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Feeding China: From Wanting to Wasting

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hat is the outlook for feeding the globe's most populous nation? Twenty-five years ago, the best that could be said about China's food supply was that there was no famine. There were, however, hundreds of millions of undernourished people. And average per capita food availability stood only marginally higher than it did during the late 1950s, before the Mao-made famine of 1959 to 1961 killed at least 30 million Chinese. In the late 1970s, Deng Xiaoping's rise to power reversed the Maoist insanities of forced communal farming and saw dramatic improvements in China's food supply.

But then, in 1995, as the Deng era was coming to an end, Worldwatch Institute president Lester Brown published a widely read report, Who Will Feed China?, in which he predicted that China's looming large food deficits would engender a global crisis. Naturally, the media further sensationalized these predictions and helped create a general impression that China would not be able to feed itself.

Like all the other catastrophist forecasts Brown has issued since the late 1960s, this one, too, has proved wrong. But this does not mean there are no reasons for concern. Does the balance of China's achievements (in food production, improved nutrition and hygiene, reduced malnutrition) and China's problems (with food waste and obesity in some regions, and with continued under-nutrition and ecosystem degradation in others) point toward an even more secure future or toward inevitable shortfalls?

For that matter, are there other food issues besides supply disparities that warrant greater concern? For example, what about masked palm civets, raccoon dogs, and ferret badgers that are all heartily eaten in parts of China, and all possibly carrying SARS-like viruses?

First the good news

China's post-1994 grain production has not conformed to Brown's doomsday forecasts, but nobody could have predicted its rapid swings. When the total 1994 grain harvest fell below 400 million metric tons (a development that Brown cited as a clear sign of China's diminishing capacity to feed itself), the government decided to stimulate grain production through increased procurement prices and mandated minimum production and reserve levels. These decisions brought a succession of record harvests, with a peak in 1998 of 456 million metric tons and a 1999 harvest only slightly smaller.

These huge outputs, along with falling demand for grain—between 1990 and 2000 consumption of rice and wheat fell by 13 percent—combined to fill China's storage facilities beyond capacity and push grain prices down. Total area sown to cereals declined in 2000 by 7 percent, and a widespread drought further reduced the harvest to just over 400 million metric tons. (The 2001 harvest was even lower.) This meant China was producing no more grain than it had in the early 1990s, when the country's population was 11 percent smaller.

Yet there have been no grain shortages. Why? Decreased demand accounts for only a small part of this discrepancy. China's enormous grain stocks explain most of it. The size of these stocks has always been a state secret, but a variety of new fragmentary information has led the US Department of Agriculture to reevaluate drastically its previous estimates. Instead of about 66 million metric tons of stocks at the end of the 2000–2001 crop year, USDA now believes the total was about 230 million metric tons; other estimates run as high as 360 million to
500 million metric tons. This explains why, at the time of the smallest harvests in a decade, China was selling abroad large amounts of corn while reducing its grain imports to a few million metric tons.

Meanwhile, China's food balance sheets have shown no decline in average per capita food availability. Calculations by the UN's Food and Agriculture Organization show that between 1997 and 2000, China's average food availability remained almost perfectly steady, with year-to-year fluctuations of less than 0.5 percent. And shifts in diet composition continued within this stable overall supply. Following the trend established at the beginning of post-1978 agricultural reforms, average per capita food supply now contains less cereals but more sugar, plant oils, vegetables, fruits, poultry, milk, and aquacultured fish than it did in the mid-1990s.

Both of these trends—stable per capita food availability and continuing slow shifts of average dietary makeup—can be expected to continue during the first decade of the twenty-first century. Urbanization in general, and the higher incomes of many city residents in particular, will drive these shifts. The latest urban household survey shows that high-income city households in China bought 18 percent less wheat and 4 percent less rice than low-income families did, while their purchases of poultry, fruit, and milk were, respectively, 1.9, 2.2, and 3.4 times higher.

Obviously, the dramatic reduction of post-1999 grain harvests has not signified any loss of China's productive capacity, and in no way does it confirm Lester Brown's forecasts of permanently declining cereal production. It merely reflects adjustments resulting from changing demand and grain prices and China's entry into the World Trade Organization (WTO), which will regulate the extent of agricultural subsidies. Direct per capita grain consumption is falling, but demand for higher-quality wheat (suitable for baked goods and noodles) and rice is rising. Moreover, the need for feed grains is not increasing as rapidly as anticipated because demand for meat and eggs stabilized.

This means that, barring any protracted or nationwide natural catastrophes, grain production levels during the coming years will be determined by government policies regarding grain stocks, WTO obligations, and prices of flour, milled rice, and animal foodstuffs—and not by any agronomical or environmental limits on China's harvests.

