

NON-CONFIDENTIAL
TAB 2

Labor costs of manufacturing employees in China: an update to 2003-04

While total hourly compensation costs for manufacturing workers increased more rapidly in China than in the United States between 2002 and 2004, hourly compensation per employee in China continued to be 3 percent of the level in the United States

Erin Lett and
Judith Banister

China's manufacturing industry is increasingly active in world trade: China's share of total world manufactures exports was 8 percent in 2004, about the same share as Japan in that year, and up from 2 percent in 1990.¹ In terms of employment, China's manufacturing industry is the largest in the world, employing more manufacturing workers than the Group of Seven (G7) industrial countries combined.² With the emergence of Chinese products on the international market, there has been increasing interest in the statistics of China's manufacturing industry, particularly for hourly compensation costs (total labor costs to employers). This article updates the 2002 compensation estimates for total Chinese manufacturing, first published in an August 2005 article in the *Monthly Labor Review*, with data for 2003 and 2004.³

While hourly compensation costs in China's manufacturing sector increased rapidly between 2002 and 2004, average hourly compensation in China continued to be a small fraction of that found in many of China's largest trade partners. For example, the average hourly manufacturing compensation estimate for China in 2004 was \$0.67, about 3 percent of the average hourly compensation costs of production workers in the United States for the same year.⁴ (See chart 1.) This percentage is virtually unchanged from the 2002 estimate. In 2004, employees in China's urban areas continued to be compensated at a higher rate than those employed in town and village en-

terprises (TVES),⁵ \$1.19 versus \$0.45. (See table 1.) The gap in labor costs between the two areas increased slightly from 2002 to 2004.

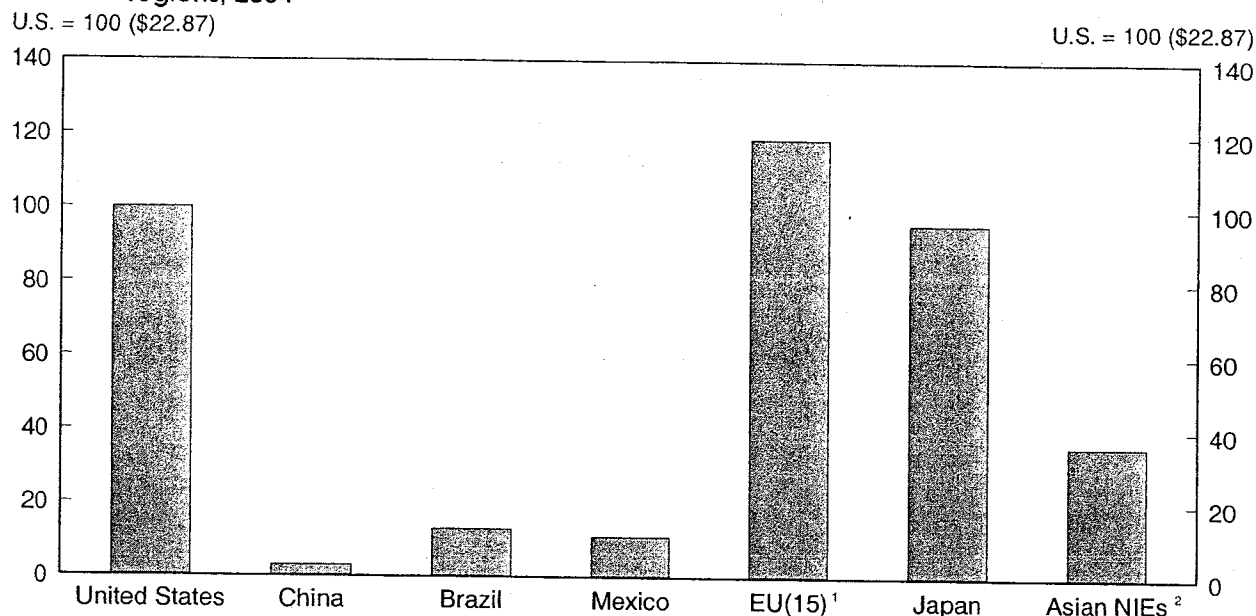
The hourly compensation cost measures presented in this article are estimates of employers' costs to hire an hour of labor; they are not estimates of worker income. It should also be noted that the changes over time in hourly compensation costs are changes in employers' costs at official exchange rates and not changes in workers' real income. Total hourly compensation, because it takes account of employer payments into funds for the benefit of workers (in China, payments to pension, medical, and housing funds, and additional employee welfare costs are not included in earnings), is a broader concept than either total direct earnings or spendable earnings.

Besides updating the hourly compensation costs comparisons published last year, this article also provides updates to 2004 of China's statistics on manufacturing urban real earnings and earnings for urban manufacturing subsectors that also were included in the previous article.

Sources and methods

The sources and methods used to update the compensation costs estimates in this report are the same as in the August 2005 article. Employment and earnings data for the various categories of workers come from the annual yearend statistical reporting system. In China, each enterprise is re-

Erin Lett is an economist in the Division of Foreign Labor Statistics, Bureau of Labor Statistics. Judith Banister is the Director of Global Demographics of The Conference Board in New York, Beijing, Hong Kong, and Brussels. She is the former head of the International Programs Center at the U.S. Census Bureau.
E-mail: Lett.Erin@bls.gov or Judith.Banister@conference-board.org

Chart 1. Average hourly compensation costs of manufacturing workers, selected economies and regions, 2004

¹ EU(15) refers to European Union member countries prior to the expansion to 25 countries on May 1, 2004.

² Asian NIEs refer to Newly Industrialized Economies of Hong Kong SAR, Korea, Singapore, and Taiwan.

SOURCES: Bureau of Labor Statistics, "International comparisons of hourly compensation costs for production workers in manufacturing, 2004," November 18, 2005. Available on the Internet at <http://www.bls.gov/fls/home.htm>. For China, data are from this article and are not from the BLS series. The data for China refer to all employees rather than production workers.

