

## Market Reforms and Policy Initiatives: Rapid Growth and Food Security in China

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**Abstract:** China has made important gains in providing food security to its vast population, but over 100 million people still live on less than one dollar a day and over 40 million people live under China's poverty line standard (around 60 cents/day). The core policies China uses to promote food security—grain reserves, marketing and self-sufficiency policies—are expensive and do not effectively provide food security to poor rural households. Various policies implemented since the 1980s to bring the remaining people out of poverty have been marginally effective. Land tenure policies promote food security by providing all rural households access to land, but also have negative effects on the growth of rural incomes. The most effective policy that promotes development and food security to targeted poor areas are the food-for-work projects coordinated by the Poor Area Development Offices. Poverty alleviation is helped by rapidly growing nonagricultural rural incomes. Job growth in this sector is likely to be spurred with China's accession to the World Trade Organization. However, many workers may be laid off from the inefficient state-owned enterprises and could result in a new food security problem in China: unemployed urban workers.

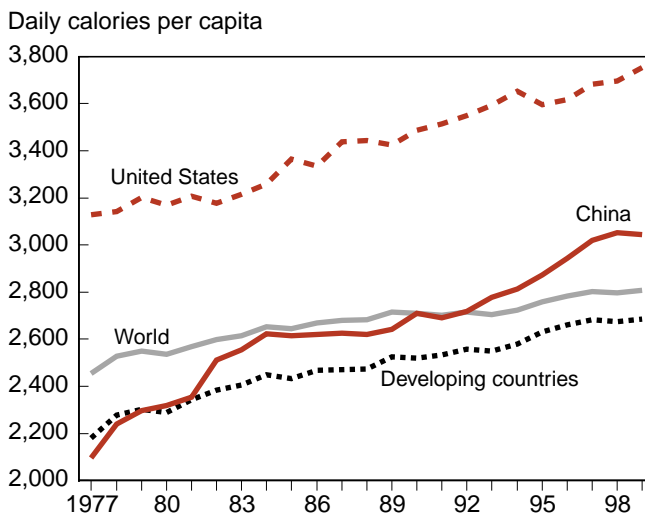
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### Introduction

China has made enormous progress in providing food security for its people since economic reforms were introduced in the late 1970s. According to FAO statistics, average per capita food consumption in China was only 2,017 calories in 1977, well below the world average of 2,500 and below the average for other developing countries at that time (fig. A-1). By 1999, average per capita food consumption in China had increased by over 50 percent, to 3,045 calories, above the world average of 2,808 calories. Nutritional intake and food quality also have improved in China. Consumers now vary their diets with more meat and vegetables than before while per capita consumption of staple grains has hardly increased in the past decade.

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Figure A-1  
**Average caloric intake in China and the rest of the world**



Source: U.N., Food and Agriculture Organization, FAOSTAT databook.

Despite the success indicated by these aggregate statistics, China still has pockets of poverty and seeks to provide greater food security for its large population, many of which are low-income farmers in areas with poor resource endowments and low levels of economic development. Household food insecurity is mostly a rural phenomenon in China. In the pre- and early reform periods (late 1950s to late 1980s), a wide variety of policies favored urban areas at the expense of rural areas, including urban food subsidies paid for by farmers through low prices received for their products. These policies kept urban food consumption at levels well above rural consumption. During the Great Leap Forward (1959-1961), urban residents, for the most part, were largely unaffected by food shortages while the world's worst famine devastated many rural areas (see box). By the 1990s, urban food subsidies were removed because urban residents had become wealthy enough to afford ample food without them.

To advance food security for both urban and rural households, China has established several programs and institutional arrangements. At the core of the policies to promote food security in China is a system of government-held stocks, state-owned grain marketing bureaus and local food self-sufficiency policies. These core policies, however, are generally intended to maintain grain supply to urban areas rather than poor rural areas. Other food security policies range from those that promote basic goals such as increasing rural incomes, targeted anti-poverty policies such as food-for-work programs, and idiosyncratic institutions such as the land tenure system which guarantees rural households access to land. These policies vary in effectiveness, but in many respects the latter set of policies have had a greater positive impact on the food security of rural households than the core grain storage and self-sufficiency policies.

