employment statistics into rural and the various urban categories is inconsistent with China's own statistical definitions of urban and rural.

The inconsistencies between census 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. In the administrative data, "urban" includes only cities and perhaps also the county seat (county town) in each county of China, while "rural" is everywhere else including all other towns that are officially established as urban towns (Fox & Zhao, 2002, p. 27). Unfortunately, in annual PRC manufacturing employment statistics, 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.

## A Major Statistical Anomaly in PRC Manufacturing Employment Data

China's statistics on manufacturing employment suffer from an important inconsistency that must be tackled. The PRC Labour 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 Labour Ministry publication *China Labour Statistical Yearbook* concerns itself almost entirely with city employment and wage statistics; even within cities, the Labour Ministry focuses its data collection and reporting on the rapidly declining urban state-owned and collective enterprises. The Labour Ministry calls these data "urban" statistics. Meanwhile, the Agriculture Ministry collects employment and wage data from the village and town enterprises (TVEs), including those engaged in manufacturing, and publishes the data in its own publications. It appears that no one coordinates these data. For example, the National Bureau of Statistics and the Labour Ministry, when calculating total manufacturing employment in China, seem to completely ignore the Agriculture Ministry data from the TVEs.

This problem is illustrated in Table 2 and Figure 1. The right hand columns in Table 2 report Agriculture Ministry data on employment in industry (*gongye*) TVEs since 1978. This category is almost all employment in manufacturing. (The rest of "industry" employment is the two relatively small categories of (a) mining and (b) production and supply of electricity, gas, and water.) In 2003 for the first time, an Agriculture Ministry publication reported 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, this author has estimated TVE manufacturing employment during 1990-2001 (Table 2, far right column).

It is important to note that TVE industry employment data had a sudden definitional shift in 1997, in which the total reported number dropped sharply, only to rise again the following year. Rawski said that the 1995 industrial census had shown massive exaggeration in TVE statistics, and thought that the 1996-98 shifts in the employment numbers might reflect a short-lived effort to improve the TVE data that was then abandoned the next year (Rawski, 2003, p. 3). Whatever the 1997 discontinuity means, it was mostly rescinded in 1998. This author has been unable to discover enough information on what the TVE industry employment numbers actually mean and do not mean, how part-time or part-year employees are treated in the data, and therefore whether TVE industry employee numbers are overreported or underreported or about right.

The Table 2 column on "PRC manufacturing employment" does not include all the reported TVE manufacturing employees. How do we know this? The reason is that all or almost all the reported "urban" manufacturing employees in China are not in TVEs. The category urban "staff and workers" explicitly excludes all TVE employees (China NBS, 2003, p. 181). The rules about how to report the "other" urban enterprise employees that, with staff and workers, constitute "employment in urban units" have

nothing to do with TVEs (Enterprise statistical reporting forms, 2004; Wage reporting instructions, 2004, pp. 1-1 to 1-2).

It may be that some of the residual 8.21 million “urban” manufacturing employees who were self-employed or worked in small private enterprises in 2002 were also called TVE employees, but this appears unlikely given the way urban and rural employment data for China are reported (China NBS, 2003, p. 123; West, 2004). These workers are in cities, while TVE manufacturing employees work outside the cities in rural areas and in towns. Among PRC manufacturing workers in 2002, there were 21.35 million employees in small private enterprises (*siying qiye*) and individual or family enterprises (*geti duzi qiye*). Of these, 8.21 million were in the cities, while 13.14 million were “rural,” meaning non-city; it is likely that the latter group was included in 2002 TVE manufacturing employment and wage statistics (China NBS, 2003, pp. 146-147).

If we subtract the 29.81 million PRC manufacturing employees in urban units at yearend 2002 from the total PRC manufacturing employment figure for the same year (Table 2), this leaves only 53 million manufacturing employees who could be working in TVEs. Yet the Agriculture Ministry reported 70.85 million TVE employees in manufacturing that year (Table 2).

Figure 2 graphs two different estimates of total manufacturing employment in China. The “reported” series is the NBS and Labour Ministry constructed series “PRC manufacturing employment” in Table 2. The higher series assumes that the Table 2 columns “Derived urban manufacturing employment” (referring to cities) and TVE manufacturing employment (referring primarily to villages and towns) are mutually exclusive and do not overlap; this series is the sum of those two sets of data (see Figure 2; figures from the two series in Figure 2 are given in Table 3). Both series indicate that total manufacturing employment in China peaked in the mid-1990s; there were definitional shifts in TVE industry employment data and then in urban manufacturing employment data during 1996-98; there was a slow decline in PRC manufacturing employment in the late 1990s; and beginning in 2001 or 2002 there was a slight increase in national manufacturing employment.

The “urban + TVE” series in Figure 2 and Table 3 suggests that China had 109 million manufacturing employees by yearend 2002, while the officially compiled series reported 83 million, a difference of 26 million. Which series is correct or more correct?

On the one hand, if we compare yearend 2000 totals from the two series in Figure 2 and Table 3 with 2000 census-based estimates of manufacturing employment, the census found about 8 million more manufacturing workers in China than the NBS-Labour Ministry compilation that year (see Table 1), but 20 million fewer than the TVE + urban manufacturing employment total for that date. This would argue in favor of the official series.

On the other hand, the urban + TVE series agrees with the results of the 1995 industrial census. The industrial census counted 147 million workers in industry

(*gongye*) nationwide. If 89 percent of “industry” employees were in manufacturing in 1995 (as implied by the official annual administrative data series, China NBS & Labour, 2003, p. 8), that would be 131 million total PRC manufacturing workers in 1995. The total of urban + TVE manufacturing employment for yearend 1995 was 128 million; this argues for using the urban + TVE series to estimate total manufacturing employment in China. (Young also showed that the NBS and Labour Ministry compilation of national manufacturing employment in 1995 was highly inconsistent with the 1995 industrial census results; Young, 2000, p. 22 & Table XI.)

More information is needed to determine which series is more correct for the total manufacturing employment in China 1990-2002. Tentatively, this author favors the use of the urban + TVE series on manufacturing employment over the official series. The reason is that NBS and the Labour Ministry appear to have little usable information on their figure of 45 million “rural” manufacturing workers. Nothing is published except that one number, and there is no information available about how this number was derived or estimated. At least for the TVE manufacturing workers, a branch of the Agriculture Ministry has gathered some information on these manufacturing employees and on the wages paid to them and has published a little information.

If the urban + TVE series on manufacturing employment is the more correct series, this means that the 2000 census long form may have underestimated the true number of manufacturing workers in China on November 1, 2000, by about  $(108 - 88 =) 20$  million manufacturing employees (see Tables 1 & 3). This author has previously pointed out that the census questionnaire and 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 (Young, 2000, pp. 22-23). Another problem is that 2000 census enumerators, when they located migrants, probably tended to hand 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 might thereby be underestimated by the census long form (Daniel Goodkind, personal communication).

If the urban + TVE manufacturing series is the more correct series, then the PRC reported about 128 million manufacturing employees at yearend 1995 and 130 million at yearend 1996 (Table 3). In 1997 and 1998, statistical changes and corrections and redefinitions in both TVE data and urban employment data dropped the PRC total manufacturing employment figure (urban + TVE) to approximately 112 million by yearend 1998, of which 44 million were “urban” and about 68 million were called “TVE” (see Table 2). 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” + TVE manufacturing employment in the PRC declined by 4 million from 112 million in 1998 to 108 million in 2000-2001, then rose slightly to 109 million by yearend 2002, as shown in Table 3 and Figure 2.

## Structure of Manufacturing Employment in China

Figure 1 displays the structure of PRC manufacturing employment at the end of 2002, the latest date for which statistics are currently available, no matter which of the national totals is more correct. China's National Bureau of Statistics and Labour Ministry published a total figure of 83 million manufacturing employees in the PRC, of whom 45 million were called "rural" and 38 million were classified as "urban." But these data apparently do not take full account of the 71 million TVE manufacturing workers reported by the Ministry of Agriculture. Based on the reasonable assumption that the 38 million "urban" and the 71 million TVE manufacturing employment categories are mutually exclusive, the total manufacturing employment at yearend 2002 was about 109 million, as shown in Figure 1.

Because of the city bias of employment statistics in China, there is almost no further readily available detail about the 45 million "rural" or the 71 million TVE manufacturing employees. This is the biggest weakness of PRC statistics on manufacturing employment.

Of the 38 million "urban" manufacturing employees at yearend 2002 shown in Figure 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. The majority of these urban manufacturing staff and workers (16 million) were employed by corporations, joint ventures, and other non-public sector companies in China's growing private sector. Manufacturing employment in urban state-owned enterprises had dropped steeply to 10 million, and in urban collective units had declined to only 3 million.

The other 8 million of China's 38 million "urban" manufacturing employees at yearend 2002 were working in small individual and private businesses, in the sub-categories given in Figure 1. Therefore, the private sector now employs at least 24 million of the reported 38 million PRC urban manufacturing workers.

## Occupational Categories of China's Manufacturing Workers

Table 4 gives us 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. (This author has not been able to locate a similar breakdown reported for the annual data on manufacturing workers.) According to the census, manufacturing included 67 million production, transport, equipment, and related workers; such line workers constituted 76 percent of workers in the manufacturing sector. 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, 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.

## **Compensation of Manufacturing Workers in China**

This project is attempting to measure or estimate the average hourly compensation of all manufacturing workers in China, or if that is not possible, of a subset of China's manufacturing workers. It is reassuring to note that statistical authorities in the PRC's National Bureau of Statistics (NBS) do indeed try to use an internationally recognizable definition of employee compensation in the calculation of China's Gross Domestic Product (GDP). 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 (China NBS, 2003, pp. 66, 84, 87, 90).

This quotation also 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 GDP.

## **Manufacturing Wages and Earnings in China**

### **A. Reported Labor Compensation in Chinese Currency**

Compensation data for manufacturing workers in China are poorly and partially reported. The available data come from the annual yearend reporting system, and the fragmentary figures are published in the *China Labour Statistical Yearbook*, and for TVE employees, from *China Village and Town Yearbook 2003*. Table 5 presents the major published numbers on annual average 2002 "wages" or "earnings" for PRC manufacturing workers. It is not clear why the annual average remuneration for manufacturing workers is called "wages" (*gongzi*) when referring to "staff and workers" but is called "earnings" or remuneration or compensation (*laodong baochou*) when referring to the employees of urban manufacturing units. These two terms appear to mean almost exactly the same thing. Both terms are defined as:

The total wage bill and total labor compensation 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 (China NBS & Labour, 2003, pp. 630, 638).

Table 5 tells us that the 30 million on-post (not laid off or unemployed) employees of manufacturing enterprises in China's cities had average reported compensation of 11,152 yuan for the year 2002. Of these employees, 95 percent were "staff and workers" whose average compensation that year was 11,001 yuan, and 5 percent were the ¾ million "other" category of city manufacturing workers who averaged much higher income of 17,237 yuan in 2002 (because foreign employees of China's manufacturing companies and re-employed or still employed retirement age workers with high seniority get higher wages).

The recorded 9 million laid-off manufacturing workers still nominally connected to their manufacturing units averaged a small living subsidy of 2,213 yuan for the year 2002. This kind of payment might be considered similar to payments of unemployment compensation for laid-off or unemployed workers in developed countries.

For the reported 71 million manufacturing TVE employees in 2002, a 2003 Agriculture Ministry publication reported for the first time ever (to this author's knowledge) the total labor compensation (*laodongzhe baochou*) paid out for the whole year 2002 in all manufacturing TVEs (China Ministry of Agriculture, 2003, pp. 130-131). The publication did not calculate the average per worker labor compensation for the year, so this figure is derived in Table 5 in the same way that the average annual wage or labor compensation is calculated for urban manufacturing workers. TVE manufacturing workers averaged only 6,927 yuan in reported labor compensation for 2002, 62 percent of the average wage that year for employees of urban manufacturing units. Workers in large-scale manufacturing TVEs earned higher average labor compensation of 8,899 yuan in 2002, which was 80 percent of the average reported labor compensation for employees of urban manufacturing units.

What forms of compensation are included in these average annual labor compensation figures? Figure 3 lists all the items whose value should be included in wage data reported by enterprises in urban China, based on written instructions to enterprise accountants and statistical personnel. Most forms of income, benefits, and subsidies in cash and in kind are in this list. Cash salary and wage payments, housing and transport provided to workers, meals given to them, and the value of income tax and social insurance payments deducted from wages and remitted to the government on behalf of the employee are all supposed to be part of the "total wage" figure (*gongzi zong'e*), based on relevant reporting regulations.

