

How should China feed itself?

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The problem

In a controversial book published in 1995 Lester Brown of the Worldwatch Institute raised the question: Who will feed China? Brown predicts that China will not be able to feed its ever-affluent population with declining arable land. He foresees that increasingly larger quantities of food imports by China will send world food prices skyrocketing.

Since the publication of Brown's book, enormous interest in the issue has been generated among policymakers and scholars around the world. This surge in interest coincided with the sharp rises in world food prices in the year to June 1996 following on from harvest shortfalls in several grain-producing regions around the world. With the slowing of grain output growth since the mid-1980s, Chinese policymakers have been particularly concerned about

food security. Brown's dire prediction has aggravated their concern.

Just what is the nature of China's food problem, if it indeed has one? To answer this question, let us first briefly review what has occurred in China in the recent past. The Chinese economy has been growing at about 10 per cent per annum over the 18 years since economic reform began in 1978. While the initial impetus to growth came from agriculture, manufacturing soon became the main source of growth. With rapid income growth and capital accumulation, China's comparative advantage in land-intensive agricultural activities has declined rapidly. This is nothing special to China, having been experienced in all rapidly industrialising economies in East Asia where population density is high. As incomes have grown, demand for animal products

has increased, increasing the demand for feed grains. This, combined with market fluctuations, led to record grain imports of 20 million tons in 1995. It was against this background that Brown made his prediction.

But Brown got it wrong

Brown's prediction is based on the assumption that China's grain production will decline from the 341 million tons produced in 1990 to 272 million tons by 2030, because of the loss of arable land to industrial and urban uses. With declining domestic supply, Brown predicts that China would need imports of 207 million tons of grain by 2030 if its per capita consumption remains at the present level (about 300 kg), and 370 million tons if per capita consumption increases to the present level in Taiwan, (400 kg) one-half that of the United States.

It may appear at first glance that Brown's prediction is plausible. Closer scrutiny reveals, however, the prediction is seriously flawed. The lack of any attention to price responses is the major problem. If food prices indeed rise to the extent predicted by him, Chinese consumers would respond by lowering per capita consumption. Indeed, per capita food consumption throughout the world would be reduced.

Just as consumers reduce their consumption when prices rise, producers will increase their production. Chinese producers have shown remarkable responsiveness to price increases in the past. In the early years of rural reform, price increases and institutional reforms induced unprecedented expansion of grain production. The relatively slow growth of grain output in the last decade is likely to have been a response to lower grain prices (relative to other agricultural products). Indeed, contrary to Brown's predictions, China's grain production rose in 1995 and 1996 to record levels. The upswing of grain output in 1996 (to a record estimated level of 475 million tons) likely results from the sharp price increases of the last two years.

Some may argue that after the dramatic improvements in grain productivity in the early 1980s the potential for further output increases has been exhausted. While China's grain yields will likely not grow as rapidly as in the early 1980s, there still is great potential. Chinese yields are not as high as previously believed because of the under-reporting of arable land. Recently available Chinese statistics put China's arable land area at 40 per

cent larger than previously reported. Moreover, a number of studies have shown that Chinese farm practice has much room for improvement, and this makes steady growth of grain output possible even if land area declines in the future.

Brown has greatly exaggerated arable land losses in China. He treats conversion of grain land to other more profitable crop land as a loss of arable land to industrial or urban uses. It should be pointed out that in many cases, industrial uses of land are not irreversible. With high food prices, land in industrial and other uses can revert to farming. In any case, the importance of land to farming should not be exaggerated. Land is only one of the three major factors involved in agricultural production (the other two being labour and capital). If land area declines and its price increases, more labour and capital-intensive farming methods can be adopted.

Asking the right question

While Brown's prediction is implausible, one should not deny that China will have to import more grain to feed its population if it wants to keep its domestic food prices near world market levels—which are predicted to continue declining in real terms. Most projections show that China will have to increase its imports of grain to within the range of 30 to 70 million tons in a decade's time if it does not increase its protection of domestic agricultural production. But with rapid industrialisation, China is losing its comparative advantage in land-intensive agricultural activities, namely grain production. It is therefore in China's interests to import

more grain in the future so that its industrialisation process will be enhanced by cheap food available from world markets.

The cost to China of its current self-sufficiency policy would be very high. Not only would Chinese consumers have to pay higher prices, but also non-agricultural sectors would have to pay higher costs for their inputs such as grain, wages and land. A self-sufficiency policy would also increase China's frictions with its trading partners.

China has benefited greatly from integration into the world economy. It wants to further this integration through accession to the World Trade Organisation. China will have to liberalise its agricultural sector in order to enjoy the full benefits of world trade liberalisation. Without liberalisation of agriculture, China's trading partners, especially industrial countries, will be reluctant to liberalise their imports of labour-intensive manufactures from China. Such an outcome would be detrimental to China's industrialisation process.