Table 1. Estimated labor compensation costs of manufacturing employees in China, 2003 and 2004

Category of manufacturing workers	Average number of employees (in millions)	Average earnings per employee (in yuan)	Annual compensation per employee		Monthly compensation per employee		Hourly compensation per employee	
			yuan	U.S. dollars	yuan	U.S. dollars	yuan	U.S. dollars
2003								
Total for manufacturing urban units and TVEs ¹	101.57	8,989	11,409	\$1,378	951	\$115	5.17	\$0.62
Manufacturing urban units	² 29.77	12,671	19,488	2,354	1,624	196	8.87	1.07
Onpost urban manufacturing staff and workers	28.98	12,496	19,219	2,321	1,602	193	8.74	1.06
Other urban manufacturing employment	² 7.79	19,030	29,268	3,535	2,439	295	13.32	1.61
Manufacturing TVEs ¹	² 71.80	7,462	8,059	973	672	81	3.63	.44
2004								
Total for manufacturing urban units and TVEs ¹	104.49	9,635	12,298	1,485	1,025	124	5.51	.67
Manufacturing urban units	² 30.29	14,251	21,918	2,647	1,827	221	9.86	1.19
Onpost urban manufacturing staff and workers	29.40	14,033	21,583	2,607	1,799	217	9.71	1.17
Other urban manufacturing employment	² 8.89	21,473	33,025	3,989	2,752	332	14.86	1.80
Manufacturing TVEs ¹	² 74.20	7,751	8,371	1,011	698	84	3.73	.45

¹ TVEs refer to town and village enterprises.

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

NOTES: Total labor compensation for urban workers is 1.538 times earnings, and for TVE workers is 1.08 times earnings. U.S. dollars calculated at prevailing commercial exchange rate: 8.28 yuan = US \$1. Hourly compensation is calculated assuming that urban manufacturing employees performed 2,198 and 2,222 actual hours of work per year in 2003 and 2004, respectively. TVE workers are assumed to have performed 2,219 and 2,243 hours per year in 2003 and 2004, respectively.

SOURCES: Judith Banister, "Manufacturing earnings and compensation in China," *Monthly Labor Review*, August 2005, p. 25. Data for 2003 are

from China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2004* (Beijing: China Statistics Press, 2004), pp. 179, 183, 272, and 278; China Ministry of Agriculture, China TVE Yearbook Editorial Committee, editors, *China Village and Town Enterprise Yearbook 2004* [in Chinese] (Beijing: China Agriculture Publishing House, 2004), pp. 102 and 104. Data for 2004 are from China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2005* (Beijing: China Statistics Press, 2005), pp. 103, 191, 195, 284, 290. China, Ministry of Agriculture, China TVE Yearbook Editorial Committee, editors, *China Village and Town Enterprise Yearbook 2005*. [in Chinese] (Beijing: China Agriculture Publishing House, 2005), pp. 108 and 110.

The Bureau of Labor Statistics (BLS) has been a leader in compiling international comparisons of hourly compensation of manufacturing workers, currently covering 32 countries. Despite its large and growing importance in world manufacturing, China has not been included in the comparisons because of difficulties in obtaining and interpreting that country's data and because of concerns about the quality of the data, as described in detail in the *Monthly Labor Review* articles by Judith Banister cited in this report. BLS does not plan to include China in its regular comparisons of hourly compensation costs at this time. Because of the widespread interest in expanded country coverage, BLS is considering providing data on China, along with data on some other countries, the quality of whose data is problematic, but in a separate format with appropriate annotations. BLS will continue to monitor China's data, and as better data become available, China could be moved into the regular comparisons series.

Division of Foreign Labor Statistics, Bureau of Labor Statistics

quired to report employment and earnings data based on the entity's "labor situation" during the previous year and at the previous yearend. Urban, or city, data are the responsibility of the Ministry of Labor and Social Security, while rural and town data are produced by the Ministry of Agriculture. The employment and earnings figures from these two sources are combined to construct an estimate of labor costs in China's manufacturing industry.⁶

For the original 2002 estimate of hourly compensation costs, an urban annual hours worked figure was derived from the Ministry of Labor's labor force survey. First, a weekly hours worked estimate was calculated by averaging two published figures which referenced a week in both the spring and autumn of 2002. Then, the weekly figure was adjusted to an annual basis using an estimate of the average number of weeks worked during the year by urban manufacturing employees. For 2003 and 2004, hours data for the spring reference period were not published. Therefore, for this update, the estimates of hours worked by urban employees are based on changes in the number of hours worked in the autumn reference periods. Because there are no published data to update the estimate of hours worked by TVE manufacturing employees, the percentage changes used for urban areas have been applied to the 2002 TVE annual hours worked estimate.

In order to estimate total compensation costs for China's manufacturing employees, additional employer payments for social benefits such as workers' compensation, unemployment insurance, and old-age pension funds must be added to the published earnings figures. China's Ministry of Labor conducted a survey of urban establishments with reference to 2002 that collected relevant compensation data for the calculation of social benefits as a percentage of total earnings. The results of this survey were used to construct the original 2002 estimates of China's manufacturing labor costs.

A more recent survey has not been conducted, so the percentage is held constant for the 2003 and 2004 estimates. However, as noted in the original article, there is evidence that the amount of required employer contributions has been increasing over time. Therefore, it is possible that legally required employer contributions to social benefits funds have increased since 2002, and the total compensation costs figures provided in this article are understated.

The estimates of Chinese manufacturing compensation costs presented in this article may not be representative of all workers in manufacturing industries because it is likely that certain groups are not fully captured in the annual administrative data collected and published by China's National Bureau of Statistics, specifically migrant workers and persons employed in small-scale and private establishments and the informal sector.⁷

In this article, data for China are converted into U.S. dollars using commercial market exchange rates. For the entire 2002–04 time period, the Chinese yuan was pegged to the U.S. dollar at 8.28 yuan per dollar. In July 2005, China revalued the yuan, appreciating it by about 2 percent. In addition, instead of being pegged solely to the U.S. dollar, the yuan is now allowed to float within a narrow 0.3 percent band against a basket of foreign currencies in daily trading. Since its revaluation, the yuan has continued to slowly appreciate against the dollar.⁸ After 2004, this appreciation will lead to larger percent increases in compensation costs measured in U.S. dollars than those measured in the national currency.

Total hourly compensation in 2003 and 2004

While employees in China's manufacturing sector are compensated at a fraction of the level of production workers in the United States, Chinese compensation costs in current U.S. dollars have been increasing at a faster rate. Between 2002 and 2004, total hourly compensation costs of manufacturing employees in China increased nearly 18 percent, from \$0.57 to \$0.67. (See table 2.) In comparison, total hourly compensation costs for manufacturing production workers in the United States grew about 7 percent over the same period from \$21.40 to \$22.87.⁹

One of the prominent features of compensation in China is the difference in labor costs between urban and rural areas. In 2004, total hourly compensation costs of TVE (rural) manufacturing employees was \$0.45. Urban manufacturing employees were compensated more than 2.6 times this level at \$1.19 per hour. The gap between urban and rural compensation costs has increased since 2002 when employees in urban units were compensated at about 2.3 times the rate of their rural counterparts.