What kinds of labor compensation are not included in the average wage and labor compensation figures reported in Table 5? For TVE workers, the figures reported in the table probably include essentially all or almost all of the benefits and money these

workers receive. China's urban towns and rural areas have very weak or nonexistent social benefit systems for pensions, medical insurance, unemployment insurance, workers' compensation, etc. Fox & Zhao (2002) and Qiao (2004) report that pension and medical insurance systems paid into by employers and employees essentially do not exist in the PRC outside of cities today. A 2002 survey of large manufacturing enterprises in Nanjing Municipality, the capital of Jiangsu Province on the east coast of China, found that welfare benefits for workers, above and beyond wages, for the years 1994-2001 averaged 36 percent of the wage in urban state-owned manufacturing enterprises, but only 16 percent of the wage in unusually large manufacturing TVEs in counties under Nanjing's administration (Dong, 2004, Table 1, pp. 28-29). These TVEs surely had an exceptionally high level of welfare benefits compared to all manufacturing TVEs in China during those years, both because TVEs in counties near major cities have better social welfare benefits than TVEs elsewhere, and because large TVEs have better benefits than average-sized TVEs. On the other hand, average manufacturing TVE worker welfare benefits in 2002 were very likely a higher percent of their wages than in earlier years. Therefore, pending the discovery of better data for 2002, this author tentatively estimates that in 2002, the average total of social insurance and other welfare benefits for PRC manufacturing TVE employees was in the range from zero to 16 percent of their total wage. (Such an estimation procedure of course does not meet BLS standards for comparing labor compensation across countries.)

For urban manufacturing workers, however, there are a few items that perhaps should be considered part of labor compensation (from an international comparative perspective), but which are specifically excluded from the reported total wage and labor compensation data reported by enterprises on required official forms.

The major excluded category is the following. China's cities today have 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, at least in theory (Qiao, 2004). There are five kinds of funds to which employees and/or employers are supposed to separately contribute each month: old-age pension fund (*yanglao baoxian*), medical insurance fund (*yiliao baoxian*), unemployment insurance fund (*shiye baoxian*), workers' compensation fund (*gongshang baoxian*) and a fund in which money is supposedly set aside for each worker by name--money that the worker can use to help buy an apartment (*zhufang gong jijin*). It is likely that not every city has all these kinds of funds successfully in place to date. The payments deducted from employee wages for these five public funds and remitted to city governments are indeed included in the reported wage and labor compensation data (see Figure 3). But the part paid by employers is excluded from labor compensation data (Wage reporting instructions, 2004, p. 2-5). According to BLS, such legally required payments to government social insurance and employee benefit programs must be included in BLS figures for hourly labor compensation in manufacturing (BLS, 1997, p. 114-115; Sparks, Bikoi, & Moglia, 2002, p. 37). In the PRC, these monthly payments by employers to city governments are mandatory and stiff penalties are specified for noncompliance (China State Council, 1999). Nevertheless, noncompliance is rampant and penalties are rarely enforced.



Another group of benefits that is provided by some manufacturing enterprises to employees but specifically excluded from the total wage or labor compensation figures is use of a company medical clinic or payment of some employee hospital costs (Wage reporting instructions, 2004, p. 2-4). It would seem that this is an important benefit that conceptually ought to be included in labor compensation data. But many countries share this shortcoming in compensation statistics, with the result that BLS specifically excludes this employee benefit from its comparative international data on labor compensation in manufacturing (BLS, 1997, pp. 114-115; Sparks, Bikoi, & Moglia, 2002, p. 49). This report will therefore not include any estimation of these particular medical benefits that are missing from PRC compensation data.

A problem with the compensation data in Table 5 is that no compensation figures are reported for the small privately-owned manufacturing groupings and the self-employed manufacturing workers in China's cities. They totaled 8.2 million in 2002 (see Figure 1), based on the difference between the two columns "derived urban manufacturing employment" and "manufacturing employment in urban units" in Table 2, and on data from China's State Administration for Industry and Commerce (SAIC). This weakness in PRC wage data parallels the same dearth in manufacturing compensation data from most countries. BLS deals with these common data shortcomings as follows. First, labor compensation for employees in small manufacturing units is not included in BLS estimates of hourly labor compensation in manufacturing: "...the data exclude very small establishments (less than 5 employees in Japan and less than 10 employees in most European and some other countries)" (Sparks, Bikoi, & Moglia, 2002, p. 49). Second: "Compensation for self-employed workers is calculated by assuming that their hourly compensation is equal to the average for wage and salary employees" (BLS, 1997, p. 114).

The average annual earnings of the 30 million workers in manufacturing units located in China's cities and their immediate suburbs (11,152 yuan) masks a wide range of earnings in different urban manufacturing sub-sectors, as shown in Table 6. For example, the lowest-paid group of city manufacturing workers is the 3 million textile industry workers, whose earnings average only 7,268 yuan per year. The 5 million city manufacturing workers in the sub-sectors of timber and bamboo products, food processing, nonmetal mineral products, paper products, furniture manufacturing, and "other" manufacturing also earn little: their reported average annual earnings are only 8,227 yuan. At the other end of the pay spectrum, the 8 million city manufacturing workers in tobacco processing, electronics and telecommunications, petroleum processing, ferrous metal smelting, transport equipment manufacturing, medical and pharmaceutical products, and specialized machine tools have average annual earnings of 15,474 yuan.

## **B. China Manufacturing Labor Compensation in Dollars**

To translate reported average annual wages for PRC manufacturing workers into dollars, let us first use official, nominal exchange rates between U.S. dollars and PRC yuan or *renminbi*. The procedure used by BLS to compare the hourly labor

compensation of manufacturing workers in different countries is to use the legal exchange rate in the case of countries like China with fixed exchange rates, and to use actual exchange rates if currencies are allowed to float: “The measures [total compensation costs per hour worked] are computed in national currency and converted into U.S. dollars at prevailing commercial market currency exchange rates” (BLS, 1997, p. 111). The Chinese yuan has been pegged to the U.S. dollar at 8.28 yuan per dollar for a decade since 1994; there is discussion about making changes to the currency peg but this has not happened to date (Hale & Hale, 2003; Lardy, 2003; Sender, 2004).

But prices for most purchases in China are low, so this dollar figure does not adequately capture the purchasing power of the incomes of PRC manufacturing workers. 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. or on the international market. “PPP rates allow a standard comparison of real price levels between countries” (World Bank, 2003, p. 265). Table 5 adjusts PRC manufacturing wages or earnings (reported in Chinese yuan) to account for additional labor compensation costs that are not included in the wage data, then calculates the range of yuan estimates in commercial exchange rate dollars and then in international PPP dollars. (For calculating labor compensation in international dollars, multiply labor compensation in dollars at official exchange rate times 4.65; see World Bank, 2003, pp. 252-253).

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

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

This report gives PRC manufacturing wages in Chinese domestic currency, dollars at commercial exchange rates, and PPP international dollars in order to allow selection of the appropriate measures for different purposes.

### **1) Wages of TVE Manufacturing Employees in Dollars**

At the official exchange rate, China’s manufacturing workers in village and town enterprises (TVEs) in 2002 averaged 6,927 yuan = US\$ 837 in reported annual labor compensation (Tables 5 and 7). For TVE manufacturing employees, the reported 2002 labor compensation total may capture basically all of their remuneration, because TVE workers do not have many social insurance benefits that urban employees might get (such as medical insurance, unemployment insurance, workers’ compensation coverage, or special funds to help them buy a home). For example, by the end of 2002, the number of

PRC rural and small town workers with any rural social pension insurance was tiny (China NBS & Labour, 2003, pp. 575-581). Table 7, in an attempt to capture the likely range of employee insurance and welfare benefits for TVE manufacturing employees, multiplies the average reported labor compensation by 1.00-1.16. Estimated annual labor compensation for TVE manufacturing workers is therefore \$837-\$970, or PPP US\$ 3,890-4,513 in “international dollars.” By any measure, China’s TVE workers get very low annual compensation. It is important to note, however, that TVE employment is highly desirable to China’s rural workers because their TVE earnings are higher than they can derive from agriculture (Knight & Yueh, 2004).

To calculate the average annual TVE manufacturing labor compensation into a monthly wage is not easy because we do not know whether all or most of the reported 71 million workers are year-round workers, and what proportion are part-year or part-time workers. If this number represents full-time equivalents or means year-round workers, then their average monthly wage was US\$ 70-81 at the official exchange rate, or 324-376 international (PPP) dollars.

To adequately estimate the hourly wage of China’s TVE manufacturing employees would require data on the average number of days actually worked per year. In the absence of such information, any hourly compensation number is strictly hypothetical. Let us make a set of such assumptions and see what the hourly wage of China’s TVE manufacturing workers would be under these assumptions. For instance, just suppose (without any evidence) that China’s 71 million reported TVE manufacturing workers in 2002 worked year-round in their TVE jobs except for taking two weeks off for Chinese New Year (spring festival), two weeks for peak planting time twice a year (assuming double-cropping on average), two weeks for each of two peak harvest seasons, and a total of two weeks for all other needs such as illness, injury, family emergencies, personal leave, etc. These assumptions are made because most TVE workers come from rural households still growing crops, and farm households tend to need all the labor they can get for planting and harvest. Assume further that the rest of the time, TVE manufacturing workers put in about 50 hours of work per week. This would total 2,000 actual work hours per year for TVE manufacturing workers in 2002. Based on these unsupported assumptions, the hourly labor compensation of China’s TVE manufacturing employees in 2002 would have been 3.46-4.02 yuan = US\$ 0.42-0.49 at the official exchange rate = 1.95-2.26 international (PPP) dollars. It is worth repeating that such numbers are mere guesswork based on the reported and adjusted annual labor compensation data, because we do not have information on the average number of hours worked in 2002 by China’s TVE manufacturing workers.

The above hypothetical calculation is for rural and town manufacturing workers in China. Most TVE manufacturing employees produce only for China’s domestic market. Nevertheless, many factories producing for the international market are classified as “rural” and these enterprises may also be called TVEs. Millions of the low-paid TVE workers produce products for export. Already in 1990, TVEs as a group produced 13.5 percent of China’s GDP and 16 percent of PRC exports (Fox & Zhao, 2002, p. 2). As of 2002, a total of 151,000 TVEs reportedly produced 1,156 billion yuan

of exports out of China's total exports of 2,695 billion yuan, or 43 percent. Of the total of 13.4 million TVE employees producing for export in 2002, 10.7 million were working in 108,000 TVEs in only six provinces: Guangdong in the south, and the east coast provinces of Zhejiang, Jiangsu, Shanghai, Shandong, and Fujian (China Ministry of Agriculture, 2003, pp. 3, 129, 219). Fully 91 percent of China's exports are manufactured goods (China NBS, 2003, pp. 654-655). Therefore it is safe to say that in value terms, PRC manufacturing TVEs produced more than one-third of China's total 2002 manufacturing exports.

China's exported manufacturing products also come from city manufacturing enterprises, especially from certain coastal regions of China. Now let us estimate labor compensation for urban manufacturing workers.

## **2) Wages of Urban Manufacturing Workers in Dollars**

Based on reported wage and labor compensation data only, China's 30 million employees of urban manufacturing units had average 2002 labor compensation of 11,152 yuan = US\$ 1,347 at the official exchange rate = 6,263 international (PPP) dollars. On the assumption that the data refer to full-time, year-round equivalents, the monthly urban manufacturing labor compensation is 929 yuan = US\$ 112 at the official exchange rate = 522 international (PPP) dollars.

We do not have adequate data on the numbers of hours worked per year by urban manufacturing workers. The only information so far located is that in the fourth quarter of 1998, a small sample of 138,000 manufacturing workers in urban state-owned enterprises in four large cities of China worked 489 actual hours, after accounting for lost work hours due to legal public holidays, down time (due to equipment repair, lack of raw materials, shortages of power, or no productive task to do), other non-productive work hours, sick leave, personal and family leave, occupational injury leave, and maternity leave (China NBS & Labour, 1999, pp. 629-630). On the assumption that hours worked were the same in all four quarters of 1998, this would have been an average of 1,955 hours worked per employee in the year. Using the arbitrary assumption that this subset of urban manufacturing workers in late 1998 can roughly represent the annual working hours of China's urban manufacturing workers in 2002, the following calculation assumes that urban manufacturing workers in the PRC average 1,955 hours of actual work time per year. Based on that number of hours for 2002, China's city manufacturing workers averaged 5.70 yuan per hour in reported "wage" or "labor compensation" = US\$ 0.69 at the official exchange rate = 3.20 international (PPP) dollars.

In the case of city workers, we need to add to their reported wage figures some estimate of the total social insurance funds payments paid to the government by the employers, which is not calculated into the wage or labor compensation data reported in Table 5. The International Labour Office in Geneva, for example, reported that in China in 2002, 29.07 million urban manufacturing staff and workers earned an average wage of 11,001 yuan per year (same as in this report in Table 5); assuming that these urban manufacturing staff and workers were full-time year-round employees, ILO calculated

the monthly average wage as (11,001 yuan / 12 months=) 916.75 yuan per month. In order to get total labor cost per manufacturing worker for 2001 (2002 estimate was not given), ILO multiplied the reported annual average 2001 wage for urban manufacturing staff and workers by 1.5 (ILO, 2003, pp. 403, 1089, 1207).

