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How Rich Is China?

BY VACLAV SMIL

The obviously important question of how rich China is has no easy answers. Although in many ways still a poor country, China is already an international economic power. But Western figures on it have misled more than they have informed, keeping alive an outdated view of the world.

The trail of misleading numbers begins with paramount leader Deng Xiaoping's economic revolution of the late 1970s, which set as its goals a quadrupling of the economy and China's rapid integration into the world market. When the State Statistical Bureau prepared the first account of Chinese gross national product in 1979, it put GNP for the previous year at 358.81 billion renminbi, or Rmb 375 per capita.¹ During the subsequent decade of rapid expansion, per capita GNP, according to the Chinese figures, rose more than fourfold, or a still very impressive 230 percent gain when adjusted for inflation.

But most foreigners do not consult State Statistical Bureau publications; they get their information on the Chinese economy from international data books. Of this group, the most widely distributed and quoted annual is the World Bank's *World Development Report*, which gave China's per capita GNP for 1978 as \$230, and listed it at \$310 in 1985 and \$370 in 1990. This amounts to a yearly increase of less than 2 percent—and would actually mean a 10 percent decline in terms of constant 1978 dollars.

Even an unobservant visitor who had traveled in China in both periods would find nonsensical the notion that the country in the early 1990s was slightly poorer than in the

late 1970s. And a connoisseur of international statistics would point out that the World Bank figure of \$370 per capita GNP put China right between the 1990 per capita figures for Haiti and Benin. This is strange company for a country that provides an average daily food supply for its citizens close to the Japanese mean, and whose total annual foreign trade turnover amounts to well over \$100 billion.

A BLIND CONVERSION GAME

The reason for all these ludicrous dollar-denominated figures for China is simple: falling exchange rates.

In 1978 the official rate stood at 1.42 renminbi to the United States dollar; by 1985 it had weakened to around 3:1, and by 1990 the currency was devalued to 4.79 to the dollar. As the dollar is almost invariably used as the common denominator in international comparisons of GNP, the Chinese expansion of the 1980s disappears, and China ends up ranking behind Haiti.

The blind conversion into dollars also makes a mockery of Deng's goal of quadrupling the economy in 20 years. When the Chinese government was formulating long-term economic strategy at the end of the 1970s, it simply took the newly estimated per capita GNP for 1979 and divided it by the current official exchange rate to come up with a figure of just over \$250 per capita. Quadrupling this would elevate China to the magic level of \$1,000 per capita—but in 1990, halfway through the process, official GNP stood at less than \$300 per capita (1980 dollars).

China has not been alone in this accounting predicament. The gross national products of nearly all poor, industrializing countries are substantially undervalued by conversion to dollars using official exchange rates. What is needed is some systematic adjustment of national accounts based on purchasing power parity (PPP), which measures the value of a country's GDP based on the domestic purchasing power of the country's own currency. This fundamental correction opens the way for meaningful comparisons between countries—one that, after several years of internal debate, the IMF in its 1993 *World Economic Outlook* embraced. Using purchasing power parity as the

VACLAV SMIL is a professor of geography at the University of Manitoba and a Current History contributing editor. His most recent books are *China's Environmental Crisis* (Armonk, N.Y.: M. E. Sharpe, 1993) and *Global Ecology* (New York: Routledge, 1993).

¹GNP is the sum of gross domestic product (total value of a country's yearly output of goods and services) and income from abroad minus the income of nonresidents living in the country.

basis for its calculations, the IMF rankings catapulted China from tenth to third place among the world's economies; the World Bank has developed its own PPP-adjusted figures, but continues to measure economies by using exchange rate conversions.

A BETTER APPROACH

University of Pennsylvania economists Robert Summers and Allen Heston were the first, in 1984, to publish PPP-adjusted estimates for the per capita gross domestic product of countries. Expressed in constant 1975 dollars, their figures for China showed a rise from \$300 in 1950 to \$1,135 in 1980. An update in constant 1980 dollars put real per capita GDP at \$1,619 in 1980 and \$2,444 in 1985, and the team's most recent tabulations gave the figure for 1988 as \$2,308. Thus China's closest economic "neighbor" in Asia is Thailand (at \$2,879), while Haiti's per capita GDP according to this method is only \$877.

If these adjustments come much closer to the actual wealth of China, where do they leave Deng's target? If China's real 1980 GDP was about \$1,600 per capita (more than five times the exchange rate-biased level), can one reasonably expect a quadrupling by the year 2000—assuming a population of at least 1.25 billion—to \$5,100. This would be an impossible goal, putting China on a par with the Ireland of 1985, and making it richer than the South Korea, Portugal, or Greece of 1990.