As for the more distant future, it is clear that China will neither empty the world's grain markets nor become a major grain exporter. Depending on the prices of meat, perhaps as much as 40 percent of China's grain demand by 2020 may be for animal feed, but a combination of improved productivity and manageable imports should cover even that eventuality. Such a mundane conclusion is the most welcome reality about the future of China's food supply: it signifies agricultural maturity and unprecedented security.

**More good news**

Unlike disposable income, where higher levels could always be spent on increasingly luxurious or frivolous purchases, “the more the better” is not a slogan applicable to food intake. Most urban societies have average daily food requirements no higher than 2,000 to 2,200 calories per capita. Theoretically, it makes no sense to supply people with more than about 2,700 to 2,800 calories of food per day, leaving a 20 to 30 percent margin for unavoidable food waste.

But this is not how things work out in the real world. Japan, in fact, is the only affluent country that has been able to maintain this rational ratio between food supply and food requirements. Ever since they recovered from postwar lows, Japan's actual average daily food intakes have fluctuated narrowly between 2,100 and 2,200 calories per capita. Food supply, highly dependent on imports and hence relatively expensive, has been sensibly stable, staying between 2,700 and 2,800 calories per capita since the early 1970s.

According to periodic nutrition surveys, US food intake on the average has remained similarly stable during the past 30 years, at around 2,500 calories per day for adult males and about 1,600 calories per day for adult females, with the mean for all individuals of all ages at just above 2,000 calories daily. But, in contrast with Japan, food supply in the United States has averaged 3,700 calories a day. Similarly high rates (3,400 to 3,700 calories per capita) prevail in Australia and New Zealand (with Canada a relatively low 3,100 calories per capita), as well as in most of the countries in the European Union. This means that

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food waste in nearly all affluent economies amounts to between 40 percent and 45 percent of the average daily per capita supply, an indefensibly large gap.

According to the Food and Agriculture Organization’s food balance sheets, China’s mean per capita food supply increased by nearly 4 percent during the second half of the 1980s; between 1990 and 1995 it rose by almost 6 percent; and during the late 1990s it grew another 5 percent. Indeed, starting in 1997, for the first time in China’s modern history, the per capita mean for food supply has stayed above 3,000 calories per day.

Per capita daily rates of between 3,010 and 3,040 calories would put China about 8 percent ahead of Japan in terms of food supply, but the real rates are not this high. China’s official output statistics have overstated meat, eggs, and aquatic production. Correcting for these production overestimates, the adjusted food balance sheet (based on official output figures) would give China about 2,700 rather than nearly 2,900 calories per capita in 1995 and, assuming the overestimates have not grown larger, about 2,800 rather than just over 3,000 calories per capita in 2000.

Even assuming that hard-working rural adults average 2,600 calories per capita, the current age-sex composition of China’s population means that the weighted nationwide average of daily food requirements is a bit less than 2,200 calories per day. This translates into a surplus of food availability over need that has widened to more than 20 percent of the total supply, representing a comfortable margin of food security.

Comparing the composition of this supply with the optimum dietary guidelines and desirable consumption goals for the year 2000 that Chinese experts formulated during the 1980s, we see that average food availability has surpassed these targets in nearly every category, with the largest differences for fruits and vegetables. In overall energy terms, China’s per capita food availability appears to be virtually the same as Japan’s.

One of their major consequences is that over-consumption of food in general, and high intakes of meat in particular, have become common among the more affluent segments of the population. In the richest and largest cities and in the coastal regions of China, tens of millions of people now have more food at their disposal than does the average Japanese. The difference between food supply and actual consumption in these areas is on the order of 30 percent. This translates into more food waste, a reality readily evident in China’s restaurants. Accentuating the waste is an unfortunate Chinese habit of ordering more than can be eaten by hosts desiring to gain face, and by widespread, and often astonishingly ostentatious, dining at public expense. In China’s largest city, a new regulation forbidding farmers from collecting restaurant waste for their pigs has not helped. In 2001, rising bills for waste disposal led one Shanghai restaurant, where many people ate less than half of what they ordered, to offer 10 percent discount vouchers to customers who finished their food.

Combined with the increasingly sedentary life of many nouveau-riche urbanites, this widening gap between supply and need induces excessive eating. It has led to an unprecedented extent of obesity, the higher incidence of which eventually is associated with the rise of cardiovascular illnesses, diabetes, and other diseases. Large-scale surveys undertaken by the Cornell-Oxford-China Project have shown that even relatively small shifts toward the Western diet can have deleterious effects, with additions of animal foods resulting in significant elevations of blood cholesterol levels and increased risk for chronic degenerative diseases.