The following two sections update other elements included in the August 2005 article in the *Review*. The first

Table 2. Estimated labor compensation costs of manufacturing employees in China, 2002–04

Category of manufacturing workers	Hourly compensation per employee					
	yuan			U.S. dollars		
	2002	2003	2004	2002	2003	2004
Total for manufacturing urban units and <i>tves</i> ¹	4.73	5.17	5.50	\$0.57	\$0.62	\$0.67
Manufacturing urban units	7.87	8.87	9.86	.95	1.07	1.19
Onpost urban manufacturing staff and workers	7.76	8.74	9.71	.94	1.06	1.17
Other urban manufacturing employment	12.17	13.32	14.86	1.47	1.61	1.80
Manufacturing <i>tves</i> ¹	3.40	3.63	3.73	.41	.44	.45

¹ *tves* refer to town and village enterprises.
 SOURCES: Table 1 and Judith Banister, "Manufacturing earnings and compensation in China," *Monthly Labor Review*, August 2005, p. 28.

section covers trends in real (price-adjusted) earnings for China's urban manufacturing sector, and the second one presents earnings data for urban manufacturing subsectors. The reader should note that these sections cover only earnings, not total labor compensation costs, and that the data are not converted into U.S. dollars. Total compensation data are not available for China's manufacturing subsectors.

Urban manufacturing earnings over time

In order to compare earnings over time within China, changes in prices should be taken into account. China's Ministry of Labor published indices of average real wages for urban manufacturing workers until 2002. This series has been extended with data through 2004 using China's Consumer Price Index for urban areas to deflate average nominal earnings. (See chart 2 and table 3.) Average annual real earnings have increased every year since 1990, with the 1999–2004 time period showing relatively rapid increases.

Earnings data for urban subsectors

China's Ministry of Labor publishes data on yearend employment and average annual earnings per urban manufacturing employee for 29 manufacturing subsectors. Data on weekly hours worked and employer contributions to social benefit funds are not available for individual subsectors. Absent these data, total hourly compensation costs were not calculated for manufacturing subindustries.

Average annual earnings vary considerably among the many urban subsectors. (See table 4.) Persons employed in tobacco processing, the highest-paying industry, earn nearly four times the amount of their counterparts in the timber and bamboo products and textiles industries. Urban employment

remained nearly constant between 2002 and 2004 in the six industries with average annual earnings below 11,000 yuan in 2004 (timber and bamboo products, textiles, food processing, nonmetallic mineral products, furniture, and leather products). Over the same time period, urban employment grew about 6 percent in the six industries with average annual earnings above 16,000 yuan in 2004 (tobacco processing, petroleum processing, ferrous metal smelting, electronics and telecommunication equipment, transport equipment, and instruments and office machinery).

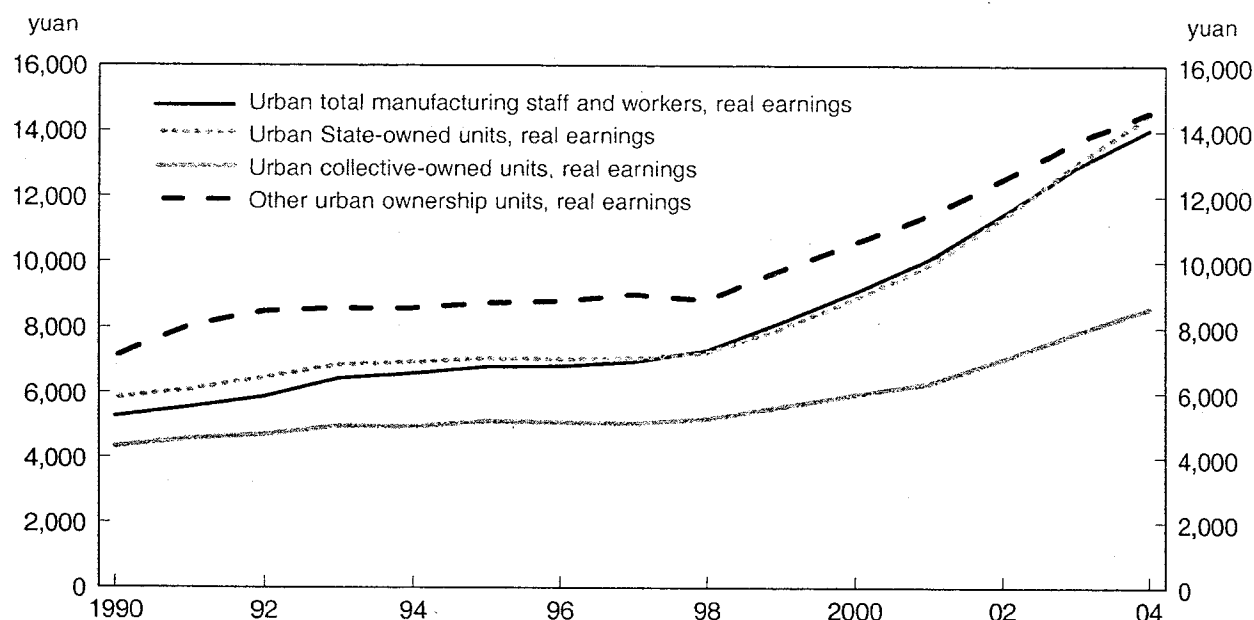
Future developments

In 2005, China's National Bureau of Statistics conducted the First National Economic Census. The Census reportedly collected data on groups previously excluded from published estimates, including earnings of those employed in individual and household manufacturing establishments. In addition, the Census questionnaire included questions on employer payments to labor and unemployment insurance, old age and medical insurance, and welfare funds. Using data from the Census, BLS may be able to prepare more precise estimates of hourly compensation costs in China's manufacturing sector in the future.

Notes

ACKNOWLEDGMENTS: As coauthor of this article, Judith Banister worked under contract to the U.S. Department of Labor, Bureau of Labor Statistics. The authors thank Constance Sorrentino and Chris Sparks for their comments on previous drafts of this article; Song Jintao and Xing Shuqin in Beijing for procuring and transmitting Chinese sources; and Kit Li and Apinait Amranand for verifying the accuracy of the data.

¹ *International Trade Statistics 2005*, World Trade Organization, on the Internet at http://www.wto.org/english/res_e/statis_e/its2005_e/its05_bysector_e.pdf.

Chart 2. Average annual real earnings of urban manufacturing staff and workers in China, 1990–2004

SOURCE: China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers. *China Labor Statistical Yearbook 2005* (Beijing: China Statistics Press, 2005), p.56.