While exchange rate conversions considerably undervalue Chinese economic output, Summers and Heston's adjustments do just the opposite. Strong evidence of both biases can be demonstrated by calculating the average energy intensities of the world's largest economies. This is done by dividing total annual primary energy requirements by GDP.² When using the World Bank's GDP calculation, China's 1990 energy intensity would be around 1,600 kilograms of oil equivalent (kgoe) per \$1,000. In contrast Summers and Heston's adjustments would result, assuming a rounded GDP value of at least \$2,500 per capita for 1990, in an energy intensity of less than 250 kgoe per \$1,000. Both results are clearly wrong. In the first case China's energy intensity would be nearly 2.7 times higher than India's, which is roughly 600 kgoe per \$1,000; in the other case it would be actually slightly better than Japanese performance!

Extensive conservation and modernization campaigns boosted the performance of Chinese industry during the 1980s, as did the massive shift toward light manufactures and export-oriented growth that made for one of the most rapidly expanding economies of the decade. In spite of this, China's industries, transportation system, and households still remain relatively inefficient users of energy—but not nearly three times worse than their Indian counterparts.

²Energy intensity is an important marker of national economic performance. For details, see Vaclav Smil, *General Energetics* (New York: Wiley, 1991).

For example, an International Energy Agency study shows that in 1985 China used about 1,360 tons of kgoe for every ton of crude steel produced, compared to about 880 kgoe per ton in India. This is a difference of about 50 percent, and given the notorious inefficiency of China's ferrous metallurgy, it is unlikely such a gap would be usual in other industrial sectors.

Conversely, it is ridiculous even to suggest that the still too rigidly controlled Chinese economy, operating with unrealistically low fuel and electricity prices and with much outdated equipment, could approach the Japanese performance in this area. It must be expected that China will lag behind—although the numbers indicate that the country's real energy intensity is not so grossly inferior. But in any case, if China were using the essential energy inputs into its economy with an efficiency comparable to that seen in Japan, and significantly higher than that in France or Germany, there would be no need for fundamental economic reforms! Clearly neither old-style exchange rate conversions nor the newer PPP-adjusted estimates come close to the elusive reality. The challenge is to reduce the broad range of GDP values produced by the two methods.

THE HAMBURGER STANDARD

The easiest shortcut is the simplest of all PPP adjustments: the surprisingly effective hamburger standard pioneered by *The Economist* in 1986. Dividing the price of a Big Mac in the local currency by the price in the United States has consistently indicated an overvaluation of the deutsche mark or yen that is surprisingly close to elaborate PPP calculations. China last year saw the opening of its first McDonald's outlet, peddling Big Macs for Rmb 6.30 apiece. With the average price in the United States at \$2.19, the implied PPP value was Rmb 2.88 to the dollar, compared with the official exchange rate of 5.44. The hamburger standard thus suggests China's 1992 real dollar-denominated GDP is 1.89 times higher than the exchange rate-converted value, or close to \$800.

I believe the real purchasing power parity of the Chinese currency is higher still. This conviction is borne out if one assembles a minibasket of three essential foodstuffs—rice, pork, and cooking oil—and compares the average price in the United States and China for the amount of each item consumed annually by the average city dweller. For 1988 such a comparison implies a purchasing power parity of 0.81 renminbi to the dollar. A 20 percent markup is made to reflect the higher quality of American food. (In this basket the difference could be minimal for rice, substantial for cooking oil, and enormous for pork—indeed, a typical piece of Chinese pork has no counterpart even among the inferior cuts in American stores. Similar differences often exist for fruits and vegetables.) This leaves the purchasing power of the renminbi inside China about equal to that of the dollar in the United States: one renminbi bought roughly as much food in Shanghai as one dollar did in Boston.

Consequently in 1988 the purchasing power parity of

the renminbi was about 3.7 times greater than the official exchange rate with the dollar. This adjustment would put China's real 1988 GNP at \$1,300 or, in constant 1980 dollars, at almost exactly \$1,000. Encouragingly, this adjustment produces a much more credible energy intensity ratio than do either the World Bank's or Summers and Heston's values: the overall energy intensity of the Chinese economy works out as comparable to that in Poland or Russia, and about double the Japanese level. The \$1,300 per capita figure also receives noteworthy confirmation by a Rand Corporation estimate based on a CIA study of purchasing power parities, which produces a per capita GNP of \$1,200 for 1988.³ And most important, applying plausible GDP growth rates to this adjusted base does not generate absurd future totals. Continuation of the long-term inflation-adjusted growth of 4.7 percent would raise per capita GDP to \$1,600 in the year 2000, and a 6 percent rate would up it to \$2,000 (in 1980 dollars). The second figure is the IMF's calculation published in the fund's 1993 *World Economic Outlook*; the IMF developed this estimate precisely in order to correct the unrealistically high published PPP values.