The right question to ask about China's food problem is therefore how China should feed itself, not who will feed China. China would be able to supply all its own food needs but only if domestic prices are raised through protection, and that would make Chinese people poorer than they would otherwise be. The alternative approach to China's food supplies is to internationalise China's food markets in accordance with its comparative advantages. This may lead to China growing more fruits and vegetables and trading these internationally for food

and feed grains. Or it may mean importing grains, subjecting these to labour-intensive processing, and exporting part of the processed products. Whatever form internationalisation of its markets take, the result will be higher living standards than if a self-sufficiency policy is followed.

Will China send world food prices skyrocketing?

What might happen to world food prices if China internationalises its food markets? Could Brown's dire prediction of world prices come true? Brown's speculation was based on a comparison of his forecast of Chinese imports by 2030 with current world exports of grain. Given his assumption of no supply responses to higher prices by exporters and no decline in consumption, price hikes in world food markets would be inevitable.

Brown's prediction lacks common sense, however. First, to compare China's future imports with current world exports is inappropriate. World exports will increase irrespective of China's import levels. Second, international grain trade volumes have been the outcome of the restrictive trade policies of several major importing countries, especially the EU and Japan. With the implementation of the Uruguay Round reforms, international agricultural trade should expand. On the supply side there is considerable potential for expansion of exports from Ukraine, United States, Latin America and Australia. If prices in the world market warrant, supplies from these countries and regions will increase.

World demand for food is unlikely to grow as fast as it has in the past two

decades or so. This results from the demographic transition that has occurred in many developing countries. World population growth has been slowing and will slow further, substantially reducing the growth in demand for food. Further, the rapid growth in per capita incomes in the large population countries of Asia, including China, has pushed most of these countries through the phase of their most rapid growth in grain consumption. As incomes rise further, grain consumption will grow more slowly. In industrial countries and high-income developing countries, consumption has been shifting away from animal products to vegetables and fruits and even to direct grain consumption for health reasons. This structural change also means slower growth in global grain demand.

A number of studies have been undertaken of the global food outlook. There is a consensus that world food prices will continue to decline in real terms or increase only slightly. The Uruguay Round reforms may exert upward pressure on world prices, but should not affect the long-term trend in world prices. Because of its large population and increasing incomes, China does have considerable influence over world food prices, but it is unlikely to cause any major increase in world price instability or increase in food prices. Simulation models show that world markets can accommodate quite large increases in China's food imports without price hikes.

The way forward

China's concern over rising food imports rests largely on the issue of

food security. The slower increase in farm incomes relative to those in the rest of the economy has also become an issue recently. It has been taken for granted by many Chinese policymakers that less reliance on world food markets means greater food security. China's own experience, however, does not support this proposition. The 1959-62 famine was the worst in modern Chinese history. Few would deny that it was a man-made disaster, made much worse by China's isolation from world markets. Despite the US export embargo in place at the time, China was able to import large quantities of food after the famine and has substantially increased its food imports.

China is a large country with substantial variations in natural conditions among regions. National grain output does not normally fluctuate because of natural disasters due to this geographical diversity. Erratic price changes introduced by the Government have perhaps been much more responsible for nationwide fluctuations in grain harvests. The higher inflation of recent years has adversely affected the policy environment with the Government trying to index farm prices to non-farm prices by making large adjustments in state purchase prices.

Regional variations in natural conditions highlight the importance of establishing an efficient, integrated food market in China. Grain trade can play an important balancing role in both national and regional demand and supply. Given the high cost of transporting grain from producing to consuming areas, it may make economic sense for grain-deficit regions to import grain from overseas instead of from grain-surplus regions, which can

export their surplus overseas.

Grain marketing reform is essential if China is to establish an efficient grain market. With improvements in the national transport system, inefficiencies in grain marketing will increasingly become a threat to price stability and food security. State monopoly over grain marketing has not helped price stability in the past. In particular, state grain reserves have not been an effective buffer to moderate price fluctuations. In addition, state monopoly over grain imports has been slow in responding to domestic market conditions. Urgent reforms are thus required.

As far as farm incomes are concerned, agricultural protection will not ensure high income growth for China's rural population. On the contrary, by encouraging farmers to remain on the land, protection will lead to stagnation of farm incomes. Instead of trying to keep farmers on the land by manipulating agricultural prices, China should encourage them to seek off-farm employment by maintaining policies which promote growth in the non-agricultural sectors. This is the ultimate solution to the relative decline in rural incomes. With a shrinking farm population, there is greater opportunity to exploit the economies of scale available from land consolidation. Liberal trade in agricultural products should also encourage farmers to produce high value-added products, such as vegetables and fruits, which have great potential for export to high-income economies. For this to happen, increased investment in rural infrastructure may be necessary. Investment in research and extension will also be important.

Further reading

Ross Garnaut, Guo Shutian, Ma Guonan (eds), *The Third Revolution in the Chinese Countryside*, Cambridge University Press, 1996.

Yiping Huang, *China's Agricultural Reform: getting institutions right*, Cambridge University Press (forthcoming).

Donald Mitchell, Merlinda Ingco and Ronald Duncan, *The World Food Outlook: waiting for Malthus*, Cambridge University Press, 1997.