China's urban employers, including all urban manufacturing enterprises, are required by law to remit to the government every month a specified percent of their total wage bill (*gongzi zonghe*) as the required employer contribution to the social insurance system and, in some cities, the home purchase fund (West, 1999, p. 165). The amount varies from city to city.<sup>3</sup> For example, in 2004, in addition to required contributions from employees that are included in their reported wages, enterprises in Changshu City of Jiangsu Province are required to pay 28 percent of their total staff and worker wage bill for the combined total of the old-age pension fund (16.5%), medical insurance fund (8%), unemployment insurance (2%), workers' compensation insurance (0.6-0.8%), and maternity leave (1%) insurance (Changshu, 2004); enterprises in Wuxi City of Jiangsu Province have to pay 32 percent of their total wage bill for old-age pension (22%), medical (8%), and unemployment (2%) insurance (Wuxi, 2004); and manufacturing enterprises in Beijing Municipality are required to remit as the employer contribution a total of 39.5 percent of their total wage bill for a combination of the old-age pension fund (20%), medical insurance (9%), unemployment insurance (1.5%), workers' compensation insurance (1% for manufacturing enterprises), and employee housing fund (8%).

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 in 2002 was lower than it is now.

We need to know the overall percent of the total wage bill that urban manufacturing employers were required to pay and did pay in 2002 for social insurance and required housing fund payments, in order to adjust the reported manufacturing wage to include legally required employer social insurance payments. China's Ministry of Labour and Social Security conducted a survey of 11,704 urban enterprises in 51 large and medium-sized cities all over China, and collected from these organizations all relevant worker compensation data for the year 2002. (All data in this paragraph are from China Ministry of Labour and Social Security, 2004, p. 379.) This report uses the results of that large survey to estimate a range for average labor compensation costs in urban manufacturing above and beyond the reported wage data for 2002 given in Tables 5 and 7. Survey results showed that urban manufacturing enterprises paid to authorities

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<sup>3</sup> In some cities, the social benefit payment that the enterprise is required to pay the government is not strictly a percent 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 (Zhang, 2004, p. 10). This procedure is supposed to be applied nationwide, based on State Council Document Number 6 (West & Goodkind, 1999, p. 3).

in 2002 an average of 28 percent of their average reported wage for social insurance and 4 percent of the average wage for the municipal housing fund, totaling 32 percent of their average wage per employee for social insurance and housing fund payments. This author will use that percent as the low estimate of legally mandated social welfare payments paid by China's urban manufacturing enterprises in 2002. The same survey also reported that total average labor cost was 1.58 times the average wage for urban manufacturing enterprises. The enterprise labor costs included wages, social insurance and housing fund payments paid by employers to government, employee welfare costs (*fuli feiyong*), education or training costs, worker protection costs, and unspecified other labor-related costs. The welfare costs were 12 percent of the average wage. This employee welfare fund is used for reimbursements and subsidies that are not reported in the wage data (see *Glossary and Definitions: Welfare fund*). Using these survey data, this author's high estimate of average 2002 urban manufacturing employer labor compensation costs above and beyond reported wages is 58 percent of the average wage.

Table 7 estimates that PRC urban manufacturing employees received an average of about US\$ 2,000 in annual labor compensation for 2002, while TVE manufacturing employees got less than US\$ 1,000. Monthly labor compensation for urban manufacturing employees was well under US\$ 200, and for TVE manufacturing employees, considerably less than US\$ 100. Using arbitrary estimates of hours worked per year by manufacturing workers in cities and in towns and rural areas, this paper produces rough estimates of hourly labor compensation for manufacturing workers in China. Employees of urban manufacturing units got about US\$ 0.90-1.10 per hour, and TVE (town and village) manufacturing employees less than US\$ 0.50 per hour of work.

Ignoring the lack of reported wage data for self-employed individuals and small urban privately-owned manufacturing operations in the cities, this paper combines labor compensation estimates for the reported 71 million TVE manufacturing employees and the 30 million manufacturing employees of urban units to derive a rough range of estimates for annual, monthly, and hourly labor compensation in PRC manufacturing. As shown in Table 7, these 100.6 million China manufacturing employees received in 2002 approximately US\$ 1,100-1,300 in labor compensation, which works out to about US\$ 90-110 in monthly labor compensation, and implies hourly labor compensation of around US\$ 0.56-0.67 for PRC manufacturing employees.<sup>4</sup>

This procedure of combining adjusted reported annual TVE and urban manufacturing wages turns out to be reasonably consistent with PRC national accounts. Estimated employee remuneration in Table 7 for "All China manufacturing urban units and TVEs" gives an unadjusted national manufacturing wage of 8,186 yuan per year on average, and total labor compensation per employee in 2002 of 9,250-10,892 yuan, which is 1.13-1.33 times the unadjusted wage. PRC national accounts are not yet published for 2002, but the 2000 China input-output table is published. For the year 2000, the flow of funds table of the PRC input-output table showed that non-financial enterprises paid 14.7 percent of the total wage bill (*gongzi ji gongzixing shouru*) in social insurance payments (*danwei shehui baoxian fukuan*). The total wage bill and employer social insurance

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<sup>4</sup> Employment weights are used to calculate an estimate of the national manufacturing wage.

payments were added together to derive the total labor compensation (*laodongzhe baochou*) for non-financial enterprises in 2000 (China NBS, 2003, p. 84). This input-output table refers to China as a whole. The 2002 PRC input-output table will presumably show that employer social insurance payments were a higher percent of the total wage bill than the 15 percent figure for 2000, because every year the mandated employer social insurance payments are increasing, at least in the cities and probably outside the cities as well.

Table 7 also derives estimates of annual, monthly, and hourly labor compensation for China's national, urban, and village and town manufacturing employees in international purchasing power parity dollars. These PPP figures give us a feel for the purchasing power of the overall compensation of China's manufacturing employees—urban manufacturing workers in China are getting income and benefits that US\$ 4-5 per hour in overall compensation would get them in the U.S., while PRC rural and town manufacturing workers receive what US\$ 2 in labor compensation would buy in the U.S. Overall equivalent buying power of labor compensation for China's manufacturing workers is about US\$ 3.

### **C. Key Export Regions: Manufacturing Labor Compensation**

Many parts of China engage in manufacturing that is part of global trade. These manufacturing enterprises import enormous quantities of components, inputs, raw materials, and machinery for their production, primarily from other Asian countries, and they employ large numbers of non-PRC managers and professionals. They export some of their final product to the global market, chiefly to the United States, Europe, and developed countries in Asia (Lardy, 2003). 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 that includes 15 cities in Shanghai Municipality, Zhejiang Province, and the southern half of Jiangsu Province (Wu, 2004). Both areas include many non-city manufacturing centers.

China's urban manufacturing wage statistics are reported by province. Using those data, we approximate urban manufacturing labor compensation for the leading export centers in Table 8. The top half of the table uses reported earnings of urban manufacturing workers without adjustment, and the lower section of the table uses the same range of multipliers as for urban manufacturing workers in Table 7, 1.32-1.58, to derive annual, monthly, and hourly labor compensation for the city manufacturing workers of these four leading provinces in China's manufacturing import and export trade.

The three provinces of the Yangtze River Delta have a wide range of urban manufacturing wages and labor compensation. As shown in Table 8, Shanghai's 1.3 million city manufacturing workers are comparatively highly paid. Their 2002 labor compensation averaged about US\$ 3,500-4,200, and hourly compensation was approximately US\$ 2. Zhejiang's 1 million and Jiangsu's 2.3 million urban

manufacturing workers had much lower labor compensation than Shanghai, but still higher than the national average shown in Table 7.

The total 2002 employment in urban manufacturing units in Guangdong Province as a whole averaged 2.6 million manufacturing workers with reported 2002 labor compensation averaging almost 15,000 yuan (Table 8). After adjustments to include other labor compensation costs, Guangdong's city manufacturing workers received labor compensation of US\$ 2,400-2,900 for 2002, which was about US\$ 200-240 per month and US\$ 1.20-1.50 per hour.

These city manufacturing wage statistics for China's leading export manufacturing regions are woefully inadequate for providing a true picture of the wages paid by manufacturing enterprises in those provinces. No wage data at all are reported for the so-called "rural" manufacturing workers by province. At yearend 2002, based on the National Bureau of Statistics and Labour Ministry compilation, 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 (China NBS & Labour, 2003, p. 26). If the Agriculture Ministry reported the numbers of TVE manufacturing workers by province, the numbers of TVE manufacturing employees for these four provinces would undoubtedly be much higher than the reported numbers of rural manufacturing employees there.

The only useful reported wage statistics that are relevant to non-city manufacturing workers and are available by province are for TVE industry (*gongye*) employees. For the PRC as a whole, the average TVE manufacturing labor compensation for 2002 was 6,927 yuan, as shown in Tables 5 and 7. These manufacturing workers constituted 92.4 percent of TVE industry workers nationwide. For China as a whole, the average 2002 TVE industry employee labor compensation was 6,891 yuan (China Ministry of Agriculture, 2003, pp. 130-131; China NBS & Labour, 2003, p. 473). Since the national TVE manufacturing wage was only 0.5 percent higher than the national TVE industry wage, we can use 2002 data by province for the latter to roughly estimate the former.

Table 9 reports 2002 TVE industry labor compensation for the two leading export manufacturing regions. These data show that TVE industry workers have higher incomes in the Yangtze Delta provinces and Guangdong Province than the average TVE industry wage for the country. Shanghai and Zhejiang TVE industry employees were the highest paid—US\$ 0.72-0.84 per hour in the Shanghai suburban and rural areas, and US\$ 0.62-0.71 an hour in Zhejiang Province's rural and industrial zones outside its cities. Non-city industry workers in Jiangsu and Guangdong Provinces were not as well paid—just US\$ 0.50-0.58 per hour in Guangdong and US\$ 0.49-0.57 in Jiangsu.

These four provinces have thriving manufacturing zones focused on the world market. If their TVE manufacturing workers constitute about 92.4 percent of their TVE industry workers, then these 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. These numbers are far greater than the numbers of rural manufacturing workers reported by the NBS and Ministry of Labour for those provinces.

### **Underreporting of Manufacturing Employment and Wages in China**

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. The government extracted the money for its budget in other ways, but they were not so visible as these taxes are now. Individuals got benefits in both urban and rural areas while wages were kept very low. Today during the reform era, people would rather not pay taxes on their still-modest incomes, or at least would prefer to keep their payments low. Employers, meanwhile, have a culture of massive tax avoidance (Dow Jones, 2004). For example, when foreign and multinational companies come to China and attempt to set up a joint venture with a (usually state-owned) Chinese company, or arrange a merger with or acquisition of a PRC company, the foreign company must engage 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' " (Woodard & Wang, forthcoming 2005). 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 remuneration, the true costs and income of the company, its actual profits, etc. The "tax ledger" is designed to minimize tax exposure, particularly corporate income tax, value-added tax, personal income tax for employer as well as 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 the following implications (see also Fox & Zhao, 2002). 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, are sometimes left off the books entirely, at least with regard to what is reported to authorities. The employment is kept informal, and neither the employee nor his wages, which are paid in cash, are reported. This means that the employee can avoid paying income tax and any required deductions from his pay, while the employer can avoid paying the required social insurance payments for any unreported employees. This may mean that actual manufacturing employment numbers are underreported in PRC statistics, especially the urban figures.

Second, even when employees are reported to authorities, both employer and employees tend to collude to minimize the reported "wage" or "labor compensation." Employers in urban areas are required to remit to the city government social insurance and other payments that are calculated as a percent of the unit's total wage or labor compensation bill as reported. These required payments have been increasing rapidly

and are high by international standards: “High contribution rates are leading to high rates of evasion in the basic pension system” as well as other required social welfare payments (Jackson & Howe, 2004, p. 14). Many employers might perceive that these required payments are squeezing their profits and are burdensome; they might therefore have an incentive to underreport wages. Some of the money actually given to employees (as bonuses or overtime pay or financial subsidies of various kinds) may not be reported as wage. Some of it gets shifted to the welfare fund (*fuli fei*) category or other unspecified labor-related cost category, which is why it is important to include these labor cost categories in a realistic estimate of urban manufacturing labor compensation in the PRC. It is also likely that many PRC urban enterprises underreport or leave out of reported wages or reported labor compensation the value of some benefits provided in kind to employees (meals, housing, transport, food distributions). Therefore, it is very likely that urban wages and labor compensation in the PRC are systematically underreported for those employees whose employment is reported to authorities.

Those employees not reported to the authorities at all are usually paid very low wages. The going rate in non-agricultural work for an unskilled rural worker in the PRC today is 500-600 yuan per month, plus whatever minimum benefits are essential to provide, such as simple meals and 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 these 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 labor compensation is 750 yuan = US\$ 91 per month, but only when they are actually working. If for 3 months of the year they are planting and harvesting and celebrating and taking care of personal business and illness, then their annual take-home cash plus basic benefits would be 6,750 yuan per year, and if they work 2000 hours in a year then hourly pay works out to 3.38 yuan or US\$ 0.41. This estimate is close to the reported data that gives us a wage of 6,927 yuan for TVE manufacturing workers in 2002.

