Food supply

Enough for everyone

by Jikun Huang

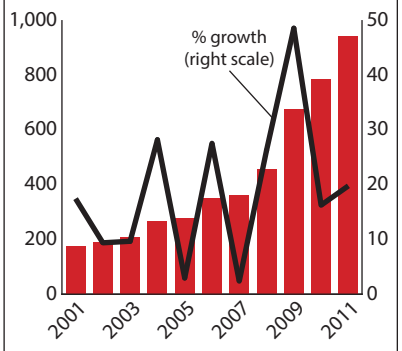
Doom-laden predictions of food shortages in China are unlikely to materialize

For 20 years, doom-laden predictions about rising food demand and its impact on domestic farmers and global agricultural markets have failed to materialize. First we were told that China would struggle to feed itself and massive food imports would eventually starve the world. And then, when China entered the WTO in 2001, we were told that cheap food imports would impoverish Chinese farmers. Yet the reality was quite different: agricultural growth was impressive and food security ensured. Over the past 10 years, China exported more food than it imported. Even by 2010, its food self-sufficiency measured 97% in value terms.

Nonetheless, the old arguments refuse to go away. Rising imports of grain, livestock and dairy products have raised new concerns about China's food security and its impact on global markets. China continues to maintain a 95% grain self-sufficiency target, but actual self-sufficiency in volume terms fell to 88% in 2012. China has been a big importer of soybeans for more than a decade, but since 2010 it has also become a net importer of maize. Domestic think-tanks openly suggest that China will rapidly become dependent on the international food market to satisfy hundreds of millions of increasingly wealthy consumers. For foreign agricultural exporters, this is excellent news—yet big food importers worry that China's growing appetite will push up global prices to unaffordable levels.

Plowing cash into the fields

Central government investment in agriculture, Rmb bn (2008 prices)



Source: NBS, GK Dragonomics estimates

These fears are overstated. Most analysis ignores China's continued commitment to national food security. China's leaders have not abandoned their targets of maintaining high grain self-sufficiency: they are serious about modernizing agriculture, raising productivity, and protecting the so-called "red line" of 120m hectares of farmland. Most of China's rising food demand will be met by new supply at home. The biggest rise in imports will come from feed grain for livestock and from dairy products—but China's existing suppliers should have little trouble boosting supply to satisfy the hundreds of millions of Chinese consumers shifting to a protein-rich diet. And with a bit of luck, some of Africa's poorest countries will also become important exporters of grain and other agricultural products, proving that a hungry China can be positive for the world.

China's agricultural performance over the past three decades was impressive. Annual growth averaged nearly 5%, slower than GDP growth but more than four times the rate of population growth over the same period. Farmers also responded well to qualitative and quantitative changes in food demand: they planted less rice and wheat; grew more

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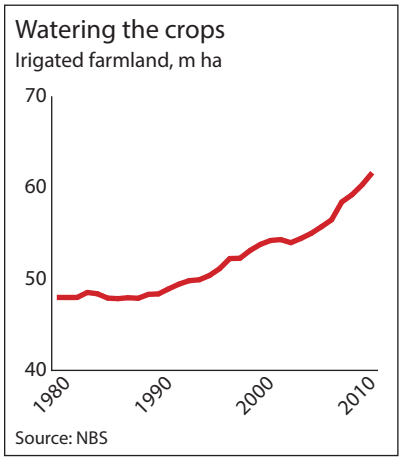
cereals for livestock feed, as well as fruit and vegetables; and reared millions more pigs, chicken and sheep for direct consumption.

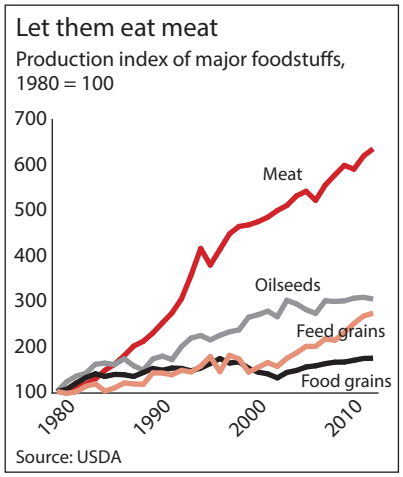
Several factors contributed to this agricultural restructuring. In the first place, the introduction of the household responsibility system in 1979-84—which gave individual households the right to profit from land formerly held collectively—boosted productivity enormously. Farmers planted improved crop varieties and invested more in inputs, such as industrial fertilizers. Another important factor was massive state investment in irrigation and technology. By 2010, more than 50% of cultivated land in China was irrigated. Finally, transportation and market infrastructure improved remarkably, which raised the return to farmers at the farm gate.