Complex food security issues and policies in China must also be considered against the backdrop of an economy in transformation simultaneously undergoing both rapid development and transition from a planned to a market economy. Much of China's achievement in extending food security to millions of households has come about under the development "miracle" of the last 20 years. This miracle was the result of policies that weakened administrative control over economic decisions that characterized the collective era. Yet many of China's food security policies have their roots

in these administrative controls, but have been hybridized to adapt to the new market environment.

This article provides an overview of China's success in providing food security and the policies used to achieve that goal. It will describe the core policies of China's grain reserve system, state-owned grain marketing, and policies to promote local self-sufficiency. In addition, it discusses China's anti-poverty policies and the problems and successes China has encountered in trying to bring development and food security to the remaining rural poor areas.

### ***Food Availability and Self-Sufficiency Policies***

The term "food security" does not always mean access to food for poor households in China. Often, food security policies are intended to promote local and national grain self-sufficiency, or to maintain food availability through government-held grain stocks. China's desire to control and maintain politically determined levels of grain stocks and grain self-sufficiency generates three sets of policies: grain reserve policies, grain marketing policies, and grain self-sufficiency policies. All three have roots in the period of collectivized agriculture and some, such as policies of state-held grain reserves, go back thousands of years in China. The reform of these policies, however, has lagged compared to the reform of marketing and trade in other products or the reform in agricultural production institutions overall. Many of the marketing, storage, and trade policies have been liberalized over the last 20 years, only to be "reformed" again by changes that bring back government control.

*Grain marketing policies.* China's leaders see the undisrupted supply of grain to urban areas and low grain price volatility as important political goals. To achieve these goals, the government maintains control over the marketing and distribution of staple grains. Private grain trade was pushed out with the establishment of collectivized agriculture in the late 1950s, and the loss of private traders is thought to be one of the causes of the famine in 1959-61 (see box). Rural markets were restored in the early 1980s, and farmers today sell nearly all their fruit and vegetable production on free markets. However, government control of grain marketing still prevails, and even increased in the late 1990s, but has liberalized in the last 2 years. At its most liberalized period in the early 1990s, nongovern-

## China: The Great Leap Forward

The high level of concern among China's leaders over food security, however misplaced by emphasizing self-sufficiency, is becoming more understandable as the events around the Great Leap Forward period (1959-1961) become known. The Great Leap Forward began as a drive to harness the energies of China's enormous rural population to modernize the agricultural sector, rapidly increase industrial and agricultural production, and establish rural collective utopias (the People's Communes). All varieties of food and services were to be plentiful and free of charge after only a few years of hard work setting up these collective enterprises. It ended as a monumental failure that likely set back China's economic development by a generation or more. The policy of state grain procurement, combined with a dramatic fall in agricultural production, caused a devastating famine, the grisly details of which are only now beginning to be known.

Estimates of the number of deaths by famine during what are now called the "three lean years" (1959-1961) are in the neighborhood of 20-45 million, making it far and away the worst famine in the history of the world in terms of absolute number of victims. In addition, an untold number of births were aborted by malnourished mothers. A frequently cited early estimate by Judith Banister (1987), concluded that there were roughly 30 million excess deaths during the period. The central inland provinces of Anhui, Henan, and Sichuan bore the brunt of the famine. Some estimate that up to a quarter of the rural population of Anhui perished during those 3 years (Becker, 1997). The actual number of famine deaths will never be known, partly because of the inherent difficulty of determining "excess deaths" from famine. Other reasons include the loss of many records in the years

since, the movement of millions who fled famine areas, and the secrecy surrounding the events that occurred, which extends down to sub-provincial levels since local leaders wanted their superiors to believe that no famine was occurring in their respective areas.