Table 3. Average annual real earnings and percent change of urban manufacturing staff and workers in China, 1990–2004

(In constant 2004 yuan)

Year	Urban manufacturing staff and workers							
	Total		Urban State-owned units		Urban collective-owned units		Other urban ownership units	
	Average real earnings	Percent change	Average real earnings	Percent change	Average real earnings	Percent change	Average real earnings	Percent change
1990	5,272	7.7	5,835	8.6	4,324	5.2	7,122	4.4
1991	5,541	5.1	6,075	4.1	4,558	5.4	8,041	12.9
1992	5,874	6.0	6,451	6.2	4,708	3.3	8,483	5.5
1993	6,426	9.4	6,851	6.2	4,962	5.4	8,576	1.1
1994	6,574	2.3	6,934	1.2	4,947	-3	8,585	.1
1995	6,791	3.3	7,044	1.6	5,120	3.5	8,739	1.8
1996	6,811	.3	7,016	-4	5,074	-9	8,809	.8
1997	6,947	2.0	7,051	.5	5,059	-3	9,012	2.3
1998	7,301	5.1	7,214	2.3	5,181	2.4	8,850	-1.8
1999	8,163	11.8	7,971	10.5	5,574	7.6	9,761	10.3
2000	9,094	11.4	8,888	11.5	5,942	6.6	10,591	8.5
2001	10,085	10.9	9,892	11.3	6,281	5.7	11,427	7.9
2002	11,466	13.7	11,336	14.6	7,035	12.0	12,536	9.7
2003	12,908	12.6	13,016	14.8	7,850	11.6	13,700	9.3
2004	14,033	8.7	14,486	11.3	8,598	9.5	14,569	6.3

NOTES: This table includes only the reported annual earnings, which have not been adjusted to include other labor compensation costs such as required employer payments to municipal social insurance systems. Published data for real earnings are not available for 2003 and 2004. Annual percent changes for these years have been calculated using China's Consumer Price Index for Urban Areas.

SOURCE: China National Bureau of Statistics and China Ministry of

Labor and Social Security, compilers. *China Labor Statistical Yearbook 2005*, (Beijing: China Statistics Press, 2005), p. 56. China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers. *China Labor Statistical Yearbook 2005*, (Beijing: China Statistics Press, 2005), pp. 46, 49, 52, 55, 56 and China National Bureau of Statistics, compilers, *China Statistical Yearbook 2005*, (Beijing, China Statistics Press, 2005), p.301.

Table 4. Urban manufacturing employment and earnings by subsector in China, 2002–04

Urban manufacturing subsector	Urban employees (yearend)			Average annual earnings per employee (in yuan)		
	2002	2003	2004	2002	2003	2004
Total manufacturing in urban units	29,807,492	29,804,919	30,508,231	11,152	12,671	14,251
Timber, bamboo, natural fiber, and straw products .	267,666	294,322	312,231	7,339	7,879	8,801
Textile industry	2,841,565	2,718,148	2,654,621	7,268	8,079	9,038
Food processing	977,439	949,907	981,935	7,965	8,727	9,607
Nonmetallic mineral products	2,116,034	2,092,946	2,095,421	8,123	9,173	10,394
Furniture manufacturing	180,484	189,110	231,098	8,881	9,501	10,808
Leather, furs, down, and related products	578,590	635,176	703,199	9,108	9,883	10,964
Papermaking and paper products	592,400	574,859	561,654	8,668	10,067	11,232
Other manufacturing	601,416	536,188	563,466	8,781	10,049	11,334
Garments and other fiber products	1,336,191	1,390,683	1,671,406	9,066	10,090	11,381
Beverage manufacturing	740,250	749,406	710,610	9,619	10,746	12,174
Cultural, educational, and sport products	294,636	332,826	353,672	10,390	11,432	12,183
Food products manufacturing	621,757	657,164	673,822	10,064	11,157	12,360
Metal products	897,455	809,559	854,134	10,075	11,073	12,451
Rubber products	377,633	375,154	387,495	10,055	11,024	12,470
Plastic products	606,800	629,700	664,683	10,131	11,317	12,584
Printing and record medium reproduction	493,497	477,071	454,347	10,863	11,707	13,409
Chemical raw materials and products	2,213,256	2,172,951	2,117,999	10,359	12,129	13,729
Chemical fibers manufacturing	263,378	204,733	207,241	11,404	12,562	13,804
Special purpose equipment manufacturing	1,400,594	1,661,521	1,627,336	10,406	12,040	13,985
Ordinary machinery manufacturing	1,921,315	1,884,852	1,900,869	10,668	12,777	14,549
Electric equipment and machinery	1,441,399	1,414,331	1,568,808	12,405	13,435	14,797
Smelting and pressing of nonferrous metals	755,646	790,666	789,552	12,491	13,661	15,285
Medical and pharmaceutical products	844,857	891,993	896,412	13,207	14,556	15,652
Instruments and stationery machine tools	464,762	553,854	581,439	12,720	15,044	16,543
Transportation equipment manufacturing	2,319,421	2,316,516	2,314,390	14,409	16,313	18,485
Electronics and telecommunications	1,623,783	1,825,847	2,054,772	17,636	18,922	20,428
Smelting and pressing of ferrous metals	1,900,648	1,900,466	1,845,205	15,032	17,989	21,074
Petroleum processing and coking products	565,505	525,522	507,916	17,357	20,733	22,951
Tobacco processing	233,485	222,476	200,184	23,744	27,143	34,688

NOTES: These data refer only to urban manufacturing employment and earnings. The subsectors listed here refer to 29.47 million, 29.78 million, and 30.49 million of China's urban manufacturing workers in 2002, 2003, and 2004, respectively. Rural manufacturing workers in each subsector undoubtedly have lower earnings than shown here. These earnings figures do not include required employer social insurance payments or other nonwage labor costs.

SOURCE: Data for 2002 are from China National Bureau of Statistics

and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2003*, (Beijing, China Statistics Press, 2003), pp. 179 and 218–25. Data for 2003 are from China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2004*, (Beijing, China Statistics Press, 2004), pp. 187–210. Data for 2004 are from China National Bureau of Statistics and China Ministry of Labor and Social Security, compilers, *China Labor Statistical Yearbook 2005*, (Beijing, China Statistics Press, 2005), pp. 199–264.

² Chinese data are from China National Bureau of Statistics and China Ministry of Labor, compilers, *China Labor Statistical Yearbook 2005* (Beijing, China Statistics Press, 2005). G7 data are from *Comparative Civilian Labor Force Statistics, 10 Countries, 1960–2005* (Bureau of Labor Statistics, April 5, 2006); on the Internet at <http://www.bls.gov/fls/lfcompendium.pdf>.