As food demand continues to grow, China must find new ways of boosting production. Given its severe natural resource constraints—China feeds more than 20% of the global population with just 8% of the world's arable land and one-quarter of its average per-capita water resource—this requires raising productivity. There are a number of reasons to be optimistic. China is one of only a few major countries that have steadily increased public spending on agricultural technology over the past few decades. And that commitment remains strong: for the past 10 years, the Number One policy document has focused on modernizing farming, improving rural livelihoods, and making agriculture more productive. Leaders plan to raise the efficiency of labor by investing in machinery, spending more on technological research and development, and plowing US$630 bn to combat water scarcity by 2020.

Meat, glorious meat

Food demand in China is growing for two reasons: rising incomes and urbanization. Total population growth, which has slowed from over 1% to under 0.5% per year over the past 15 years, is no longer a big factor. With the population now expected to peak at roughly 1.45 bn people, there will only be 100m or so extra mouths to feed over the next 15-20 years. To put that in context, China's urban population grew by around 220m in the first decade of this century, and may grow by a further 250m by 2030. Far more important for global markets is that China's wealthier urban citizens are eating more meat, vegetables, fruit and sugar. Urban life encourages people to eat out far more than they used to, which in turn encourages a richer diet: nearly half of all meat consumed in China's towns and cities is eaten in restaurants.



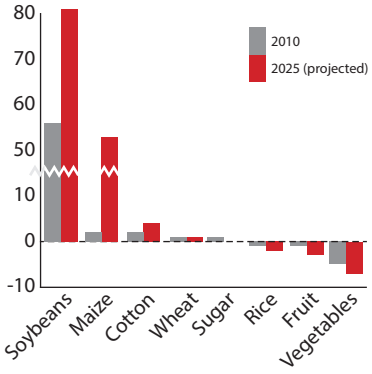
Income growth and urbanization will continue to drive food demand in the future. According to most experts' projections, China will maintain annual GDP growth of 7-8% in 2011-20, falling to about 6% in 2021-2030. Even if actual growth is slower, a tighter labor market means that income levels should rise significantly. The speed of urbanization will largely depend on the pace of job creation and government policies to move farmers into cities. But we can reasonably expect the proportion of people living in cities to rise from a little over half today to around two-thirds by

2030. With rapid income growth and urbanization set to continue, the fast growth in total food demand over the next decade will roughly match that of the last. Demand growth will slow in 2021-30, but continue to expand. Only by the early 2030s will China's demand for food stabilize.

Meat consumption will rise more than 60% in the next two decades

The changing consumption patterns of the past decade will continue but broaden over the next. Increases in food demand will mainly come from non-staple food, particularly livestock products. While direct consumption of grains like rice and wheat is projected to fall, rising meat consumption means that demand for grain feed will rise substantially. In the next two decades, meat consumption—pork, poultry, beef, mutton and fish—is expected to jump by more than 60%. The fastest growth will be in dairy consumption: the average person will drink nearly 70 liters of milk a year by 2030, an increase of 150%. Demand for vegetables, fruit, edible oil and sugar will grow by 20-60%.