The famine was due to a combination of lower food availability as well as a state-controlled grain distribution system that gave urban residents entitlement to food at the expense of rural residents in order to support industrialization. Agricultural production clearly plummeted over the period (Crook, 1988). Bad weather is officially blamed for the fall in production and at least part of the famine, but this does not fit with meteorological evidence taken from nearby countries, which paints a picture of relatively good weather for agricultural production over those years. It is more likely that production fell due to poor incentives under the collectives, ill-suited farming practices that the collective leaders were implored to adopt, and bureaucratic allocation of labor, much of which was directed at the now notorious rural steel furnaces even while unharvested crops rotted in the fields. But despite the production fall, rural officials at the time reported production increases in order to show the success of their collective operations. Thus China increased its grain procurement from rural areas and even its grain exports to the Soviet Union during this time. Between 1958 and 1959, grain output fell from 200 to 170 million metric tons (mmt), but quota deliveries rose from 51.8 to 64.1 mmt and exports rose from 2.7 to 4.2 mmt (Lin and Yang, 2000). This left insufficient grain for many rural areas to survive the year. Although grain production did not recover until 1966, quota levels fell back to the 1958 level (as a percent of production) and imports began by 1961.

ment traders handled about one-third of China's domestic grain market.

To carry out government grain marketing and storage policy, China has established a system of government-owned Grain Bureaus and Grain Stations in counties and townships across the countryside. The primary responsibility of this system has been to collect mandatory grain quota deliveries from farmers and to store state-owned grain reserves. China's grain quota policy is linked with the land policy (see page 27).

Since reforms in the late 1970s, households receive land to farm in exchange for delivering a grain quota to the Grain Bureau for a fixed, below-market price determined in advance by the government. The Grain Bureaus then either store the collected grain as state grain reserves or market it as a state-owned commercial enterprise. Grain Bureaus also can buy grain beyond the quota amount at a "negotiated" price, which is also set in advance by the government but is closer to free market prices. Farmers generally are free

also to sell any remaining grain on the free market, but this outlet was restricted in the late 1990s.<sup>2</sup>

China's government-owned Grain Bureaus are often called upon to fulfill policy objectives, yet are also expected to be commercial, financially independent enterprises. The conflicts that are inherent to fulfilling both goals cause a variety of problems. As state-owned companies, they are often required to hire demobilized soldiers or follow other hiring requirements. As a result, they have far more employees than they need, are notoriously inefficient, and rely on large subsidies to stay solvent. Because they must also compete with the private sector, or because of underlying economic factors that distort the outcomes of policy directives, they often cannot fulfill their political objectives.

The use of the extensive but inefficient state grain system to further political goals not only draws from government revenues, but also may exacerbate food insecurity in rural China. The Grain Bureau subsidies are substantial. In 1997/98, losses by state-owned Grain Bureaus totaled over 100 billion yuan, or \$12 billion (Crook, 1998). In addition, since the Grain Bureaus carry out politically motivated price policies that do not consider underlying economic trends, they may actually exacerbate price volatility. In some cases, the Grain Bureaus could not make money buying grain at the prices they were instructed to pay, so they stopped buying altogether, which hurt farmers. Finally, until recently the Grain Bureaus have not considered quality or paid a premium for it. Even today, the premium is probably not sufficient to make high-quality grain, which tends to be lower yielding, profitable enough for farmers.

*Grain reserve policies.* In addition to control over grain movement, China's national government also controls a large amount of reserve grain stocks. The actual size of the government held stocks is not publicly released and is considered a state secret. In addition to state stocks, private end users (such as millers) maintain stocks, the Grain Bureaus themselves hold commercial stocks, and farm households also hold stocks for their own food security and as a liquid

<sup>2</sup> Grain markets are currently liberalizing restrictions placed on private traders in the 1990s and private trade is growing. In 2000 and 2001, several provinces also announced that they will no longer set and collect grain quotas from farmers, so more grain will be available for marketing through the private sector.

asset in areas where there are few, if any, financial institutions. One of the few attempts to break down China's stocks concluded that roughly 70 percent were held on farms, 24 percent were state-owned, and 6 percent were commercial stocks held by the Grain Bureaus and private operators (Crook, 1996).