³ For the original hourly compensation estimate for 2002 and a detailed explanation of the methods used, see Judith Banister, "Manufacturing Employment and Compensation in China," on the Internet at <http://www.bls.gov/fls/chinareport.pdf> or two *Monthly Labor Review* articles based on this report: Judith Banister, "Manufacturing employment in China," *Monthly Labor Review*, July 2005, pp. 11–29 on the Internet at <http://www.bls.gov/opub/mlr/2005/07/art2full.pdf> and Judith Banister, "Manufacturing earnings and compensation in China," *Monthly Labor Review*, August 2005, pp. 22–40 on the Internet at <http://www.bls.gov/opub/mlr/2005/08/art3full.pdf>.

⁴ China's compensation data are for all employees while compensation data for other countries in this report only refer to production workers. Because nonproduction workers in manufacturing often are compensated at higher rates than their production worker counterparts, the inclusion of nonproduction workers in China's data may affect comparability with other

countries.

⁵ Town and village enterprise (tve) data published by the Ministry of Agriculture are used in this article to represent employment and earnings in rural establishments. For a detailed explanation of why tve data are used, see Banister, "Manufacturing employment in China," pp. 11–29.

⁶ See Banister, "Manufacturing earnings and compensation in China," pp. 22–40, for a more detailed explanation of the sources and methods used in constructing estimates of compensation costs and for the limitations of published data from China.

⁷ See Banister, "Manufacturing employment in China," pp. 11–29 and Banister, "Manufacturing earnings and compensation in China," pp. 22–40 for more detailed explanations of the undercoverage of these groups in China's administrative data.

⁸ Federal Reserve historical exchange rate data for China is on the Internet at http://www.federalreserve.gov/RELEASES/H10/hist/dat00_ch.txt.

⁹ See "International comparisons of hourly compensation costs for production workers in manufacturing, 1975–2004," (Bureau of Labor Statistics, November 18, 2005), on the Internet at <http://www.bls.gov/fls/home.htm>.



keyword or company
Register Sign In

DECEMBER 13, 2004

NEWS: ANALYSIS & COMMENTARY

Get Four
Free Issues

Register

Subscribe to BW

Customer Service

Full Table of Contents
Cover Story
Special Report
Up Front
The Great Innovators
Editor's Memo
Readers Report
Corrections & Clarifications
Books
Technology & You
Economic Viewpoint

Business Outlook
News: Analysis & Commentary
In Biz This Week
Washington Outlook
Asian Business
European Business
Latin America
International Outlook
The Corporation
Science & Technology
Working Life
Entertainment
Sports Biz
Management
People
Marketing
Information Technology
Media
Finance
Personal Business
Footnotes
The Barker Portfolio
Inside Wall Street
Figures Of The Week
Editorials

INTERNATIONAL
EDITIONS
International -- Readers
Report
International -- Finance
International -- Editorials
International -- Int'l Figures
Of The Week

PREMIUM CONTENT

Just How Cheap is Chinese Labor?

Reliable data don't exist, but the U.S. government is doing some sleuthing

Every year the U.S. Bureau of Labor Statistics compares manufacturing labor costs in the U.S. with those of about 30 global rivals. Its latest report, on Nov. 18, showed that average hourly compensation of foreign factory workers rose 12% in 2003, measured in dollars, compared with 4% in the U.S.

But these statistics have a glaring omission: China. The BLS can't compare Chinese and U.S. factory labor costs because reliable statistics from the Asian giant don't exist. That makes it hard to assess China's competitive strength.

Now, the info deficit is starting to be remedied. This past summer, the BLS hired a Beijing-based American consultant, Judith Banister, to dig through China's mountain of incomplete and sometimes unreliable statistics. The goal: to calculate average manufacturing compensation in China in 2002 -- the last year for which data was available. *BusinessWeek* was given a preview of her findings, which she will present to the BLS later this month.

Her estimate? The cost of Chinese factory labor is a paltry 64 cents an hour. Although that figure is rough, since it's pieced together from sketchy statistics, it's still the most thorough estimate ever compiled. It includes both wages and employer contributions for benefits and social insurance. And it covers not just city factory workers, who get the most attention, but the more numerous rural and suburban factory workers as well. For comparison, hourly factory compensation in the U.S. in 2002 was \$21.11, and an average of \$14.22 in the 30 foreign countries covered by the existing BLS report.

How Banister came up with her estimate is a tale of patient data sleuthing. Since the BLS wanted to be able to replicate her numbers in the future, she relied solely on official, public data. So the Stanford University-educated demographer and former Census Bureau staffer started with China's *Labor Statistical Yearbook*. But it covers only 30 million factory workers, all in cities. And it covers wages only, not benefits and social insurance. To fill in the blanks, she had to unearth such hard-to-find data as Agriculture Ministry stats on rural factories. She and an assistant found crucial figures on social insurance contributions only by doggedly scanning hundreds of volumes in the bookstore of the Labor & Social Security Ministry.

WESTERN RATES

Banister concluded China has about 38 million city manufacturing workers. The 30 million on whom she found data earn an average \$1.06 an hour. Another roughly 71 million suburban and rural manufacturing workers earn an average 45 cents an hour, for a blended 64 cents. In the current BLS survey, Mexico's \$2.48 hourly compensation is the

STORY TOOLS

- Printer-Friendly Version
- E-Mail This Story

RELATED ITEMS

Graphic: Pay Gap

NEWS: ANALYSIS & COMMENTARY

Playing The Discount Game

A New Headache For The Credit-Card Biz

Wanted: One Tough Economic Team

Commentary: How To Prevent Another Vioxx

Commentary: CalPERS: Getting Back To Business

Just How Cheap is Chinese Labor?

Commentary: Quit While You're Ahead, Hank

TOP POP

1. Crit
2. Hey Ove
3. Ten 200
4. Star
5. Reli List Indi

Get Free I

MARKE

- DJIA
- S&P 500
- Nasdaq

Portfolio

Stock Lc

Enter na

MBA Insider

lowest.

BW MAGAZINE

- Get Four Free Issues
- Register
- Subscribe
- Customer Service

Because China's living costs are low, that 64 cents buys as much as \$2.96 in the U.S. Banister estimates inflation-adjusted pay in cities doubled from 1990 to 2002. (She thinks it rose outside cities, too, but won't guess how much.) She figures that between 1995 and 2002, factory jobs fell by at least 11 million in cities as state-owned enterprises shed workers, and rose some 5 million outside cities.