### **Migrant Manufacturing Workers**

Where are the migrant manufacturing workers in PRC statistics? Most published data on manufacturing employment and wages do not single out migrants. Therefore it is difficult to discover how many migrant manufacturing workers there are, where they are, and what they are paid. 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 wage in the “manufacturing staff and worker” category. But in most cities of China, migrants who do not possess city permanent residence documents are apparently, in practice, 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 labour in urban areas would also reduce the dependency ratio because of the concentration of migrant labourers 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 (West, 1999, p. 172).

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 (Fox & Zhao, 2002, p. 37).

There is increasing informal evidence that published urban wage data exclude the pay of migrant workers (Rawski, personal communication). It is not clear whether urban manufacturing enterprises actually report their migrant employee numbers and wages, and then these data are left out of the urban statistics, or whether information on the migrant manufacturing workers is not even reported.

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 peri-urban industrial zones, towns, or rural regions where agricultural land is being taken over for manufacturing zones. Both foreign and domestic employers eager to keep down their labor costs may prefer that their export processing factories be classified as rural and/or TVE (Fox & Zhao, 2002). In this case, they are confronted with few or no requirements to pay social insurance and other welfare payments for their hundreds or thousands of production and hand-assembly workers, and at the same time statistical reporting requirements for their enterprises are minimal. Many of the migrant manufacturing workers in these factories may be counted in the PRC "rural" manufacturing employment figures and/or the TVE manufacturing industry employment numbers (see Table 2). However, it is possible that hundreds of thousands or even millions of migrant manufacturing workers working in cities or outside cities are not reported in any of the annual administrative statistics, because employer and employee are jointly avoiding taxes.

### **China 2002 Manufacturing Labor Compensation—Best Guess Scenario**

As this report has demonstrated, the PRC has not collected and published enough detailed information and statistics to justify derivation of solid figures on hourly labor compensation in manufacturing. Therefore, to illustrate the levels of uncertainty with which this analysis must cope, the author has presented a range for each estimate in Tables 7, 8, and 9.

Nevertheless, in order to simplify discussion and serve the needs of BLS, this report presents best guess estimates in Table 10. This author's best guess multiplier for urban manufacturing workers is 1.538 for 2002. That is, the reported 2002 annual wage or earnings should be multiplied by 1.538 to include the following labor compensation

costs to the employers: required employer social insurance payments to the government, 28 percent of the wage; required housing fund payments, 4 percent of the wage; employee welfare costs paid by the employer to or for employees in addition to those included in the wage, 12 percent of reported wage; and other labor-related costs not specified in detail, 10 percent of the wage (China Ministry of Labour & Social Security, 2004, p. 379). This multiplier leaves out employee education and training costs and worker protection and safety costs because BLS does not normally include these costs in its international comparative estimates of hourly labor compensation in manufacturing. In the Chinese case, it is probably wise to include in labor compensation the amorphous, vaguely reported categories of welfare costs and other unspecified labor-related costs because of the likely biases in the basic wage and earnings data. To minimize individual and corporate taxes and required social insurance payments, urban employers tend to underreport wages to the extent possible, neglecting to include some in-kind benefits in the reported wage and off-loading as many employee subsidies and benefits as possible onto the *fuli feiyong* (welfare fund costs) category or “other” labor compensation category.

This author has no better information than previously presented on the true social insurance benefits and other labor compensation costs not included in reported TVE manufacturing wages but given to or remitted to governments on behalf of employees. So far this multiplier has been estimated in the range 1.00-1.16, so for a best guess scenario this author just takes the average and uses 1.08 as the best guess multiplier for TVEs in Table 10.

Best guess estimation procedures result in these conclusions (Table 10):

--China's manufacturing workers earn less than \$1,300 per year on average, if the calculation is based on commercial exchange rates. Urban manufacturing employees get average annual labor compensation of about \$2,100, more than twice the figure of \$900 for TVE manufacturing workers who work mostly outside the cities.

--PRC manufacturing employees receive labor compensation of approximately \$0.63 per hour. Urban manufacturing workers get about \$1.06 an hour, while TVE manufacturing employees average only \$0.45 per hour.

--Using purchasing power parity exchange rates, China's manufacturing workers get average labor compensation that would buy the equivalent of what almost \$3 an hour in the US would purchase. Urban Chinese manufacturing employees approach \$5 per hour in international PPP dollars, but TVE manufacturing workers get only a little over \$2 in international purchasing power.

### **Time Series of Manufacturing Wages for China, 1990-2002**

One of the many goals of this project is to derive a time series of hourly manufacturing labor compensation for the PRC 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 wages of some sub-group of PRC manufacturing workers would still be useful.

This author 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 labor compensation paid out to them during the year.
- b) The Labour Ministry carried out a large survey of city enterprises for the year 2002 and published a book that included data on labor costs in urban manufacturing units above and beyond reported wages (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 wages in China for 1990-2002 is probably not possible.

The only information this author has located on time trends of manufacturing wages in China refer to urban manufacturing staff and workers. Table 11 presents the published information on indices of average real wages. Real living standards have been rising in PRC cities, and real wages have been rising for urban staff and workers in manufacturing (see also Lardy, 2004a). The urban “staff and worker” component of urban manufacturing workers is theoretically supposed to include manufacturing workers who migrated into cities from rural areas, but the rising wages indicated in Table 11 probably exclude data on wages of rural-to-urban migrant manufacturing workers (Rawski, personal communication; Fox & Zhao, 2002, p. 3, 22). Urban manufacturing wages rose rapidly in the early 1990s, rose slowly in the mid-1990s, and increased very fast at the end of the 1990s and in the early 21<sup>st</sup> century. Table 11 shows that these generalizations about city manufacturing wage trends also hold for manufacturing employees in state-owned units, collective-owned units, and “other” ownership units (joint ventures, foreign-owned, multinational, etc.).

Table 12 and Figure 4 present trends in real annual wages (not including required employer payments for social insurance schemes or other non-wage 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 total numbers of urban manufacturing staff and workers shrank to 29 million in 2002, the average wage of those remaining was 11,001 yuan, more than double the 1990 average wage. There was a shift in composition of the urban manufacturing staff and workers category in these 13 years (Table 2). In 1990 the lowest-paid subgroup, urban collective manufacturing workers, was large (18 million) and helped hold down the average real wage, while the highest paid subgroup, private sector enterprises, was tiny. 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 the average wage among urban staff and workers in manufacturing.

### **Hours Worked in Manufacturing—The Key Missing Statistic**

China reports manufacturing employment numbers and average wages on an annual basis. These annual numbers for 2002 appear to be rough but usable. Annual labor compensation figures so derived are reasonably consistent with reports from visits, interviews, and investigations in China's factories. The major weakness in this report is the attempt to move from annual data to hourly figures for average labor compensation in manufacturing. The problem is that, as far as this author has been able to determine, the PRC has published essentially no data on average number of hours worked per year in manufacturing production for urban or rural factories.

It is possible that in this report the author has estimated too low for the numbers of hours worked on average per year by manufacturing employees in city and non-city factories. 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 only a two-week holiday at Chinese New Year. In many such export-oriented factories, employees usually work 6 or 7 days each week, totaling 60-80 hours per week in peak season for that manufacturing sub-sector, which can be up to 8 months a year (Verite, 2004; Chang, 2004). Average yearly hours actually worked per employee might be as high as 4,000 hours in some China manufacturing enterprises. In those hard-driving Guangdong factories, suppose that in 2002 the average urban wage was 14,958 yuan as reported in Table 8, and suppose that we must increase the urban wage by 54 percent to include all employer social insurance payments, welfare costs, and other labor costs, giving us average annual labor compensation of 23,035 yuan or \$2,782. If employees in 2002 worked 4,000 hours for that income, it worked out to \$0.70 per hour for the manufacturing workers in those city factories. Outside Guangdong's cities, reported 2002 average wage was 8,345 yuan (Table 9). Increasing this figure by 8 percent to adjust for employer social insurance payments, total average 2002 labor compensation was 9,013 yuan or \$1,088. For those factories whose workers put in 4,000 hours of production work in that year, per hour average labor compensation was only \$0.27. This illustration emphasizes why it is very important to determine what is the actual average number of hours worked in each year for city and for TVE manufacturing employees.

Data from China's 2000 census confirm that, generally speaking, manufacturing employees in the PRC work a lengthy week; at least they did during the last week of October of the year 2000. From the census, of 88 million manufacturing workers in China, 58 percent had worked 6 or 7 days in the previous week. But if the census counted tens of millions of part-year, seasonal manufacturing workers from rural areas and small towns as farmers, those rural (probably called TVE) manufacturing workers would put in far fewer hours in manufacturing per year than those working year round in coastal zone factories.

In the case of the PRC, it is not acceptable to use legal limits on working hours or overtime hours to estimate 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 very widespread double bookkeeping in China's factories is to report compliance with laws on minimum wages and maximum permissible overtime hours when in fact the factory routinely violates the laws. Factories frequently keep two sets of payroll records, one set to present to the social auditors (government authorities, investigators sent by overseas buyers to check compliance with labor laws, etc.) and the other to use for internal bookkeeping (Verite, 2004). Generally speaking, grass-roots investigators report that the factories do not misreport the total wage paid per month or per day to the employees; rather, they grossly underreport the hours worked to earn that income.

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. An adequate estimate of average annual hours worked in TVE manufacturing must take account of both these categories of non-city manufacturing workers.

### **Is China's Labor Supply "Inexhaustible"?**

The PRC is widely perceived to have an unending supply of poor laborers willing to work for extraordinarily 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 (Powell, 2001).

One reason that China still pays very low compensation to manufacturing laborers by international standards is that the vast size of its current surplus labor force dampens forces that tend to raise wages. Rawski, for example, refers to "China's growing problems of unemployment and excess labour supply" (Rawski, 2003, p. 1). 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?

The PRC 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 2. "The shutdown of inefficient state-owned plants has cost China tens of millions of jobs, with more to go" (Forney, 2004, p. 34). 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 (Hu, 1998; Rawski, 2003; Cai, 2004; Knight & Xue, 2004; Knight & Yueh, 2004; Economist, 2004a, p. 27), with some estimates of the true

unemployment rate rising to 25 percent as some scholars attempt to include disguised unemployment (Chen & Coulson, 2002, p. 2193). 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 (Yang, 2003, p. 265; Cai & Wang, 2004, p. 79). 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 (Economist, 2004a, p. 28). 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" (Hale & Hale, 2003). According to some surveys, nearly a third of today's rural labor force is surplus agricultural workers (Cai et al., 2002, p. 321; Knight & Xue, 2004, p. 2). As agriculture modernizes in China during the coming decades, hundreds of millions of agricultural workers will need other kinds of employment (McGuckin & Spiegelman, 2004, p. 27).

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, helping to hold down wages for low-skilled workers (who currently earn less than 50 cents an hour)...Although average real wages in Chinese manufacturing have increased quite briskly over the past decade, the main beneficiaries have been skilled rather than unskilled workers (Economist, 2004c).

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 Programme Director Yukon Huang] (Xu, 2004).

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:



--Continuing hidden barriers to migration, including lack of social security and health care for migrants and inability to get urban residence registration (Economist, 2004e). Policies that continue to dampen labor mobility are keeping China's labor markets segmented (Fox & Zhao, 2002, pp. 1-5, 25, 30-38).

--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 (Economist, 2004a, p. 28). Grain prices and agricultural subsidies have increased, making agricultural work more attractive than before (Fong, 2004, p. B1).

--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 (Fong, 2004, p. B1; Goodman, 2004).

--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 (Washington Times, 2004).

These labor shortages will presumably be solved by policy changes to make migration more desirable and feasible for rural workers, as well as 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" (Economist, 2004f).

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)" (Brooks & Tao, 2003, pp. 1-3). 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 (Knight & Xue, 2004, p. 18; Knight & Yueh, 2004). “Up to 500 million peasants are expected to migrate to cities in search of factory work over the next two decades” (Forney, 2004, p. 34). 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 (Dolven, 2003).

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.

### **Comparisons of Estimates of Manufacturing Employee Compensation in China**

Many media and other sources around the world have published very rough estimates of hourly or monthly wages or compensation for manufacturing workers in China. Let us compare their estimates with those in this report:

With manufacturing wages in China averaging about 60 cents an hour—5% of the American average, and 10% of that in some neighboring Asian economies—and a seemingly infinite supply of workers, China does look as though it could out-compete other economies in the manufacturing of almost anything labour-intensive. And this is exactly what is happening: 70% of China’s exports today are of garments, toys, shoes, furniture and such like...China is already by far the biggest garment exporter in the world, with average wages in the industry of 40 cents an hour—less than a third of, say, Mexico’s (Economist, 2003).

Typically, a U.S. or Western European factory worker costs an employer \$15 to \$30 per hour. A Chinese factory worker earns the equivalent of less than \$1 per hour (Stalk & Young, 2004).