China's state-held stocks, however, are too bureaucratically constrained to effectively reduce price volatility. Their existence has more to do with grain security for urban consumers and the military than to promote food security for low-income farmers. The state stocks are managed by the State Administration for Grain Reserves (SAGR), but are held by the Grain Bureaus, which in turn report to the SAGR. The SAGR stocks may be sold if prices increase by more than 20 percent, but this requires a decision at the provincial level, which takes time. Often, the Grain Bureaus intermingle the SAGR stocks and their own commercial stocks and so may perceive state stocks as part of their commercial enterprise, which they may not want to sell when prices are rising. Grain Bureaus also collect fees from SAGR to store the stocks, which they will lose if they sell the stored grain.

China's policy of maintaining strategic stocks is also expensive and perhaps unnecessary for advancing food security for the most vulnerable households. Cost estimates for carrying over the excessively large strategic stocks are substantial. A recent estimate of the costs to carry over one ton of wheat, rice, and corn came to roughly \$42, \$56 and \$39, respectively, over 20 percent of the price of each commodity on the world market (Nyberg and Rozelle, 1999). These amounts, when multiplied by the several million tons of carry-over stocks, translate into substantial maintenance costs. In addition, farmers likely will not rely on these stocks to protect them from food shortages, partly due to past experience, and may store sufficient grain to weather a bad crop year (or two) themselves.

*Self-sufficiency policies.* The political motivation for holding strategic stocks also motivates the desire to be self-sufficient in staple grains. As a remnant from the collective era, central planners have promoted self-sufficiency on a national, as well as local, scale. Emphasis on self-sufficiency began to wane in the early 1990s, only to become important again in 1995, presumably after Lester Brown predicted massive food imports in China by 2030 that would destabilize world markets and cause famine in poorer parts of the world (Brown, 1994).

In 1995, China established the Governors Grain Bag Policy (GGBP), which charged governors with achieving provincial self-sufficiency (balancing local supply and demand) and for some grain pricing and marketing in their provinces. The GGBP did not make any fundamental changes to grain marketing or production policy other than turning over the responsibility for grain production, marketing, and quota fulfillment to governors. At the same time this policy was initiated, however, came an increase in quota levels indicating a clear emphasis on increasing grain sown area, yields, and ultimately grain production.

At the national level, China seeks to promote self-sufficiency through state control over grain imports and exports. This allows government policy to ensure that if the international price is below China's price, grain will not be imported and undermine local grain production. Alternatively, if prices are higher on the international market, China's domestically produced grain will not leave the country and undermine locally held grain reserves. This control is achieved through a complex system of state-owned marketing and trade companies that interact with officials from the national government and the provinces to determine annual import and export quotas. These quotas are then allocated to buyers and sellers who fulfill their quota through the state trading enterprises (WTO accession has changed the import mechanisms and borders will become more open to imports).

While self-sufficiency policies ensure that grain is produced for local consumption, they may well adversely affect rural household food security. The policies discourage areas from moving into crops or economic activities for which they have a comparative advantage, thus holding back potential income growth. Income, of course, is the most important determinant of household food security, so policies that discourage farmers' ability to increase their incomes have a distinct negative effect on farm household food security. In addition, by encouraging grain to be locally produced, rather than produced in the most suitable areas, food self-sufficiency policies also lower the demand for markets in rural areas and thus slow market development. Well-functioning markets increase the overall wealth of an economy and can assure that food supplies are available for households when they need them, so long as they have the income to purchase them.

Overall, the main problem with China's system of state controlled grain marketing, storage, and emphasis

on self-sufficient production, all done in the name of advancing food security, is that they promote food availability in rural areas, but not entitlement or the right to food. Entitlement is often the more important component of food security. Many famines happen when food is available, but households do not have the means to access it. Indeed, during the famine of 1959-61, China was exporting grain to the Soviet Union. Although crop production fell dramatically, there was some stored grain available, but the grain was not made available to many poor farmers.