LIVING WELL, AND FOR HOW LONG?

Although clearly giving a more realistic picture of China's wealth, these adjustments do not measure quality of life under the new affluence. Modernization's achievements cannot be subsumed under a single aggregate measure; an evaluation should encompass a broad range of quality-of-life variables, from food availability, health, and education to material possessions and housing.

Data on average per capita supplies of food energy, protein, dietary fats, and the principal minerals and vitamins in countries worldwide are readily available in United Nations Food and Agriculture Organization yearbooks. These values, and especially the means of per capita food energy and protein supply, are undoubtedly the most frequently reprinted and quoted indicators of national food availability, and the global coverage allows for revealing international comparisons. China's current standing in these lists, especially considering the combination of the country's physical limitations (less than one-fifteenth of the

world's arable land) and population burden (more than one-fifth of all people), is definitely enviable.

With more than 2,600 kilocalories (kcal) of food energy available daily to its average citizen, China was just 8 percent behind the Japanese rate, well ahead of India (2,200 kcal per day), and above the Asian mean of just shy of 2,500 kcal per day; besides Japan, only Taiwan, Mongolia, and the Koreans enjoy a better food supply in East Asia. But these impressive quantitative achievements in China have been accompanied by only limited qualitative improvement, and by the persistence of a huge gap between average rural and urban consumption. Although the per capita availability of meat and eggs has more than doubled since the late 1970s, plant foods still provide all but about 5 percent of food energy. Moreover, by 1990 average yearly consumption in the countryside of the three principal animal foods (about 11 kilograms of pork and 2 kilograms of poultry, and less than 2.5 kilograms of eggs) remained far below the city means (18.5, 3.5, and 8 kilograms, respectively).

In China's poorest provinces the basic challenge of providing minimum rations is as acute as ever. The southwest and northwest must contend with a below-average supply of grain. Drought has been always a major factor limiting production in the arid northwest, but during the 1980s chronic grain shortages were also recurrently aggravated by drought in normally wet Guangxi province. During the spring and summer of 1989, when some 16 million people depended on state emergency relief, the region's grain deficit was close to the shortfall during the great famine of 1959–1961. And given the inadequate transportation between provinces, serious drought can still cause large-scale shortages of grain even in areas of normally adequate supply. For example, during the fall of 1989 10 million people in Shandong were short of grain.

There are no reliable figures for the number of chronically undernourished people in China. In 1984, a year of record harvest, Deng Xiaoping spoke in *Beijing Review* of "tens of millions of peasants in the countryside who do not yet have enough food." Liu Bang, in *Liaowang*, put the number at 11 percent of the rural population, or some 90 million people—equivalent to the entire population of Mexico.⁴ But given the dominance of staple grains in the Chinese diet, it is possible to come up with an approximate estimate for undernourished population from the mean grain production in each of the provinces.

In 1990, 230 million people lived in nine provinces where average grain harvests per capita were more than 20 percent below the national mean. The average daily food supply per person in these provinces would be around 2,200 kcal—thus, some 110 to 120 million people would be subsisting on less than this minimum caloric requirement. The limited food transfers between provinces and higher local reliance on aquatic or dairy products could reduce this number to about 100 million. These people do not necessarily starve, but their food intake does not provide for proper growth and demanding rural work. Simply

³Charles Wolf et al., *Long-term Economic and Military Trends, 1950–2010* (Santa Monica, Calif.: Rand Corporation, 1989). This assessment also contained provocative predictions that China's aggregate real GNP will almost equal the former Soviet economic product by the end of the century, and that it will surpass it by some 20 percent a decade later, when it will rival even the Japanese total. An unidentified high-ranking Chinese official saw these estimates as "a friendly exaggeration" of China's economic strength; see "Bridging the Economic Gap," *Beijing Review*, vol. 32, no. 5 (1989).