Both GM and Ford acknowledge that Chinese auto-parts suppliers now serve as global “benchmark” prices for quality and price on certain components....The prices reflect China’s average wage costs of 90 cents an hour, compared with

\$22.50 in the U.S., according to Roland Berger Strategy Consultants of Troy, Michigan (Shirouzu, 2004, p. A5)

The best estimates are that workers employed [in China] by the big, global automakers make the equivalent of \$1.50 per hour in wages and benefits (Szczesny, 2004).

[Regarding wages in China's electronics manufacturing industry]: In China, there are multitudes of people eager to work for wages as low as \$130 a month...(Ramstad, 2004).

The above estimates of manufacturing wages or labor compensation in China are all in the ballpark. Table 7 derived an all-China labor compensation estimate of US\$ 0.56-0.67 for PRC manufacturing workers, and Table 10 derived a best-guess estimate of \$0.63; therefore a figure of 60 cents an hour is realistic as an estimate of hourly labor compensation in manufacturing, though it is high as an estimate of wage only. It is certainly safe to say that Chinese factory workers earn less than 90 cents or \$ 1 per hour on average.

Outside the cities, labor compensation for manufacturing workers is indeed less than US\$ 130 per month, though total labor compensation for city manufacturing workers is more like US\$ 145-180 per month (Table 7). Looking at wage only, TVE manufacturing workers earn US\$ 70 per month and city manufacturing workers earn a wage of US\$ 112 monthly. City workers in electronics manufacturing reportedly earn an average wage of 17,636 yuan per year or US\$ 177.50 per month (Table 6; China NBS & Labour, 2003, p. 225). Adjusted to include social insurance and other labor compensation costs, their monthly total compensation averages about US\$ 234-280. But of course, electronics manufacturing workers outside the cities probably do earn less than US\$ 130 per month, even if their enterprises are classified as large-scale TVE manufacturing enterprises (Table 7).

Wages for auto workers and auto parts suppliers were not directly reported for 2002, though city transportation equipment manufacturing employees reportedly earned 14,409 yuan or about US\$ 0.89 per hour in wages, which means that a wage estimate of US\$ 0.90 is accurate for city auto-parts suppliers (Table 6; China NBS & Labour, 2003, p. 224). Adjusting for all labor compensation costs, the hourly labor compensation of city transportation equipment manufacturing workers would be US\$ 1.17-1.41. Therefore, an estimate for city auto worker compensation of US\$ 1.50 per hour including all benefits is reasonable. Auto and auto parts workers outside the cities would receive much less.

City garment workers earn a reported annual average wage of 9,066 yuan or about US\$ 0.56 per hour (Table 6; China NBS & Labour, 2003, p. 219). After adjusting for other urban labor compensation costs, their total hourly compensation in 2002 was about US\$ 0.74-0.88. But outside the cities, the garment workers, most of whom are young and female, are among the lowest-paid manufacturing workers in China. It is very likely that

they earn less than US\$ 0.40 in hourly wage or total labor compensation. In general, therefore, the estimates of PRC manufacturing wages or labor compensation put forth in the popular media are approximately true.

### **Competitiveness of Manufacturing Industries in China**

What makes manufacturing production in China competitive in the international market, and in China's domestic market? It is widely agreed that certain factors are paramount:

#### **A. Low Wages and Labor Compensation Costs**

One of the leading reasons why some of China's own domestic manufacturing industries can sell their products at home and abroad, and why multinational and other foreign companies are moving their manufacturing operations to China, is the genuinely low cost of employing manufacturing workers in the PRC. 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 (Stalk & Young, 2004).

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 (CASS, 2001, pp. 109, 547).

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 (Szczeny, 2004).

The truly low cost of labor in China makes the PRC particularly competitive in the following types of manufacturing industries: labor-intensive, assembly, reprocessing, low value-added, simple repetitive steps in the manufacturing process, food processing, etc. "China has become an essential link in the global production chain for many labor-intensive products...a manufacturing hub for the rest of the world in low-end labor-intensive goods" (Hale & Hale, 2003). Labor productivity (output per employee) is low by world standards in these kinds of PRC factories, and wages are correspondingly low (Lardy, 2004). In the 1990s and beyond, the PRC showed widening wage inequality, as wages rose for city-born workers but basically stagnated for the least skilled and least educated workers (Fox & Zhao, 2002). China is not particularly competitive in capital-intensive and materials-intensive industries. In addition, large proportions of China's young adults now have at least a lower middle school education and therefore are

basically literate and numerate. Millions of young and middle-aged workers from rural areas are also 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 could 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. Therefore, “China rules in stocking stuffers, but it’s climbing the technology ladder too;” the PRC now produces half of the world’s cameras and photocopiers and one-quarter of the world’s television sets and washing machines (Forney, 2004, p. 34). 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” (Economist, 2004b).

### **B. 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. The PRC is not a perfect manufacturing environment by any means, but there is relatively low terrorist risk, civil unrest does not destabilize the economy, there are few public safety concerns for multinationals’ property and personnel, and the economy and financial system are functioning—not supremely well but at least adequately. Multinational firms are thought to allocate their investment among countries so as to maximize their risk-adjusted profit (Caves, 1996; Zhang, 2001); China compares rather well with other less developed countries when both risk and costs of production are considered.

### **C. China’s Own Huge Potential or Actual Domestic Market**

Of the world’s total population, 21 percent live in the PRC. They provide a far larger domestic market for manufactures than any other developing country today with the possible exception of India (see also McGuckin & Spiegelman, 2004, pp. 4, 23). Though China is still a lower middle income country, ordinary people buy some manufactured goods, providing a ready market for the least expensive manufactured products. More important, China has a growing middle class and a small luxury class, especially in cities. 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 (China Radio International, 2001).

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 (Smith, 2002, p. 2).

...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)...(Powell, 2001).

Consumers of luxury products now account for 13% of the total population in China and are continuing to increase (New Express, 2004).

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 (Hale & Hale, 2003).

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

#### **D. Convenient Logistics in Coastal Regions of China**

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

and bilingual or multilingual local Chinese to staff the professional and managerial layers of manufacturing concerns, and they are willing to work for moderate salaries.

### **E. 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” (Ho, 2004).

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 (McDaniels, 2004, p. 9; French, 2004, p. A7). 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 (Ho, 2004). However, one economist reported that in China: “Land prices have declined by about 70% in major urban areas since 1993” (Xie, 2001).

### **F. Incentive Policies to Promote Foreign Investment in China**

During the 1980s and 1990s, the PRC 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 FDI poured into the PRC in general and into these Chinese coastal areas in particular (Zhang, 2001). 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 the PRC than the East Asia/Pacific average; and in order to promote the hiring of more workers, the PRC has slashed regulatory burdens associated with hiring (Wright, 2004, p. 12).

PRC 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 (Lardy, 2003).

### **What Hampers China's Competitiveness in Manufacturing?**

From an international perspective, the PRC 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. Some such considerations are as follows:

#### **A. Rising Manufacturing Wages and Labor Costs in China's Cities**

Real living standards have been rising in PRC cities, and real wages have been rising for urban staff and workers in manufacturing, as shown in Tables 11 and 12 (see also Lardy, 2004). Urban manufacturing wages rose in the early and mid-1990s, and increased very fast at the end of the 1990s and in the early 21<sup>st</sup> century. Tables 11 and 12 and Figure 4 show that these generalizations about city manufacturing wage trends also hold for manufacturing employees in state-owned units, collective-owned units, and "other" ownership units (joint ventures, foreign-owned, multinational, etc.).

Why are urban manufacturing wages rising rapidly in China? Some scholars argue that because labor productivity is rising rapidly in China's city factories, we would expect city manufacturing wages to also rise (Lardy, 2004b). Others contend that the huge supply of surplus urban and rural workers ought to keep these wages down: "The coincidence of rising mass unemployment and rapid increases in real wages in the late 1990s appears contrary to the predictions of competitive labour markets." Forces raising urban manufacturing wages have included rising labor productivity and a sustained rise in the returns to education and skill, as well as a wage premium for Communist Party members and others still remaining in protected state-owned enterprises (Fox & Zhao, 2002; Appleton & Song, 2004). Rigidities in urban labor markets have also forced up wages and impeded competition (Knight & Yueh, 2004). Simultaneously, however, the range of wages in China manufacturing has widened, and the least educated unskilled workers have experienced near-stagnation in their real wages "under the twin pressures of heavy migration from China's villages and intense pursuit of cost advantage from overseas buyers of labor-intensive goods" (Rawski, 2003; Fox & Zhao, 2002, pp. 3, 22).

In addition to the wage bill, required payments for other urban employee benefits have increased (Yang, 2003). China is trying to build a viable system of pensions, medical benefits, unemployment benefits, workers' compensation, and housing benefits



at least for its city population. Rawski argues that required employer payments for these urban social safety net programs in the PRC are now higher than they need to be, for example substantially higher than in Malaysia, South Korea, Taiwan, or Singapore (Rawski, 2003, p. 27). In some cities the mandated payments are 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% year on the year. This rise was significantly higher than in cities such as Kunshan, Nanjing, Hangzhou, Suzhou, or Ningbo (French, 2004, p. A7).

As wages and mandated social insurance payments increase, urban China becomes less competitive in the global context and even in the PRC context. Shanghai, for example, is beginning to become too expensive for many manufacturing concerns: “The massive influx of investment and rapidly improving standard of living has driven up labor costs in Shanghai, almost high enough to price Shanghai out of the market” (McDaniels, 2004, p. 8). Many businesses are now locating elsewhere. “Companies moving from Shanghai to neighboring Anhui Province report that they can cut costs by 50%. Few multinationals can resist those kinds of savings” (French, 2004, p. A7). 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” (Economist, 2004f, p. 44). Many manufacturing companies are now choosing to move their production operations from developed countries or from China to other developing countries with lower labor costs. For instance, India, Pakistan, and Vietnam are becoming competitive as textile and apparel producing and exporting countries because the cost of textile production is generally lower there than in China (Xin & Liang, 2004).

### **B. The PRC is Easy to Enter but Very Difficult to Leave**

China’s policies attract foreign companies to the PRC, 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. The PRC 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. The PRC 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 (Wright, 2004, p. 13). 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.

## **C. Other Constraints on Future Growth**

### **1) Electric Power Shortages**

The PRC economy has been booming for so long that power shortages have become a problem. In 2004, electric power outages, blackouts, shortfalls, and rationing have hit manufacturers in the Pearl River Delta and Shanghai. Power has been 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” (Bloomberg, 2004b).

### **2) 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 has driven up domestic prices of cotton and other fibers (Bloomberg, 2004a).

### **3) Lack of Patent, Trademark, and Copyright Protection in China**

The PRC has serious deficiencies in enforcing the protection of intellectual property (AmCham China, 2004a, 2004b). Patents and copyright, both domestic and foreign, are ignored with impunity in China’s manufacturing sector. Trademark/brand theft is epidemic and very expensive and slow to attempt to correct (Ho & Fiske, 2004, p. 24). Production processes, brand names, and innovations are stolen by domestic PRC producers and churned out at a cheap price for the Chinese and global markets. The PRC 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” (AP, 2004; Evans, 2004). Many multinational companies have entered joint ventures with Chinese partners, often because PRC 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; the PRC treats such technology piracy as merely a minor civil or administrative matter rather than the crime that it is (Snoddy, 2004, pp. 6-8). 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 employment and labor compensation in the People's Republic of China. Official data from the China National Bureau of Statistics and the Ministry of Labour and Social Security show a steep drop in urban manufacturing employment in China from 1995 to 2001, and in total PRC manufacturing employment from 1995 to 2000, after which the numbers stabilized or began to rise. The declines in PRC manufacturing employment in the late 1990s were caused by massive layoffs and early retirements of redundant workers in China's urban state-owned and urban collective-owned manufacturing enterprises, and by a change in definition starting in 1998 that has included only on-post (not laid-off) manufacturing workers in the urban employment numbers from 1998 to the present.

Published labor statistics for the PRC 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 means that the employment and wage numbers put out by the Labour 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 dismissive term "Other Ownership Units." Small privately-owned and family-owned urban *siying qiye* manufacturing businesses are entirely ignored in the employment and wage data from the Labour Ministry and NBS, and the same is true with 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; the number has grown every year since then and reached 15.82 million by yearend 2002. Meanwhile, the residual category of urban manufacturing workers, which is supposed to be the small privately-owned *siying qiye* and *getihu*, rose from less than 1 million in 1990 to 2.72 million in 1994 to 6.33 million in 2000 to 8.21 million by yearend 2002. PRC government statistical and labor agencies do not pay adequate attention to the private manufacturing corporations and the small manufacturing businesses in China's cities.