ONLINE FEATURES

- Book Reviews
- BW Video
- Columnists
- Interactive Gallery
- Newsletters
- Past Covers
- Philanthropy
- Podcasts
- Special Reports

Western companies shouldn't waltz into China expecting to pay 64 cents an hour. They usually locate in cities, where wages are higher, and hire skilled workers who earn more, says R. Mark Mechem, an adviser at the U.S.-China Business Council. Plus, Banister's figure for 2002 misses recent pay hikes. The BLS plans to scrutinize Banister's results over the next year. Before it includes China in its survey, the Chinese need to improve their counting. The Labor Ministry has begun a trial workforce survey based on random sampling, and may soon release results. Meanwhile, the BLS project is a start. Getting a grip on China's labor costs is vital. You can't run a modern economy without good data.

BLOGS

- Auto Beat
- Bangalore Tigers
- Blogspotting
- Brand New Day
- Byte of the Apple
- Economics Unbound
- Eye on Asia
- Fine On Media
- Green Biz
- Hot Property
- Investing Insights
- Management IQ
- NEXT: Innovation
- NussbaumOnDesign
- Tech Beat
- Working Parents

By Peter Coy in New York

BW MALL SPONSORED LINKS

Book Your Next Business Trip with Amtrak! Acela Express - Northeast Destinations - Convenient, Comfortable, and There When You Need Us.

Exchange Traded Funds iShares Funds - Brought to you by Barclays Global Investors

Invest with \$100 or Less - ShareBuilder Buy Stocks for \$4. No Minimum required to Open an Account. Open Your Account Now -- It's Easy

Wachovia Free Checking Open a Free Checking Account Online Today - It's Fast, Secure & Easy.

Try before you buy with optionsXpress Virtual Trade Practice trading before putting money on the line. It's just like investing but without the risk!

Buy a link now!

TECHNOLOGY

- J.D. Power Ratings
- Product Reviews
- Tech Stats
- Wildstrom: Tech Maven

Get BusinessWeek directly on your desktop with our **RSS feeds**.

Add BusinessWeek news to your Web site with our **headline feed**.

Click to buy an **e-print or reprint** of a *BusinessWeek* or BusinessWeek Online story or video.

To subscribe online to *BusinessWeek* magazine, please **click here**.

Learn more, go to the **BusinessWeekOnline home page**

▲ BACK TO TOP

AUTOS

- Home Page
- Auto Reviews
- Classic Cars
- Car Care & Safety
- Hybrids

INNOVATION & DESIGN

- Home Page
- Architecture
- Brand Equity
- Auto Design
- Game Room

SMALLBIZ

Smart Answers

Success Stories

Today's Tip

INVESTING

Investing: Europe

Annual Reports

BW 50

S&P Picks & Pans

Stock Screeners

Free S&P Stock Report

SCOREBOARDS

Hot Growth 100

Mutual Funds

Info Tech 100

S&P 500

B-SCHOOLS

Undergrad Programs

MBA Blogs

MBA Profiles

MBA Rankings

Who's Hiring Grads


BW EXTRAS


BW Digital

BW Mobile

BW Online Alerts

Dashboard Widgets

Podcasts 

RSS Feeds 

Reprints/ Permissions

Conferences

Research Services

Copyright 2004, by The McGraw-Hill Companies Inc. All rights reserved.
Terms of Use | Privacy Notice

Media Kit | Special Sections | MarketPlace | Knowledge Centers

The McGraw-Hill Companies

The China Syndrome

A five-dimension analytical model for deciding when (and when not) to purchase from the East.

by Mitchell Quint and Dermot Shorten

For one U.S. automotive supplier a few years ago, it seemed that purchasing components from China was the right thing to do — and quickly. Manufacturers in virtually every industry were setting up shop in China; to read about it in the business press, every venture paid off. The industrial manufacturer, though, discovered to its dismay that success in China is not a sure thing. Enticed by attractive price quotes, the manufacturer failed to make completely sure that its Chinese partners could live up to its technical and logistical requirements. When the Chinese suppliers struggled to meet production schedules, the manufacturer was forced to use expensive air-freight. Quality issues also surfaced; the suppliers lacked the skills to maintain process control and implement engineering changes. The combination of problems eroded the expected cost savings. Ultimately, the automotive supplier reduced its Chinese procurement effort.

With Western companies rushing to China to fill gaps or strengthen links across their supply chains,

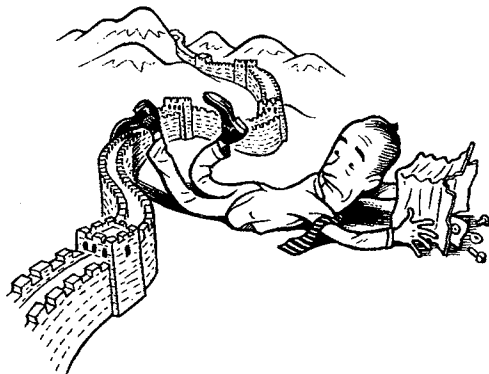
one particular part of their operations — procurement — deserves special scrutiny. If approached with a rigorous evaluation of product characteristics, Chinese component purchasing can be the right answer for optimal management of the supply chain. When not well planned and carefully analyzed, sourcing in China can be the source of woe.

Gold Rush

The China “gold rush” grew out of a dilemma. In recent years, when companies examined their P&Ls, most found that purchased material was the largest line item — typically 40 to 70 percent of the total cost of goods. In the face of relentless market pressure to keep prices down, procurement often became a prime target for cost reductions. But that well, for many companies, has begun to run dry. Thus, businesses are increasingly looking to nondomestic sources to meet cost reduction demands.

Asia, especially China, is the most apparent solution. It has the cheapest labor, a pro-business environment, a productive work force, and strong government support for keeping domestic manufacturing

Illustration by Lars Leetaru



operations as inexpensive as possible — a direct path to easy cost cutting.

The supply chain's headlong tilt toward China can be seen in the percentage share of supplier contracts awarded in the past six years. In 1998, at one U.S. auto manufacturer, U.S. and Canadian companies garnered 62 percent of all quotes and supplier contracts, and Asian (primarily Chinese) outfits only 4 percent. By 2002, the two regions were just about equal, with each enjoying about 30 percent of supplier contracts awarded.