Not the end of the world
Net imports of agriculture and food*



*Net imports of pork, poultry and beef = 0 in both 2010 and 2025
Source: CCAP

More demand, more supply

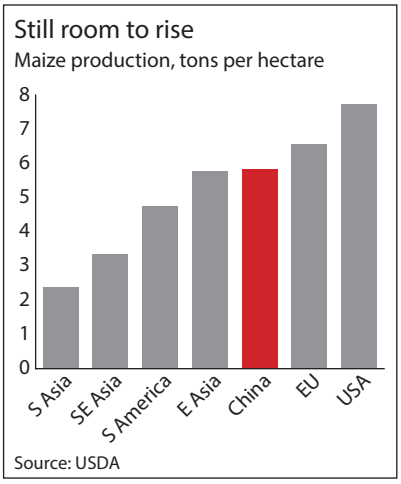
Will Chinese agriculture be able to keep up? With the nation's commitment to food security and modernizing farming, production will increase. Over the next two decades, average annual growth exceeding 3% is possible. This would be sufficient for China to achieve an overall food self-sufficiency rate of 90% in 2030. After that, as demand begins to stabilize, there is no reason why China's food security should not improve along with productivity increases.

Even as overall food demand grows, China should not struggle to meet domestic demand for rice and wheat—especially as direct grain consumption is expected to fall. As long as the domestic grain price is competitive with the international price, that will be good news for the nation's import bill. China will also be able to grow the vast majority of its fruit and vegetables, and will remain a net exporter of horticulture products—though imports of tropical fruits will rise. Increases in total meat imports are expected, but these will only be moderate as China ramps up domestic meat production. The Center for Chinese Agricultural Policy projects that China should produce nearly enough pork and poultry to be self sufficient; the biggest imports (as shares of consumption) will come from beef, mutton and dairy produce.

The most significant increase in imports will be for feed from soybeans and maize. The huge increase in soybean imports over the past decade was driven by demand for edible oils as well as feed, but future growth will largely be to feed China's swelling stock of animals raised for meat. We project that soybean imports, which totaled 58m tons in 2010, will hit nearly 90m tons in 2030. Although domestic maize production to feed livestock should steadily increase, more imports will also be needed for China to achieve a high level of meat self-sufficiency. By 2030, imports could exceed 40m tons.

All these numbers presume a business-as-usual scenario—but two measures could significantly reduce China's imports of soybean and maize.

The first is to raise soybean and maize production yields. China's grain productivity is already high compared with other developing countries, but lower than countries with more advanced farming systems. On average, China produces 5.7 tons of maize per hectare—a very decent haul, but still well behind the 7.8 tons US farmers manage to squeeze out of the soil. Investment in better irrigation, advances in biotechnology, and better farm management could all boost output. The second is to increase China's import of meats and therefore reduce its demand for feed. This is a less realistic measure, however, given the sheer size of the country and the instability of the international market. Importing feed makes more sense.



Malthusians, relax!

So what are the global implications of China's food economy in the coming decades? Mostly, they are positive. China's growing demand will be good for food exporters, but will not have much of a negative impact on other food importers. Countries with a comparative advantage in the production of soybean, maize and dairy products will be able to expand production and benefit from growing exports to China. All the necessary increase in grain production is well within the capacity of China's existing trade partners in North America, South America and Eastern Europe. Moreover, a number of other countries have the capacity to expand production and become exporters once infrastructural and technological constraints are overcome. Since the vast majority of China's rising food demand will be met by domestic production, it will have little impact on world food security.

Some of the biggest opportunities should come in Africa, particularly in the Sub-Saharan region. Greater China-Africa cooperation is a huge opportunity for African farmers. Many African countries have substantial areas of land that are agro-climatically suitable for maize, soybean and sugar production, but are constrained by technology, marketing infrastructure, and farm management. Average yields are generally low, and there has been serious under investment in agricultural R&D and advisory services for many years, which China is now helping to strengthen. To give an idea of Africa's potential, the World Bank estimates that only about 0.2% of agricultural land in Sub-Saharan Africa is irrigated.

As most of China's rising food demand will be met by domestic production, it will have little impact on world food security

Of course, implications on the rest of world are highly dependent on China's future agricultural and trade policy. The direction of agricultural policy is pretty clear: China remains committed to ensuring national food security and will pump plenty of money into modernizing agriculture. Trade policy is trickier to call. While meat imports have been liberalized and are subject to a single import tariff of about 10%, maize imports are managed under a tariff-quota scheme. Any imports above the current quota of 7.2m tons, roughly 3.3% of consumption in 2012, can be slapped with a tariff of 65%. If China needs more maize than the quotas will allow and decides to impose a tariff, then meat imports could rise significantly.