PRC employment and wage statistics focus only on the cities, while the expanding "rural," town, suburban, and industrial park manufacturing enterprises all over China are almost entirely left out of the statistics. The *China Labour Statistics Yearbook 2003* gave no wage data at all for the 45 million "rural" manufacturing employees they reported to exist, while providing labor compensation figures for only 30 million of the 38 million "urban" manufacturing workers. Apparently, essentially all or almost all of China's manufacturing enterprises and factories located outside strict city limits are lumped together under the category "village and town enterprises" (TVEs). This term is a misnomer for all the employers, both domestic and foreign, of the 71 million non-city manufacturing employees in the PRC who are referred to as TVE manufacturing employees.

The Ministry of Agriculture, in a holdover from the Maoist decades, 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 labor compensation costs for 2002 for all those employees.

Adding together manufacturing employment numbers for the cities and estimates for the TVEs suggests that the PRC had about 105 million manufacturing employees in 1990 and the number may have increased in the early 1990s to a peak of 130 million in 1996. This large number may have included some over-reporting 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, the PRC had approximately 112 million manufacturing employees at yearend 1998. The number declined to about 108 million in 2000-2001 and rose slightly to 109 million by yearend 2002. These numbers are based on the supposition that there is no overlap between TVE and urban manufacturing employee figures.

This report has combined employment and wage data for China's urban manufacturing workers and for the non-city TVE manufacturing workers to derive approximations of annual, monthly, and hourly labor compensation for urban and non-city and all-China manufacturing employees. Reported wage and labor compensation data have been adjusted separately for urban data and for TVE data. Urban manufacturing wage data for 2002 were adjusted by multiplying the wage figures by 1.32-1.58, providing a range of labor compensation figures per employee, depending on whether the reported wages are adjusted only for employer social insurance payments or instead for all labor-related costs. TVE labor compensation data were adjusted by multiplying the wage figures by 1.00-1.16, on the assumption that the likely true employer costs for insurance and welfare and other non-wage compensation was somewhere in the range from zero to 16 percent of the reported labor compensation data for TVE manufacturing workers. These estimates were then combined for 100.6 million manufacturing employees in the PRC to represent all-China 2002 annual, monthly, and hourly labor compensation in manufacturing.

Results of this exercise show that China manufacturing workers in 2002 received hourly labor compensation of approximately US\$ 0.56-0.67. City manufacturing employees received about US\$ 0.91-1.09, more than twice the hourly labor compensation of US\$ 0.42-0.49 received by TVE (that is, non-city) manufacturing workers. Because living costs are so low in China, this report also calculates the labor compensation of PRC manufacturing employees in international purchasing power parity dollars. China's manufacturing workers in 2002 got total compensation that would be similar to U.S. employees receiving labor compensation of US\$ 3 per hour in terms of what the money would purchase. China's TVE manufacturing employees got the equivalent of US\$ 2 purchasing power and PRC urban manufacturing employees received the equivalent of US\$ 4-5 in terms of what they could buy.

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. Best guess estimates are provided for annual, monthly, and hourly labor compensation in manufacturing. As of 2002, the latest year for which wage data are available, average labor compensation for 30 million PRC urban manufacturing employees was approximately US\$ 1.06 per hour, while the reported 71 million manufacturing employees in village and town enterprises (TVEs) outside the cities averaged about US\$ 0.45 in labor compensation per hour of work. Combining the labor compensation of manufacturing workers in cities and in the towns and villages to derive an all-China estimate results in labor compensation of US\$ 0.63 per hour of work for 101 million manufacturing workers in China.

China is a developing country that is rapidly changing, both statistically and economically, from a Communist command economy with primarily administrative statistics toward a market economy with modern, sophisticated, internationally comparable statistics. This report shows that PRC statistics on manufacturing employment and labor compensation have not reached world standards. Nevertheless, the available statistics can be utilized, given a set of explicit extrapolations and assumptions, to estimate China's manufacturing employment levels and trends, as well as the current level of labor compensation in the PRC manufacturing sector.

### **Future Research on PRC Manufacturing Employment and Compensation**

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

1. For the important goal of calculating average hourly labor compensation in manufacturing in the PRC, the highest 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 this variable.
2. During the year 2005, with reference year of 2004, China is conducting its first national census of the economy. This Economic Census is expected to refine, correct, and update data on who works where in manufacturing, and on labor compensation received. "The survey [PRC economic census] is sure to find that private-sector employment is much higher than currently reported" (Economist, 2004a, p. 28). When results of the economic census become available at the end of 2005, the new information should be used to update this report.
3. Migrant manufacturing workers: Publicly available information on China's manufacturing employees does not provide enough information about how many migrant manufacturing workers there are in China, where they are working, what they are paid in comparison to locals at their migration destination, whether or not social insurance payments are deducted from their wages, and what social insurance payments employers must remit to the authorities based on the wages of

in-migrants. It is important to know these facts, because rural-to-city and rural-to-town manufacturing employees will tolerate lower pay and longer working hours than urban-born employees. Migrant workers help keep China globally competitive in manufacturing. A further search for information on China's migrant manufacturing workers is needed.

4. Rural manufacturing employment and labor compensation: Much more research is needed to try to fill in some of the missing information on rural and town manufacturing employment and wages. Reporting is routinely more thorough for city manufacturing units in China.
5. Labor force surveys: China needs to design, carry out, and publish results of labor force surveys using international standards and definitions. The PRC reportedly has been conducting experimental labor force surveys, but the results have so far not been released.
6. 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, MOLSS, Ministry of Agriculture, and SAIC, and with scholars utilizing China's collected official labor force statistics.

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**Table 1. China Employed Population, Census 2000 and Enterprise Data 2000**

(In millions)

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

Notes: Prepared by Judith Banister. Difference is census figure minus enterprise figure.

Enterprise data are for yearend 2000; census data are November 1, 2000, which was two 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 population age 15 and older.

Sources: Census data: China NBS, 2002, Vol. 2, pp. 1569-1570.

Enterprise data: China NBS & Labour, 2003, pp. 8-9.

**Table 2. Reported Manufacturing Employment in China, 1978-2002**

(Yearend figures in millions)

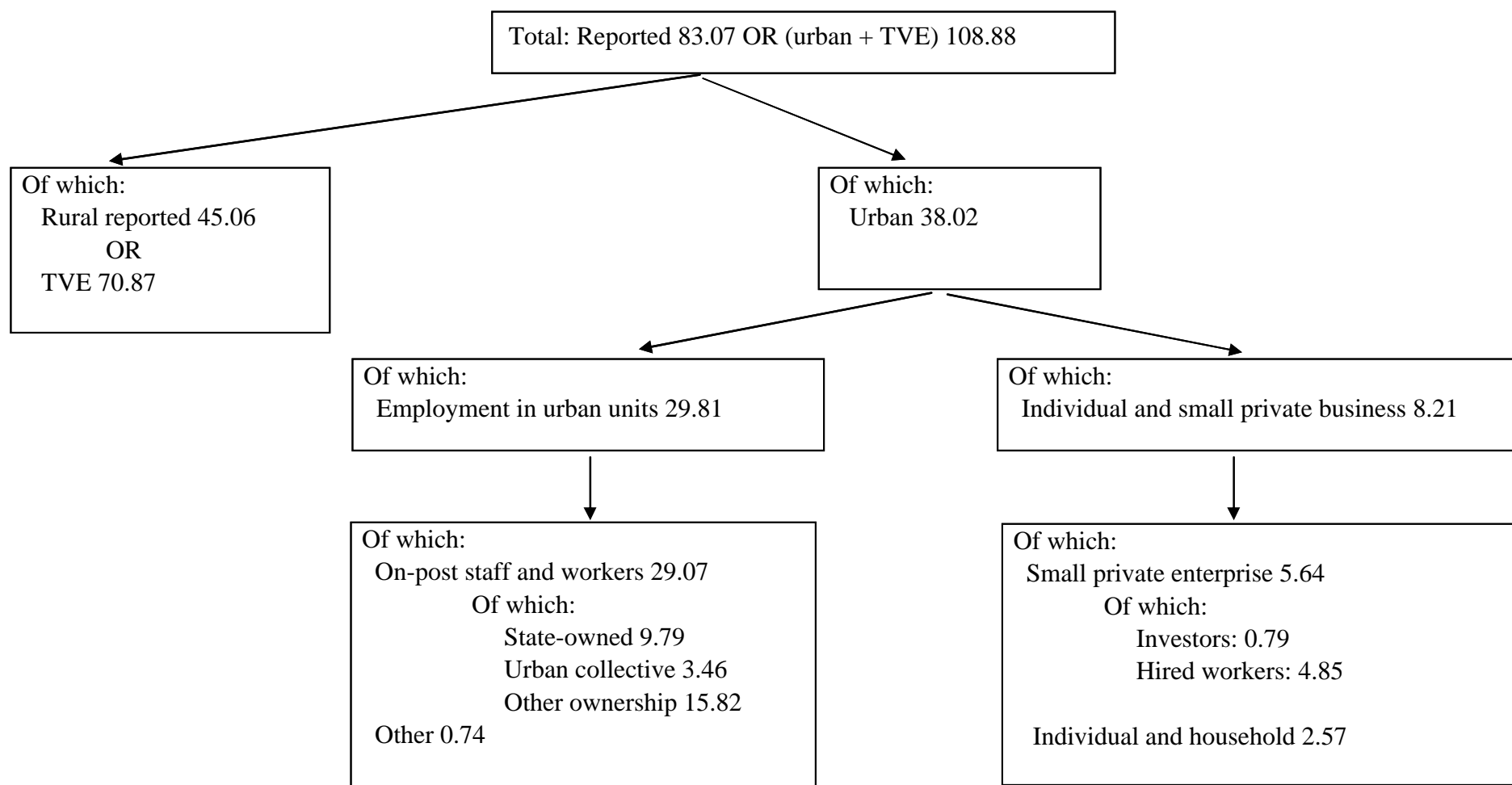
Year	PRC manufacturing employment	PRC "rural" manufacturing employment	Derived urban manufacturing employment	PRC manufacturing "employment in urban units"			PRC manufacturing urban "staff and workers"				Village & town enterprises (TVEs)	
				Total	Male	Female	Total	State-owned units	Urban collective- owned units	Other ownership units	Industry ( <i>gong ye</i> )	Manufacturing
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	0.37	41.37	
1986	80.19	31.39	48.80				48.20	30.96	16.80	0.46	47.62	
1987	83.59	32.97	50.62				49.88	32.09	17.24	0.58	52.67	
1988	86.52	34.13	52.39				51.49	33.27	17.45	0.77	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	61.49	(56.84)
1998	83.19	39.29	43.90	38.26			37.69	18.83	7.42	11.44	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

Notes: Prepared by Judith Banister. These figures refer to the mainland provinces of the PRC not including Hong Kong, Macao, or Taiwan. These data are from China's annual yearend reporting system, not from census data and not adjusted to agree with census data. The column on "Derived urban manufacturing employment" is calculated from national manufacturing employment minus rural manufacturing employment. TVE manufacturing employment is reported only for 2002, when it constituted 92.4% of TVE industry (*gong ye*) employment; other years are estimated using the same percentage.

Sources: China NBS & Labour, 2003, pp. 8, 10, 13, 16, 21, 23-26, 171, 473. *China Village and Town Enterprise Yearbook 2003*, p. 130.



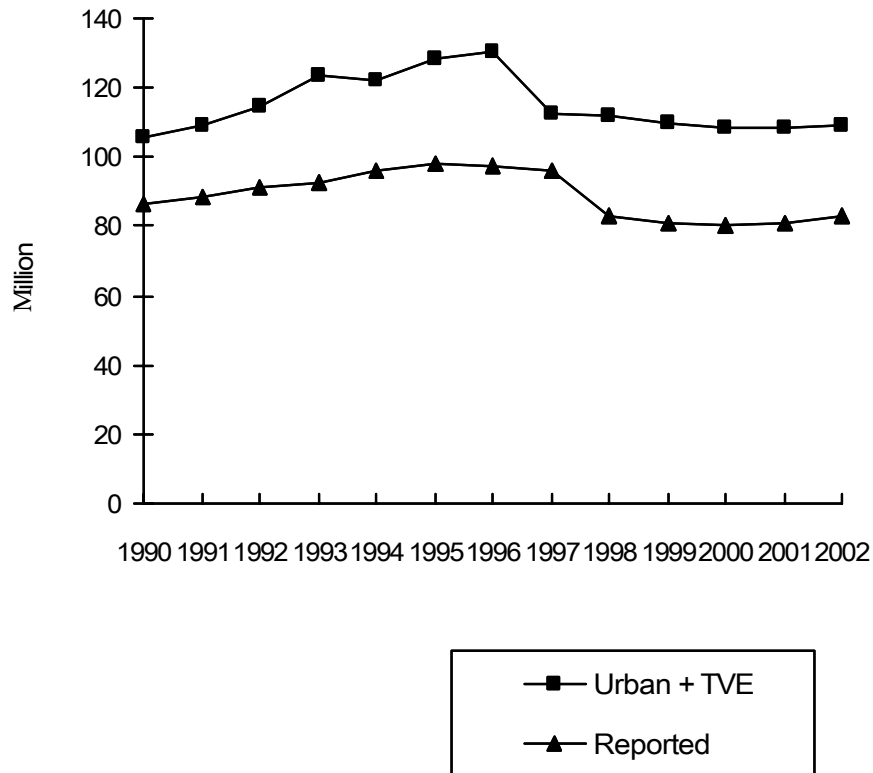
Figure 1. Structure of Manufacturing Employment in China, Yearend 2002  
(In millions)



Notes: Prepared by Judith Banister. The 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 village and town enterprise (TVE) employment of 70.87 million, then the total yearend 2002 China manufacturing employment was 108.88 million.