⁴Deng Xiaoping, "Current Policies Will Continue," *Beijing Review*, vol. 28, no. 4, (1985), p. 5; Liu Bang, "Speaking of the Good Situation in Rural Areas," *Liaowang*, vol. 5 (1984), p. 6.

put, they fall below the supply level guaranteeing enough food for a healthy and vigorous life.

In spite of persistent nutrition problems in parts of the interior, China has done very well in extending average life expectancy. The figure rose from just 40 years in the early 1950s to about 65 years by the late 1970s, with four more years added during the 1980s. A Chinese male born today can expect to live about 69 years, and a female about 71. This makes for some surprising comparisons. The life expectancy for males is more than a decade above the level in India, two to five years higher than in Argentina and Mexico, about three years ahead of the mean for the former Soviet Union, and just a year or two behind such Western nations as Austria or Ireland; although nearly fifteen years above India's level, the survival rates for Chinese females are relatively less impressive, equaling those in Mexico or Malaysia, and between three and five years behind the lower end of means in Europe.

These achievements would not be possible without very low infant and child mortality. Chinese rates during the late 1980s—just over 30 and in the mid-40s, respectively, per 1,000 live births—were only about one-third Indian levels, and substantially lower than those in Brazil or Mexico. China thus belongs to a small group of countries where life expectancy is much higher and infant and child mortality much lower than would be expected from the exchange rate-converted gross domestic product—and this disparity is yet another strong proof that actual GDP is considerably higher.

In contrast, China does not come off exceptionally well in international comparisons of education: its record is only average among other populous nations in primary education, and is decidedly inferior in postsecondary studies. The situation is best at the primary level: all but a few percent of children between the ages of 6 and 14 attend school. But many grade school pupils drop out in order to work. In some rural areas one-tenth or even one-fifth of all laborers are school-age children, with the percentage of girls disproportionately high.

The Chinese share of the world's illiterate adult population (over 15 years old) is not as large as Pakistan's or India's, but the rate of 20 percent remains unacceptably high, with the official total at 220 million people as of late 1988.⁵ Peasants account for 95 percent and women for 70 percent of this. The secondary school enrollment ratio in the late 1980s of just over 40 percent was unexceptional among populous poor countries, but the postsecondary share of just 1.7 percent was lower than in any large nation except Bangladesh.

The enormous shortage of university-educated people in China is perhaps the most persistent legacy of anti-intel-

lectual Maoism, a price to be paid for decades and a loss that will not be remedied in a single generation. Naturally this weakness carries over into the availability of scientific and engineering manpower: in the late 1980s there were only 1,000 such experts per million people in China, compared to more than 3,000 in India and 10,000 in Brazil.

THE "FOUR BIG ITEMS" AND OTHER CONSUMER DREAMS

Some measures of material affluence commonly employed in international comparisons of living standards make little sense in the Chinese (or Indian, or Nigerian) setting. To insist that car ownership rates chronicle a nation's advance toward modernity is untenable in Asia; indeed, a sound argument can be made that the opposite is true (based largely on the enormous negative environmental impact) even in the case of much less densely populated Western nations. But whether for good or ill, the Chinese have been both heavy importers of Japanese cars and resolute developers of a domestic car industry.

The number of telephones per 1,000 people, another popular measure of technical progress, is more acceptable. Environmental negatives are minor, while economic and social benefits are obvious. China's 10 phones per 1,000 people in 1990 was equivalent to the Pakistani average, marginally higher than the figure in India or Indonesia, and less than one-tenth typical Latin American rates. A tenfold expansion would seem to be the minimum required for good basic management and better personal communication.

Similar multipliers would apply to the ownership of washing machines (fewer than 10 per 100 Chinese in 1990) and refrigerators (a mere 3 per 100); rates for both in Japan during the 1980s were about 40 per 100 people. Purchases of television sets rose rapidly in China during the 1980s, and an ownership rate of 16 per 100 in 1990 compared to one of more than 60 per 100 in Japan. Indeed, color television sets became one of the principal badges of affluence during the 1980s, with fridges, washers, and tape recorders right up there.

The rapid advance of Chinese consumer aspirations can be seen from the changing list of most desirable wedding gifts. During the 1960s there were the "three rounds"—wristwatches, bicycles, and sewing machines. In the 1980s the "four big items" were color televisions, double-door refrigerators, twin-tub washing machines, and double-deck tape recorders, and supplementing these with the "three golds"—gold rings, bracelets, and necklaces—was often de rigueur.

But while tens of millions of Chinese are undoubtedly pleased at the variety of new household gadgets they have been able to afford since their purchasing power began rising in the early 1980s, they would be even more pleased if their food bills went down. And no material advance would be more important for the country's modernization than a substantial improvement in average housing conditions.