This trend is not even near its peak yet. By 2008, auto and industrial products companies will more than double their percentage of spending on components and materials in low-cost countries (LCCs), according to a recent Booz Allen Hamilton survey of purchasing executives. Moreover, apparel companies, which currently spend 50 percent of their procurement dollars in LCCs, say that within four years, these countries will provide virtually all of their material and supply needs. (See Exhibit 1.) And for most companies, over half of the spending targeted for LCCs will be earmarked for China.

The Chinese experience can turn sour, though, when procurement managers fail to systematically assess the fit between the requirements for purchased components and the realities of the China-based supply chain. They can inadvertently increase their cost of operations and put revenue at risk — thereby compromising their profitability. Some commodities that are sourced in China, it turns out, can more wisely be procured from another low-cost region, or even from domestic sources.

Each of five critical dimensions

must be examined for every prospective purchase of components and materials in order for a company to determine whether purchasing from China is the best decision. These dimensions include, naturally, manufacturing cost, but they add in transportation efficiency, lead time and scheduling stability, product design, and technical capabilities.

Using this analysis, we have found, for example, that production tooling (such as injection-molded plastics and stamping dies, which are labor-intensive to manufacture and which have long product lead times) is perfect for Chinese procurement initiatives. By contrast, minimal labor requirements make China a bad bet for auto interior plastics and stamping, for example. Frequent product changes similarly rule the country out as a first choice for customized telecommunications equipment. Manufacturers in these industries would do better to consider low-labor-cost regions closer to home (such as Mexico for the U.S., or Eastern Europe for Western Europe), where they can realize a portion of the labor savings while maintaining tighter control on the supply chain.

Five Dimensions

The five-dimension analytical model readily leads procurement executives to a set of significant matters they need to consider when making sourcing decisions.

1. Manufacturing Cost. China can provide Western parts and materials buyers significant benefits in overhead and raw material costs. Total overhead rates in China vary significantly by supplier, but can be less than half of Western levels.

Chinese labor rates also are extremely attractive relative to those

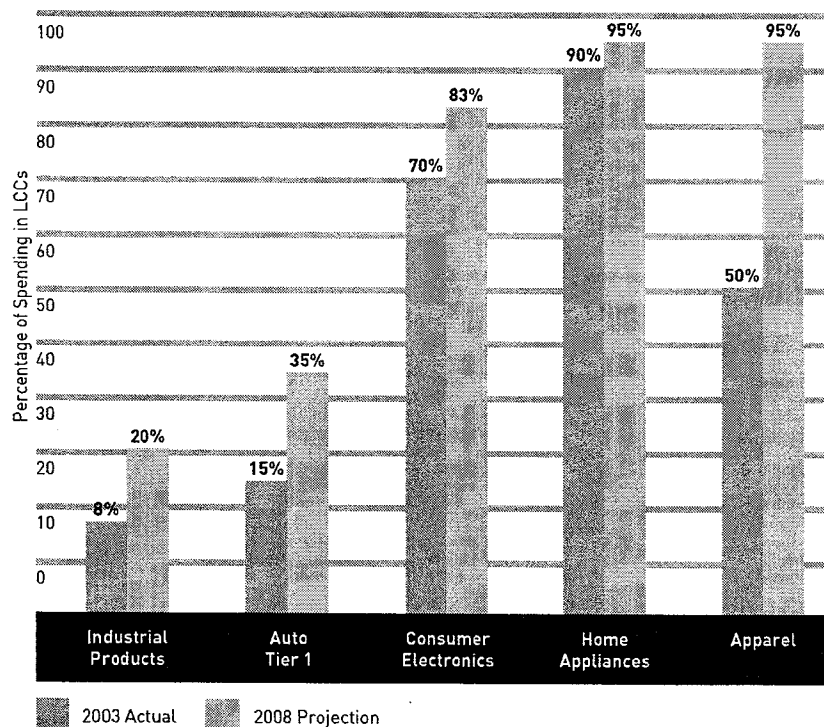
Mitchell Quint (quint_mitchell@bah.com) is a principal with Booz Allen Hamilton in Cleveland. Mr. Quint focuses on operations strategy, and has expertise in manufacturing, global sourcing, and supply chain management in automotive, industrial products, and high-tech industries.

Dermot Shorten

(shorten_dermot@bah.com) is a vice president with Booz Allen Hamilton in Boston. Mr. Shorten specializes in value stream restructuring, and has expertise in supply chain management, supply base configuration, and manufacturing strategy.

This article is adapted from *The Missing Link: Designing Supply Chains for Growth, Profitability, and Resilience*, edited by Jeffrey Rothfeder with an introduction by Tim Laseter and Keith Oliver (strategy+business Books, 2005).

Exhibit 1: Low-Cost Country Sourcing Levels



Note: Data represents average of multiple companies in each segment.

Source: Booz Allen Hamilton Global Sourcing Survey

of other countries. Including hourly wage rates and benefits, Chinese wages are about 10 percent of salaries in the U.S. and Western Europe and 50 percent of the average wage in Mexico. There is still a large supply of low-cost labor throughout the country, and manufacturers in major cities (Shanghai, for example) are supported by government efforts to keep wages low by bringing additional workers to urban areas.

Nevertheless, as more and more companies purchase supplies from China, there has been wage inflation in some large cities. As a result, labor-intensive supplier relationships, such as some automotive OEM programs, are moving inland, where wages remain lower. Honda, for example, is establishing its manufacturing center, automotive assembly, and supporting compo-

nent operations in Dongfeng, in central China. Moving inland, though, makes shipment scheduling more difficult and often more costly, because of poor roads and the lack of developed logistics infrastructures.

These trends show how executives should evaluate manufacturing cost when making procurement decisions:

- *The total labor content (direct and indirect) of a product is the primary driver for China procurement savings.* For a product with a large labor component (i.e., 25 percent or more of the product cost structure), low Chinese wages represent a meaningful benefit. In these cases, the labor savings — applied labor hours multiplied by the difference in the labor rate — can be significant. But for some products, such as shoot-and-ship injection-molded plastics, for which one operator

manages several high-speed machines, the labor requirements are too low for China sourcing to be the best option.

- *Real overhead savings can be realized in China.* Local labor rates are embedded in the price of many of the goods and services that are critical components of overhead costs. And many suppliers use local machinery, which can also cost as little as half the price of imported equipment.

- *Savings on raw materials in China are possible when these materials are locally sourced from competitive suppliers.* Electronic components and some lower-end steel grades are areas where local competition can lead to raw-material savings. However, when Chinese suppliers have to import materials — such as high-quality steel alloys — there can be a significant cost penalty in a procurement agreement.