Sources: Table 2 and text.

Figure 2. China Manufacturing Employment, 1990-2002



Notes: Prepared by Judith Banister.

TVE manufacturing employment is derived from reported TVE industry (*gongye*) employment.

Source: Calculated and copied from Table 2.

Table 3. China Manufacturing Employment, Two Alternative Series, 1990 - 2002

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

Note: Prepared by Judith Banister.

Source: Calculated from Table 2.

**Table 4. China, Manufacturing Workers by Occupation, Census of November 1, 2000**

(In millions)

Occupation	Number of manufacturing workers			
	Total	Percent of total	Male	Female
All manufacturing	88.43	100 %	48.10	40.33
Production, transport, equipment and related workers ( <i>Shengchan, yunshu, shebei ren yuan</i> <i>ji youguan ren yuan</i> )	67.36	76.2	35.18	32.18
Sales and service workers ( <i>Shangye, fuwuye ren yuan</i> )	7.65	8.7	4.57	3.08
Professional/technical ( <i>Zhuanye, jishu ren yuan</i> )	4.97	5.6	2.29	2.68
Clerical and related workers ( <i>Banshi ren yuan ji youguan ren yuan</i> )	4.39	5.0	3.02	1.37
Administrator and manager ( <i>Guojia jiguan, dangqun zuzhi qiye,</i> <i>shiye, danwei fuzeren</i> )	2.89	3.3	2.50	0.39
Agriculture and related workers ( <i>Nong, lin, mu, yu, shuiliye ren yuan</i> )	1.04	1.2	0.47	0.57
Others ( <i>Bubian fenlei ren yuan</i> )	0.14	0.2	0.08	0.06

Notes: Prepared by Judith Banister. Figures in this table 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.

Source: China NBS, 2002, Vol. 2, p. 1569.

**Table 5. China Published Compensation Data for the Manufacturing Sector, 2002**

(Annual wages, earnings, or subsidy, in 2002 Chinese yuan or renminbi)

Category of workers	Total 2002 "earnings" or "wages" paid	Yearend 2002 number of employees	Average number of employees in 2002	Average 2002 "earnings" or "wages" per employee	Average 2002 living subsidy
Manufacturing "urban units"	334.39 billion yuan	29.81 million	(29.98 million)	11,152 yuan	
Of which:					
On-post urban manufacturing "staff and workers"	321.90 billion yuan	29.07 million	29.26 million	11,001 yuan	
"Other" urban manufacturing employment		0.74 million		17,237 yuan	
Not-on-post urban manufacturing "staff and workers"		9.13 million			2,213 yuan
Manufacturing village & town enterprises (TVEs)	489.22 billion yuan	70.87 million	(70.62 million)	(6,927 yuan)	
Of which:					
Large-scale manufacturing TVEs ( <i>guimo yi shang</i> )	168.94 billion yuan	19.05 million	(18.98 million)	(8,899 yuan)	

Notes: Prepared by Judith Banister. In the sources, remuneration for workers in urban manufacturing units, and for "other" urban manufacturing employees is called "earnings" (*laodong baochou*). But remuneration for on-post urban manufacturing staff and workers is called "wages" (*gongzi*).

For manufacturing TVEs, only the total 2002 expenditure for labor compensation costs is reported (*laodongzhe baochou*), but the average per employee is not directly reported.

The numbers in parenthesis are derived from other numbers reported in the table or in the sources. All figures for manufacturing "urban units" exclude self-employed individuals and small privately owned firms.

Sources: China NBS & Labour, 2003, pp. 29, 34, 46, 169, 171, 179, 230, 243, 249, 473.

*China Village and Town Enterprise Yearbook 2003*, pp. 130-131.

### Figure 3. China, Components of Urban Wage Statistics

From 1990 to 2004, the statistical concept of wage (*gongzi*) for on-post urban “staff and workers” includes the following components, whether the employees receive the wage or benefit in money or in kind, and whether or not they are taxable items:

- Monthly or annual salary income (including base wage and additions based on position, seniority, wage scale, etc.)
- Wage during on-the-job training, probationary period
- Employee income paid on an irregular basis
- Hourly payment for work performed
- Piece-work 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, etc.)
- 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 wage and paid directly by enterprise to government
- Social insurance funds (pension, medical, unemployment insurance funds and housing purchase fund) that are deducted from employee wage and paid by 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
- Wage 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 compensation, even if it is not spelled out in the regulations

Note: Prepared by Judith Banister.

Source: Wage reporting instructions, 2004, pp. 2-1 to 2-5 (see bibliography).

**Table 6. China, Urban Manufacturing Employment and Wages by Sub-sector, 2002**

(Average 2002 wages in yuan)

Urban manufacturing sub-sector	Yearend 2002 urban employees	Average 2002 earnings per employee
Textile industry	2,841,565	7,268
Timber, bamboo, natural fiber & straw products	267,666	7,339
Food processing	977,439	7,965
Nonmetal mineral products	2,116,034	8,123
Papermaking and paper products	592,400	8,668
Other manufacturing	601,416	8,781
Furniture manufacturing	180,484	8,881
Garments and other fiber products	1,336,191	9,066
Leather, furs, down and related products	578,590	9,108
Beverage manufacturing	740,250	9,619
Rubber products	377,633	10,055
Food products manufacturing	621,757	10,064
Metal products	897,455	10,075
Plastic products	606,800	10,131
Chemical raw materials & products	2,213,256	10,359
Cultural, educational, and sport products	294,636	10,390
Special purpose equipment manufacturing	1,400,594	10,406
Ordinary machinery manufacturing	1,921,315	10,668
Printing & record medium reproduction	493,497	10,863
Chemical fibers manufacturing	263,378	11,404
Electric equipment and machinery	1,441,399	12,405
Smelting & pressing of nonferrous metals	755,646	12,491
Instruments & stationery machine tools	464,762	12,720
Medical & pharmaceutical products	844,857	13,207
Transportation equipment manufacturing	2,319,421	14,409
Smelting & pressing of ferrous metals	1,900,648	15,032
Petroleum processing and coking products	565,505	17,357
Electronics and telecommunications	1,623,783	17,636
Tobacco processing	233,485	23,744

Notes: These data refer only to urban manufacturing employment and wages, totaling 29.47 million million urban manufacturing workers. Rural manufacturing workers in each sub-sector undoubtedly have lower earnings than shown here. These earnings figure(*laodong baochou*) do not include required employer social insurance payments or other non-wage labor costs.

Source: China NBS & Labour, 2003, pp. 218-225.

**Table 7. China, Manufacturing Labor Compensation in Dollars, 2002**

(At prevailing commercial exchange rate, and in international PPP dollars)

Category of Manufacturing workers	Average number of employees in 2002	Average 2002 "earnings" or "wages" per employee	Total labor compensation per employee 2002	Annual compensation per employee US dollars	Annual compensation per employee PPP dollars	Monthly compensation per employee in yuan	Monthly compensation per employee US dollars	Monthly compensation per employee PPP dollars	Hourly compensation per employee in yuan	Hourly compensation per employee US dollars	Hourly compensation per employee PPP dollars
Manufacturing "urban units"	29.98 million	11,152 yuan	14,721-17,620 yuan	\$ 1,778-2,128	PPP\$ 8,267-9,895	1,227-1,468 yuan	\$ 148-\$177	PPP\$ 689-825	7.53-9.01 yuan	\$ 0.91-\$1.09	PPP\$ 4.23-5.06
Of which:											
On-post urban manufacturing staff & workers	29.26 million	11,001 yuan	14,521-17,382 yuan	\$ 1,754-\$2,099	PPP\$ 8,155-9,761	1,210-1,448 yuan	\$ 146-\$175	PPP\$ 680-813	7.43-8.89 yuan	\$ 0.90-\$1.07	PPP\$ 4.17-4.99
"Other" urban manufacturing employment	0.72 million	17,237 yuan	22,753-27,234 yuan	\$ 2,748-\$3,289	PPP\$ 12,778-15,295	1,896-2,270 yuan	\$ 229-\$274	PPP\$ 1,065-1,275	11.64-13.93 yuan	\$ 1.41-\$1.68	PPP\$ 6.54-7.82
Manufacturing village & town enterprises (TVEs)	70.62 million	6,927 yuan	6,927-8,035 yuan	\$ 837-\$970	PPP\$ 3,890-4,513	577 - 670 yuan	\$ 70 - \$ 81	PPP\$ 324-376	3.46-4.02 yuan	\$ 0.42-\$0.49	PPP\$ 1.95-2.26
Of which:											
Large-scale manufacturing TVEs	18.98 million	8,899 yuan	8,899-10,323 yuan	\$ 1,075-\$1,247	PPP\$ 4,998-5,797	742 - 860 yuan	\$ 90 - \$ 104	PPP\$ 416-483	4.45 - 5.16 yuan	\$ 0.54-\$0.62	PPP\$ 2.50-2.90
All China manufacturing urban units + TVEs	100.61 million	8,186 yuan	9,250-10,892 yuan	\$ 1,117-\$1,315	PPP\$ 5,195-6,117	771-908 yuan	\$ 93 - \$ 110	PPP\$ 433-510	4.68-5.51 yuan	\$ 0.56-\$0.67	PPP\$ 2.63-3.09

Notes: Prepared by Judith Banister. First columns are from Table 5. Total labor compensation for urban workers is 1.32-1.58 times the wage, and for TVE workers is 1.00-1.16 times the wage. Commercial exchange rate is 8.28 yuan = US\$ 1. To calculate international Purchasing Power Parity (PPP) dollars, multiply dollars at commercial exchange rate by 4.65. Hourly compensation is calculated assuming that urban manufacturing employees perform 1,955 actual hours of work per year, and TVE workers 2,000 hours per year. See text for detail.

Sources: Table 4; China NBS & Labour, 2003, pp. 29, 34, 46, 169, 171, 179, 230, 249, 473; *China Village and Town Enterprise Yearbook 2003*, pp. 130-131; World Bank, 2003, pp. 252-253.



Table 8. China, Compensation of Urban Manufacturing Workers, Yangtze Delta Provinces and Guangdong, 2002

Province	Manufacturing employees in urban units (millions)	Reported 2002 labor compensation (yuan)	Reported annual labor compensation		Per month, from reported annual labor compensation			Per hour, from reported annual labor compensation		
			US \$	PPP US \$	yuan	US \$	PPP US \$	yuan	US \$	PPP US \$
Shanghai municipality	1.31	21,957	\$2,645	PPP\$ 12,301	1,830	\$220	PPP\$ 1,025	9.34	\$ 1.13	PPP\$ 5.23
Zhejiang province	0.99	13,435	\$1,619	PPP\$ 7,527	1,120	\$135	PPP\$ 627	5.27	\$ 0.69	PPP\$ 3.20
Jiangsu province	2.27	11,731	\$1,413	PPP\$ 6,572	978	\$118	PPP\$ 548	4.99	\$ 0.60	PPP\$ 2.80
Guangdong province	2.55	14,958	\$1,802	PPP\$ 8,380	1,247	\$150	PPP\$ 698	6.37	\$ 0.77	PPP\$ 3.57

Labor compensation below is adjusted for social insurance and housing fund payments by companies to city governments and for other labor costs:

Province	Manufacturing employees in urban units (millions)	Adjusted 2002 labor compensation (yuan)	Adjusted annual labor compensation		Adjusted monthly labor compensation			Adjusted Hourly labor compensation		
			US \$	PPP US \$	yuan	US \$	PPP US \$	yuan	US \$	PPP US \$
Shanghai municipality	1.31	28,983 - 34,692	\$ 3,500 - \$ 4,190	PPP\$ 16,277 - 19,483	2,415 - 2,891	\$ 292 - \$ 349	PPP\$ 1,356 - 1,624	14.83 - 17.75	\$ 1.79 - \$ 2.14	PPP\$ 8.33 - 9.97
Zhejiang province	0.99	17,734 - 21,227	\$ 2,142 - \$ 2,564	PPP\$ 9,959 - 11,921	1,478 - 1,769	\$ 178 - \$ 214	PPP\$ 830 - 993	9.07 - 10.86	\$ 1.10 - \$ 1.31	PPP\$ 5.09 - 6.10
Jiangsu province	2.27	15,485 - 18,535	\$ 1,870 - \$ 2,239	PPP\$ 8,696 - 10,409	1,290 - 1,545	\$ 156 - \$ 187	PPP\$ 725 - 867	7.92 - 9.48	\$ 0.96 - \$ 1.15	PPP\$ 4.45 - 5.32
Guangdong province	2.55	19,745 - 23,634	\$ 2,385 - \$ 2,854	PPP\$ 11,088 - 13,273	1,645 - 1,969	\$ 199 - \$ 238	PPP\$ 924 - 1,106	10.10 - 12.09	\$ 1.22 - \$ 1.46	PPP\$ 5.67 - 6.79

Notes: Prepared by Judith Banister. Hourly wage estimates were calculated assuming 1,955 hours worked per year by the average employee.