Although rationed staple grains are still heavily subsi-

⁵Literacy rates are not easily comparable. In China literate workers should recognize at least 2,000 characters, peasants about 1,500; people reading fewer than 500 are considered illiterate.

dized in China (rice costs nearly five times more on the free market), expenditures for food averaged nearly 55 percent of typical rural, and just over 50 percent of urban, disposable income in the late 1980s. This is a burden shared by the inhabitants of other poor, populous Asian nations (the figure in India is also 55 percent). In better-off poor countries people spend less than 40 percent of their disposable income on food, while in the most highly developed nations outlays range between 13 percent (United States) and 21 percent (Japan). In reality, the gap is even wider than indicated by these figures: smaller slices of income in rich countries buy more food containing higher amounts of nutrients in a greater variety of safer foodstuffs.

While the near future holds little hope for significantly lower food prices, the recent past has seen great improvement in housing. Rural reforms of the 1980s, and especially the incipient affluence in the suburban countryside of richer coastal provinces, led to a surge in new, and better, house construction in villages. Belatedly increased investment in urban apartment building brought some substantial gains in most major cities.

General conditions, however, remain unsatisfactory. The first representative survey of urban housing in China, carried out by the State Statistical Bureau in 1985 and 1986, found that average living space amounted to a mere 6.1 cubic meters per capita, with smaller cities (less than 200,000 people) averaging 6.65 and the largest ones (over 1 million) only 5.86 square meters per person. One-quarter of all urban inhabitants lived in less than 4 square meters—little more than a single bed with an equally narrow strip alongside. Merely bringing China's urban housing up to the standard of notoriously cramped Japanese homes would require a roughly 70 percent increase in average living space. By 1990 the average for China's 424 largest cities had risen marginally, and the goal for the year 2000 is to raise the mean to just over 8 square meters per person.

Villagers had more living space than their city cousins even before the reforms, and since the late 1970s their gains have been relatively large. Before 1978 no more than 100 million square meters of new housing was built in China's countryside each year, but the total for 1979–1988 rose to 6.8 billion square meters (including a record 1 billion square meters in 1986), and the quality of the buildings also improved substantially. Between 1980 and 1988 average rural living space rose from 9.4 to nearly 17 square meters per capita, ranging from just 9 square meters in Tibet to up to 30 square meters on Shanghai's outskirts. But the gen-

eral quality of rural housing is still quite poor: late last decade a variety of adobe-and-thatch structures were still dominant, with only about 9 percent of all existing houses built of brick and wood (even in Shanghai's periurban area this share was no higher than 30 percent). Just over half of all rural houses had electricity, and less than one-seventh had running water.

Any realistic review of China's recent quest for greater personal wealth would be incomplete without noting the persistence of extensive rural poverty—and the growing income disparities since 1984. The 1980s saw the black marketeers of Hainan Island reaping fabulous profits by importing nearly 100,000 Japanese cars and 3 million television sets and reselling them to buyers from inland provinces. It saw suburban farm families in Jiangsu and Zhejiang get rich from a combination of mushroom growing, poultry raising, and local manufactures. But these are the peasants and others best able to take advantage of Deng's revolution, which gave them the power to make money. That power is easier to exercise in suburban Nanjing or in the Zhujiang River Delta than in the scrubby hills of Guizhou or the eroded, arid Loess Plateau. Millions of rural households in Guizhou, Gansu, and Shanxi provinces could not extricate themselves from dire poverty. Their incomes rose, but far from enough to secure them a better standard of living; they were left even further behind newly rich areas.

While the coefficient of variation expressing the gap between rich and poor provinces narrowed from 35 percent in 1978 to 26 percent by 1983, it rose to 37 percent in 1988. Taking rural per capita income of less than 200 renminbi in 1987 as an indicator of abject poverty, no fewer than 8.3 percent of peasant households, or more than 60 million people, were below that line, and it is unlikely the total dipped below 50 million by 1990. For these people a well-padded coat, a well-heated room, or a well-built chair are still beyond reach. Lifting these families—a population equivalent to a large European nation—at least to a level of bearable subsistence will not be accomplished easily.

The question “How rich is China?” thus raises the question: “Which China?” The one of burgeoning special manufacturing zones, property speculation, and ties to the global market, or that of remote interior counties where the isolation and degraded land, air, and water offer little hope for any appreciable material improvement in people's lives? ■