### ***Poverty Reduction in China: The Success of Rural Reforms***

China's enormous success at increasing the food security for hundreds of millions of rural residents is due more to rapid economic growth than policies specific to food security. In the late 1970s and early 1980s, China implemented a series of economic reforms. The result was one of the world's most spectacular reductions in poverty, increasing food security for hundreds of millions of rural residents. The gross value of agricultural output rose from 139.7 billion yuan to 321.4 billion yuan between 1978 and 1984, increasing 7.7 percent a year in real terms. Using China's own poverty lines, the number of rural poor fell by 132 million between 1978 and 1984, from 260 million to 128 million (table A-1). World Bank estimates suggest an even greater decline, from 260 to 89 million, indicating that 171 million rural residents came out of absolute poverty in China over the period of 1978-84 (table A-1).<sup>3</sup>

The economic reforms that generated the profound reduction in absolute poverty had three main features (table A-2). First, in 1978, the new leadership introduced a one-time, 20-percent increase in prices paid to agricultural producers to reverse the urban-biased policies that dominated the collective period. Second, the Household Responsibility System (HRS) broke up collectivized agriculture and restored the role of the farm household as the primary unit of production.

It is interesting to note that China's leaders did not encourage the adoption of HRS in the beginning. Initially, HRS was viewed as a local anti-poverty program. Cadres in poor areas were allowed to experi-

<sup>3</sup> The estimates of absolute poor take retail food prices into account. They estimate the number of people whose income is insufficient to purchase a food basket that achieves minimum caloric intake at current prices.

Table A-1--Poverty reduction in China: China and World Bank estimates

Year	China's official poverty lines			World Bank I		World Bank II	
	Poverty line	Number of rural poor	Share of rural population	Number of rural poor	Share of rural population	Number of rural poor	Share of rural population
	<i>Current yuan</i>	<i>Million</i>	<i>Percent</i>	<i>Million</i>	<i>Percent</i>	<i>Million</i>	<i>Percent</i>
1978	--	260	32.9	--	--	260	33.0
1980	--	218	27.6	--	--	218	27.6
1981	--	--	--	--	--	194	24.3
1982	--	140	17.5	--	--	140	17.4
1983	--	--	--	--	--	123	15.2
1984	200	128	15.1	--	--	89	11.0
1985	206	125	14.8	--	--	96	11.9
1986	213	131	15.5	--	--	97	11.9
1987	227	122	14.3	--	--	91	11.1
1988	236	96	11.1	--	--	86	10.4
1989	259	106	12.1	--	--	103	12.3
1990	300	85	9.5	280	31.3	97	11.5
1991	304	94	10.4	287	31.7	--	--
1992	317	80	8.8	274	30.1	--	--
1993	350	75	8.2	266	29.1	--	--
1994	440	70	7.6	237	25.9	--	--
1995	530	65	7.1	200	21.8	--	--
1996	580	58	6.3	138	15.0	--	--
1997	640	50	5.4	124	13.5	--	--
1998	635	42	4.6	106	11.5	--	--

-- = Not available.

Source: China's poverty estimates for 1978-82 and absolute poverty estimates for 1978-1990 are from World Bank I (1992). International Poverty line estimates from 1984 to 1998 are from World Bank II (2001).

Table A-2--China: Rapid changes between 1978 and 1984

	Grain prices	HRS adoption	Rural markets	Grain production	Grain sown area	Grain yield
	<i>1978=100</i>	<i>Percent of villages</i>	<i>Number</i>	<i>Million tons</i>	<i>Hectares</i>	<i>Kg/ha</i>
1978	100.0	0	--	304.8	120.6	2,596
1980	141.8	14	37,890	320.6	117.2	2,735
1982	161.1	80	--	354.5	113.5	3,124
1984	199.4	99	50,356	407.3	112.9	3,608

-- = Not available.

Source: National Bureau of Statistics, Agricultural Statistical Yearbook, various years; Lin, 1992; Carter, Zhong and Cai, 1996.

ment with organizational forms that increased production and incomes. Thus, poor areas implemented the HRS reforms first, and were so successful that other areas soon adopted the system. By the time HRS was officially sanctioned in 1984, nearly all of China's countryside had already adopted the system.

The third feature was the establishment of rural markets for households to market their excess production (beyond their grain quota delivery obligation). These free markets gave households the opportunity to not only sell excess production, but also to earn income through production and sale of sideline goods. The real value of sideline production rose 15.5 percent annually over the 1978-84 period (Carter, Zhong and Cai, 1996).