The average annual labor compensation data refer to employees of urban manufacturing units in 2002.

Sources: China NBS & Labour, 2003, p. 179; World Bank, 2003, p. 252.

Table 9. China, TVE Industry Labor Compensation, Yangtze Delta Provinces and Guangdong, 2002

Province	Midyear 2002 TVE industry (gongye) employees (millions)	Total 2002 TVE industry labor compensation (billion yuan)	2002 labor compensation per TVE industry employee (yuan)	Adjusted annual labor compensation		Adjusted monthly labor compensation			Adjusted hourly labor compensation		
				US \$	PPP US \$	yuan	US \$	PPP US \$	yuan	US \$	PPP US \$
Shanghai municipality	1.62	19.37 - 22.47	11,939 - 13,849	1,442 - 1,673	6,705 - 7,778	995 - 1,154	120 - 139	559 - 648	5.97 - 6.92	0.72 - 0.84	3.35 - 3.89
Zhejiang province	8.66	88.20 - 102.31	10,188 - 11,819	1,230 - 1,427	5,722 - 6,637	849 - 985	103 - 119	477 - 553	5.09 - 5.91	0.62 - 0.71	2.86 - 3.32
Jiangsu province	7.53	61.34 - 71.16	8,143 - 9,445	983 - 1,141	4,573 - 5,304	679 - 787	82 - 95	381 - 442	4.07 - 4.72	0.49 - 0.57	2.29 - 2.65
Guangdong province	8.23	68.71 - 79.71	8,345 - 9,681	1,008 - 1,169	4,687 - 5,437	695 - 807	84 - 97	391 - 453	4.17 - 4.84	0.50 - 0.58	2.34 - 2.72

Notes: Prepared by Judith Banister. Reported total labor compensation is multiplied by 1.00 - 1.16 to derive a range for estimated actual labor compensation. Non-city manufacturing workers are assumed to perform 2000 hours of actual work time per year.

Sources: *China Village and Town Enterprise Yearbook 2003*, pp. 156, 174; World Bank, 2003, p. 252.

**Table 10. China, Best Guess Estimates of China Manufacturing Labor Compensation in Dollars, 2002**

(At prevailing commercial exchange rate, and in international PPP dollars)

Category of Manufacturing workers	Average number of employees in 2002	Average 2002 "earnings" or "wages" per employee	Total labor compensation per employee 2002	Annual compensation per employee US dollars	Annual compensation per employee PPP dollars	Monthly compensation per employee in yuan	Monthly compensation per employee US dollars	Monthly compensation per employee PPP dollars	Hourly compensation per employee in yuan	Hourly compensation per employee US dollars	Hourly compensation per employee PPP dollars
Manufacturing "urban units"	29.98 million	11,152 yuan	17,152 yuan	\$2,071	9,632 PPP dollars	1,429 yuan	\$173	803 PPP dollars	8.77 yuan	\$1.06	4.93 PPP dollars
Of which:											
On-post urban manufacturing staff & workers	29.26 million	11,001 yuan	16,920 yuan	\$2,043	9,502 PPP dollars	1,410 yuan	\$170	792 PPP dollars	8.65 yuan	\$1.05	4.86 PPP dollars
"Other" urban manufacturing employment	0.72 million	17,237 yuan	26,511 yuan	\$3,202	14,888 PPP dollars	2,209 yuan	\$267	1,241 PPP dollars	13.56 yuan	\$1.64	7.62 PPP dollars
Manufacturing village & town enterprises (TVEs)	70.62 million	6,927 yuan	7,481 yuan	\$904	4,201 PPP dollars	623 yuan	\$75	350 PPP dollars	3.74 yuan	\$0.45	2.10 PPP dollars
Of which:											
Large-scale manufacturing TVEs	18.98 million	8,899 yuan	9,611 yuan	\$1,161	5,397 PPP dollars	801 yuan	\$97	450 PPP dollars	4.81 yuan	\$0.58	2.70 PPP dollars
All China manufacturing urban units + TVEs	100.61 million	8,186 yuan	10,363 yuan	\$1,252	5,820 PPP dollars	864 yuan	\$104	485 PPP dollars	5.24 yuan	\$0.63	2.94 PPP dollars

Notes: Prepared by Judith Banister. First columns are from Table 5. Total labor compensation for urban workers is 1.538 times the wage, and for TVE workers is 1.08 times the wage. Commercial exchange rate is 8.28 yuan = US\$ 1. To calculate international Purchasing Power Parity (PPP) dollars, multiply dollars at commercial exchange rate by 4.65. Hourly compensation is calculated assuming that urban manufacturing employees perform 1,955 actual hours of work per year, and TVE workers 2,000 hours per year. See text for detail.

Sources: Tables 5 & 7; China NBS & Labour, 2003, pp. 29, 34, 46, 169, 171, 179, 230, 249, 473; *China Village and Town Enterprise Yearbook 2003*, pp. 130-131; World Bank, 2003, pp. 252-253.

**Table 11. China, Indices of Average Real Wages of Urban Manufacturing Staff and Workers, 1979-2002**  
(Preceding year = 100)

Year	Urban total manufacturing staff & workers	Of which:		
		Urban state-owned units	Urban collective- owned units	Other urban ownership units
1979	109.1	107.4	104.4	
1980	105.4	105.2	107.5	
1985	104.1	103.4	106.9	117.9
1986	107.1	108.6	104.3	107.5
1987	102.2	102.6	100.8	107.6
1988	99.9	100.5	97.5	114.0
1989	95.5	95.6	94.3	100.9
1990	107.7	108.6	105.2	104.4
1991	105.1	104.1	105.4	112.9
1992	106.0	106.2	103.3	105.5
1993	109.4	106.2	105.4	101.1
1994	102.3	101.2	99.7	100.1
1995	103.3	101.6	103.5	101.8
1996	100.3	99.6	99.1	100.8
1997	102.0	100.5	99.7	102.3
1998	105.1	102.3	102.4	98.2
1999	111.8	110.5	107.6	110.3
2000	111.4	111.5	106.6	108.5
2001	110.9	111.3	105.7	107.9
2002	113.7	114.6	112.0	109.7

Source: China NBS & Labour, 2003, pp. 36, 39, 42, 45.

**Table 12. China, Average Annual Real Wages of Urban Manufacturing Staff and Workers, 1990-2002**

(In constant 2002 yuan and constant 2002 dollars)

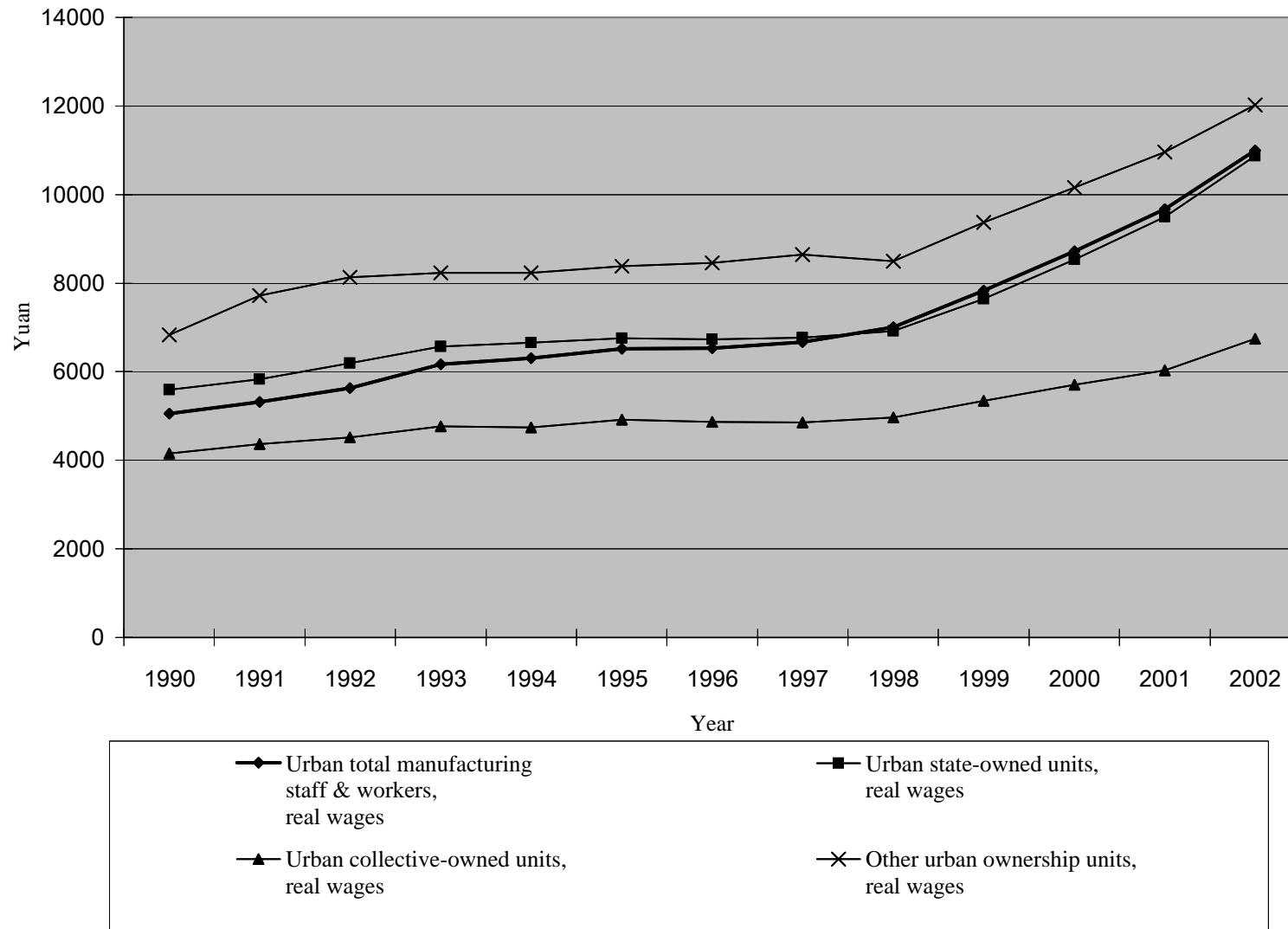
Year	Urban total manufacturing staff & workers, real wages			Of which								
				Urban state-owned units, real wages			Urban collective-owned units, real wages			Other urban ownership units, real wages		
	In 2002 yuan	In 2002 US dollars	In 2002 PPP dollars	In 2002 yuan	In 2002 US dollars	In 2002 PPP dollars	In 2002 yuan	In 2002 US dollars	In 2002 PPP dollars	In 2002 yuan	In 2002 US dollars	In 2002 PPP dollars
1990	5,058	611	2,841	5,599	676	3,144	4,149	501	2,330	6,833	825	3,837
1991	5,316	642	2,986	5,828	704	3,273	4,373	528	2,456	7,714	932	4,332
1992	5,635	681	3,165	6,189	748	3,476	4,517	546	2,537	8,138	983	4,571
1993	6,165	745	3,462	6,573	794	3,691	4,761	575	2,674	8,228	994	4,621
1994	6,307	762	3,542	6,652	803	3,736	4,746	573	2,666	8,236	995	4,625
1995	6,515	787	3,659	6,759	816	3,796	4,913	593	2,759	8,384	1,013	4,709
1996	6,534	789	3,670	6,731	813	3,780	4,868	588	2,734	8,452	1,021	4,746
1997	6,665	805	3,743	6,765	817	3,799	4,854	586	2,726	8,646	1,044	4,856
1998	7,005	846	3,934	6,921	836	3,887	4,970	600	2,791	8,490	1,025	4,768
1999	7,832	946	4,398	7,647	924	4,295	5,348	646	3,003	9,365	1,131	5,259
2000	8,724	1,054	4,900	8,527	1,030	4,789	5,701	689	3,202	10,161	1,227	5,706
2001	9,675	1,169	5,434	9,490	1,146	5,330	6,026	728	3,384	10,964	1,324	6,157
2002	11,001	1,329	6,178	10,876	1,314	6,108	6,749	815	3,790	12,027	1,453	6,754

Notes: Prepared by Judith Banister.

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

Sources: Table 11; China NBS & Labour, 2003, pp. 34-45.

**Figure 4. China, Average Real Wages of Urban Manufacturing Staff and Workers, 1990-2002**  
(In constant 2002 yuan)



Source: Table 12.

## 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 ren yuan*

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