The trend almost certainly will continue. Globalization of tastes already has introduced numerous fast food empires into China. And, as in other rapidly modernizing and urbanizing countries, the breakdown of traditional families, high rates of female employment, and reduced willingness to cook are fueling increased purchases of fast foods full of saturated fat and refined sugar.

Also troubling is the spreading impact China’s dietary traditions (and medicinal habits) are having on the world’s diminishing biodiversity, as well as on the transfer of pathogens from animals to people. It could be argued that China’s traditionally indiscriminate omnivorousness makes for an efficient way of food consumption, since nothing—from a pig’s skin to chicken feet, from silk moth pupae to carp eyes (both considered delicacies)—is wasted. But this consumption pattern also entails
appetites for anything that moves, from monkeys to dogs and snakes, and much that does not (abalones, sea cucumbers). Rising incomes lead to rising demand for these unusual foodstuffs, which are consumed not only by China’s suddenly rich entrepreneurs and their cronies but also by legions of corrupt officials dining at daily banquets.

Many of these dietary predilections, however offensive they may be to Westerners, who do not hesitate to eat lambs and calves, are merely a cultural concern. But a seemingly insatiable demand for snakes, turtles, and frogs constitutes a major reason for the local extinction of many of their species (particularly throughout south China). Moreover, illegal imports of these animals, as well as rare coral reef fish, from Vietnam, the Philippines and Indonesia, now extend the reach of China’s destructive eating habits across Southeast Asia. According to a 1999 survey by the China Wildlife Conservation Association, 26 percent of all wild animal dishes served in restaurants contained species on China’s endangered list. Ecosystemic consequences of this gluttony, augmented by the search for such destructive and medically medieval therapies as bear galls and tiger bones, are serious. Perhaps the most noticeable is an increase in the density of mice and rat populations that snakes had previously held in check.

In January 2002 the China Wildlife Conservation Association launched an unusual campaign to save disappearing animals by asking professional chefs to sign a declaration stating that they will refuse to prepare any meals containing endangered species. The association’s hope is to collect at least 3 million signatures. (The estimated total of China’s chefs is at least 8 million.) But the campaign faces no small challenge, given reports of 10 metric tons of snakes consumed daily in Shenzhen, and 1,000 metric tons of snake meat served annually in Shanghai.

**AN UNHEALTHY DIET**

South China’s indiscriminate omnivory carries risks that go far beyond the destruction of local and regional biodiversity. In contrast with the European habit of selling dead game, the Chinese insist on buying live animals. Catching wild species, or rearing them in captivity, and keeping them penned in small cages puts people in contact with carriers of pathogens that may infect humans with bacteria and viruses to which human populations would not otherwise be exposed.

Of course, the most devastating crossing of this kind took place in Central Africa with the transfer of HIV-1 from chimpanzees. It now appears most likely that severe acute respiratory syndrome (SARS)—an ailment with relatively high mortality that has affected more than 8,000 people worldwide and caused about 800 deaths since March 2003—was transferred to humans from small wild mammals eaten in south China.

When researchers from the University of Hong Kong tested 25 animals from eight different species in a live animal market in Shenzhen, just across the border from Hong Kong, they found a coronavirus closely resembling the SARS virus in six masked palm civets (nocturnal animals with long tails and catlike bodies related to the mongoose) as well as in a raccoon dog, and antibodies against the virus in a Chinese ferret badger—all species commonly eaten in Guangdong province. The mostly likely infection route involves the handling, slaughtering, or cooking of the animals.

This is a worrisome development because SARS has a clear potential to grow into a new pandemic. It also is troubling because south China is already a well-known reservoir of influenza viruses that could be transferred not only from mammals but also from birds reared in large groups and sold alive in Asia and now in American Chinese markets, a practice that should have been outlawed a long time ago.

This conclusion arises from solid scientific grounds: in 1997, H5N1 virus spread avian influenza from chickens to 18 people in Hong Kong, killing 6 of them and requiring the destruction of all of the territory’s 1.6 million chickens. Because the infections coincided with the onset of the usual influenza season, health experts worried that human strains might co-circulate with the avian influenza and create new avian viruses that could readily spread person-to-person, raising fears of a new pandemic. Less widespread and less virulent returns of the virus in 2001 and 2002 led to further preventive killings of chickens (nearly 900,000 in February 2002).

Although forecasting has been very much in vogue during the past two generations, even a cursory retrospective shows that the practice has an abysmally poor record. And so the food-related China fears of yesterday—the country’s predicted inability to feed itself, thus putting an unbearable burden on global food supplies—have today been replaced by new worries, about pandemic possibilities. Given China’s huge untapped potential for more efficient food production and the known nature of microbial pathogens, it is a good bet that in the future we will hear more about the latter than about the former.