*Land tenure system under HRS.* A unique land tenure system was established under HRS in order to both restore household farming and promote egalitarian access to land, and, indirectly, to food. Chinese households do not own their land outright. Instead, the *right to use* land and the *right to residual income* from the land are extended to the households in the collective. The guidelines for how these allocations are determined vary widely from village to village, but usually are based on the number of people in the household (to uphold the egalitarian ideals of the collective era). In return for these rights, farm households usually must deliver a mandatory grain quota to the state Grain Bureaus (as described above) and often must pay an agricultural tax that is based on the size of their land allocation.

The fundamental aspects of the land tenure system established under HRS still exist today, providing access to land for every rural household and serving an important food security function. Because of this system, China does not have a large population of landless workers as is found in most other low-income agrarian countries. Landless rural workers are usually the most food insecure because they rely on wages to buy food and therefore are more vulnerable to disruptions in employment or food price increases. Landed households are less vulnerable because they are more likely to store agricultural production that they can sell or consume later. Landed households can also use their land as collateral to borrow money or food. While farmers in China cannot use their land directly as collateral, they can use future production as collateral if in need. China's policy of providing every household with access to land makes an important contribution to furthering food security for rural residents.

Although growth in agricultural production was impressive under HRS, and its linkage to the new land tenure arrangements is clear, the land tenure system also has effects that hold back income growth and impede entitlement. Tenure rights in China depend on the household maintaining residency in the village. The nominal owners of land, usually a village collective, hold the right to reallocate land away from households, which they may do to maintain an egalitarian distribution or for other more capricious reasons, generating tenure insecurity. The implied mobility costs and lack of incentives to make long-term productivity increasing investments adversely affect farm incomes. The magnitude of these effects is unknown and debated among China's rural economy scholars. In addition, the tenure system is less effective at promoting old-age food security since households lose land as members move out, leaving the elderly more dependent on their children than if they had small land holdings generating rental income.

*Anti-poverty policies.* After the enormous and immediate success of the HRS and related reforms, the pace of poverty reduction waned by the mid-1980s. To reinvigorate the process, China's State Council established the Leading Group for Economic Development in Poor Areas (LGEDPA) in 1986. The LGEDPA was a task force charged with the task of identifying poor areas and coordinating policies to facilitate economic growth in those areas.

Under the LGEDPA, China initiated a campaign to eliminate poverty by identifying poor areas, then channeling

various funds to these areas to facilitate economic development. The LGEDPA ultimately identified a total of 698 counties, roughly one-third of all the counties in China. Seventy-eight percent of the designated counties were to the west of a north-south line drawn through the mountainous regions connecting Heilongjiang and Yunnan Provinces, a geographic pattern of poverty that remains today. Once identified, the LGEDPA established Poor Area Development Offices (PADOs) to administer funds from national and provincial budgets, and also directed banks to make loans to these offices from special funds set up for poverty reduction. Designated poor counties received three main types of aid: subsidized credit, food-for-work programs, and development grants. These aid programs are meant to provide the investment impetus to spur economic development.

Since the introduction of the anti-poverty programs in the late 1980s, the campaign has been re-organized, and while it has not achieved its original goals, there are some signs of success. While poor counties that were designated and assisted by the anti-poverty campaign did not grow faster than all other counties, they did grow as fast as the average, which was faster than the poor counties that were not included in the campaign (Rozelle, Zhang and Huang, 1998). Many of the original loans were actually consumption subsidies, rather than investments to promote economic growth. In the early 1990s, efforts were made to re-designate counties to reflect their actual poverty levels and to ensure that funds went into investments rather than consumption loans. The most successful elements in the campaign were investments to increase rural education and agricultural productivity. In particular, the food-for-work programs, especially when the work was directed at constructing irrigation systems or soil conservation projects, had the best record of achieving average growth rates, and also likely had the greatest direct impact on food security for rural households.