- *To gain the highest potential returns from a Chinese procurement effort, the amount of labor should be maximized.* It often pays to think beyond the purchase of the part, and to include machining and assembly activities in the sourcing contract. For example, when an automotive company attempted to purchase raw aluminum castings from China, the Chinese supplier offered savings of only 1 percent over the bid of a U.S. supplier. By redoing the bid to include finished machining of the parts, the incremental labor, handling, and overhead, the automotive company realized a 15 percent total cost savings from the same supplier.

2. Transportation Efficiency. Procurement from China naturally increases transportation cost over more local sourcing arrangements. In China, a product must go from

the factory to the port, onto a ship, and then to the U.S. or another major market, where it is unloaded and trucked to its destination. The cost of ocean transport alone from China to the U.S. is \$2,500 to \$3,000 per container. For a \$12 casting, the total incremental transportation cost is \$1.10, compared with \$0.30 for a typical Mexican supplier shipping to the U.S.

Financial assessment of China sourcing should be made on the total landed cost of a product, which includes the manufacturing cost differential as well as the full logistics cost — hence two major considerations when assessing transportation costs:

- *Measure the ratio of transport cost to total product cost.* Since ocean transportation costs are essentially a fixed cost per volume shipped, economics favor China when smaller, higher-value items are involved. For instance, thousands of small electric motors can be packed in one container, spreading the fixed costs

over numerous units. Conversely, plastics and stamping assemblies for auto interiors require protective packaging that results in low packing density and fewer parts to share the burden.

- *If airfreight is required — for instance, to meet lead time requirements shorter than ocean freight allows — the savings generated by lower-wage-rate manufacturing in China are usually eliminated.* Airfreight costs about \$1.51 per pound; ocean transport, \$0.06 per

pound. Only products with very high packing density and high value per unit (for example, printed circuit boards) can support the costs associated with airfreight.

3. Lead Time and Scheduling Stability. Ocean freight adds four to six weeks to the delivery time from China to Western markets. The risk of this extended supply chain to the core business needs to be incorporated into any assessment of whether China is the right place from which to procure. The time delay generated by the longer supply chain significantly increases the chances of both stock-outs in the near term, and excess and obsolete inventory in the long term. So procurement executives must carefully weigh several factors to ensure that their lead times and scheduling remain stable:

- *Because Chinese providers typically include large volumes of a product in each shipment, buyers face inventory and defect risk.* Purchasing in large volumes means more of the

wiring panels required labor-intensive assembly. However, this benefit was canceled out because the manufacturer's customers often demanded a high degree of late-stage product customization and expected a rapid lead time. The manufacturer was able to charge more for these customized products and, thus, pay the slightly higher wages in Mexico and Eastern Europe for a quicker turnaround on components delivered to U.S. and Western Europe operations.

4. Product Design. Engineering changes can introduce instability even into mature supply chains. Because the items most frequently sourced are components made up of other components, when an old version of a product becomes obsolete, a change can create a cascade of incompatibility. What's more, manufacturing operations require time to digest new products and processes; subpar quality frequently corrupts operations during a transition period.

The long lead time and large order quantities required to do business cheaply in China exacerbate both these problems, because the arrival of old-version components can continue for weeks after an engineering change. And it can require an equally long time to take corrective action on lower-quality parts — thus, the central product-design considerations when sourcing from China:

- *Products with one or more design changes per quarter may not be suitable for Chinese procurement.* Frequent design changes mean the supply chain could end up with a continuous run of obsolete inventory and on a learning curve that resembles a merry-go-round. Products that are stable for at least a

Products with one or more design changes per quarter may not be suitable for Chinese procurement.

buyer's dollars are tied up in massive inventory investments, a source of inventory carrying costs and, potentially, obsolescence. Moreover, if manufactured defects are spread throughout a shipment, that could mean thousands of useless components.

- *For some product categories, ocean freight lead time can make a Chinese procurement effort unwise.* For instance, a manufacturer of telecom infrastructure seemed to be a perfect fit for China because its

model year, such as automotive components, may fit better in a Chinese procurement strategy, since they essentially involve a successful one-time launch rather than continual incremental changes.

- *China is probably not a good option when a high degree of skill is required to implement design changes.* Chinese supply chains are challenged by the language gap, a lack of local technical capability for implementing changes correctly, and the complexities of suppliers' processes for managing launches of new products.

skilled domestic factories will probably yield a better total cost return than procuring the total product. Technology-driven processes often need significant oversight if process control is to be maintained. That frequently can be achieved only in sophisticated plants in developed countries. When factory processes get out of skew in China, yields decrease and the resulting scrap (as well as logistics costs) can quickly overshadow the savings generated by lower wage rates.

- *The evolving sophistication of Chinese suppliers means careful buyers*

better understand their geographic sourcing options — which products are candidates for being sourced from low-cost countries and which should be purchased from more developed markets. If a low-cost country is appropriate, assessment of lead times can help establish which commodities can be sourced from remote low-cost countries (such as China or India) and which need to be purchased more locally — from Mexico, say, or Eastern Europe.

China remains one of the world's most desirable sourcing opportunities. Its wage advantages are not likely to end anytime soon, and its skills as a supplier and manufacturer will only grow stronger. But as is the case with any other procurement effort, obvious costs, such as labor, are not the only factors to take into account. When the other, subtler criteria in our model are considered, China may still be a lucrative gold mine for some companies. Others, though, should be careful: The ore could be a fool's blend. †

Reprint No. 05102

Chinese suppliers are becoming more sophisticated. A savvy purchaser can gain advantage by exploring cost *and* capability.

5. Technical Capabilities.

China is not currently a viable option for highly specialized manufactured products made with custom equipment, such as application-specific copper-wrapped coils or high-speed connector assemblies. The processes used to manufacture such products often require specific technical knowledge of product engineering or equipment design that generally is not available among suppliers in new procurement markets such as China.

By contrast, almost all suppliers can handle commoditized processes such as stamping, casting, and manual electronics assembly. Companies buying from Chinese sources must weigh two issues relating to the supplier's capabilities:

- *Sourcing subcomponents in China and maintaining technology-intensive activities in more highly*

can gain some important, albeit temporary, advantages. Although products made with the least complicated, most mature technologies are the best choices to source from China, the nation's suppliers continue to develop increasingly sophisticated skills. As a result, more companies are sourcing process-sensitive products, such as rubber and machined parts, from China. That can be a good decision when other critical procurement dimensions, such as lead time, engineering changes, and labor and transportation costs, favor China. It also can give a purchaser a boost over competitors who haven't figured out where to go to combine China's cost advantage with its emerging capabilities.

By analyzing the five critical dimensions for each unique procurement initiative, companies can