*The role of nonfarm income growth.* The fastest growing segment of rural incomes since the early 1980s has not been agriculture, but rather nonagricultural incomes. Rural industry was the most dynamic sector of the economy for many years during the mid-1980s through to the early 1990s. Since 1980, over 100 million rural residents have found nonfarm jobs in rural industry. In addition to jobs in the formal rural industrial sector, the number of self-employed farmers in nonagricultural trades increased even faster (Lohmar, Rozelle and Zhao, 2001). By the mid-1990s, when growth in the rural industrial sector began to slow,

rural-urban migration surged. While this component of rural nonfarm employment is less well documented, estimates of the number of rural-urban migrants range from between 40 to 100 million in the mid 1990s. Unlike many other developing countries, however, rural-urban migrants do not face high food insecurity because they are not landless laborers driven from the countryside by poverty. They are generally young adults who, on their own, leave rural households behind to seek employment opportunities in the cities. These migrants tend to come from relatively poor villages in generally well-off regions. If these migrants suffer wage or employment loss, they can generally return to their home village for access to food.

The explosion in rural nonfarm employment in China has brought increased income to hundreds of millions of rural residents, but it has also had some drawbacks. Rural industrial growth was largely a coastal phenomenon. Inland provinces do not have the same access to urban and overseas markets or investment funds enjoyed by the coastal provinces. Even within villages, households with nonfarm incomes are the wealthiest households. Income inequality has increased substantially since the early 1980s. The tax system, which has yet to be reformed to reflect new income sources, exacerbates this inequality. Households still pay most taxes according to land size or agricultural production, while nonfarm income is not subject to taxes. Although rural income inequality has increased and is a problem, it is far lower than the inequality between regions, particularly between urban and rural areas where the ratio of average income is nearly 3 to 1. Because of the differences between agriculture and nonagricultural incomes, policies that facilitate movement of labor out of agriculture and labor mobility, such as rural education programs, hold out the most promise for increasing rural incomes in the future.

### ***The Effect of WTO on Food Security***

China recently finished longstanding negotiations to enter the World Trade Organization (WTO). Implementing the commitments it made to join WTO will make China's agricultural economy more open. The commitments include: transparent and significant tariff-rate quotas for staple grains and other important commodities; limits on the levels of trade-distorting domestic support China can extend to farm commodities; and, measures that will undermine the monopoly power of state trading companies and will likely promote domestic market development.

It is difficult to assess the net effect of China's commitments to WTO on the nation's overall food security. In the agricultural sector, many outcomes will depend on whether prices are higher or lower in China than the rest of the world and how the state trading and marketing regimes manage price volatility. These points are currently debated among scholars of China's rural economy. If prices are lower and more volatile than international markets, then the integration with the outside world that will come as a result of WTO accession will have a clear positive impact on rural incomes and food security for households that produce more grain than they can consume. However, higher grain prices will adversely affect households that cannot produce enough grain for their own consumption. The greater integration of China's domestic economy is also expected to increase overall wealth and rural incomes, especially as more farmers are allowed to specialize in high-value cash crops.

The most important impact WTO accession will have on food security in China, however, will likely be through growth in the nonagricultural sector, rather than through changes in agriculture directly. WTO accession is expected to increase the nonagricultural component of rural incomes and will, in the long run, provide net income increases for farm households even if prices for agricultural products fall. These effects, coupled with increased migration opportunities as the domestic economy becomes more integrated, will serve to increase household income, even in poor and remote areas of China where most food insecurity exists.

There is a downside to WTO accession, however, that could exacerbate the emerging problem of food insecurity in urban areas as state-owned enterprises lay off workers that formerly enjoyed "iron rice bowls"—lifetime employment and food security. The number of employees laid off from overstuffed and inefficient state-owned enterprises has grown significantly in recent years as China's leaders push state enterprise reform to prepare the industrial sector for competition with foreign enterprises after WTO accession. These workers are often older and have less education than the workers with whom they must compete for available jobs. The plight of these workers is a major, and growing, concern for the leadership in China. Attempts at introducing a social security system to provide them with at least subsistence income have failed, largely due to fiscal constraints. WTO accession will increase the pressure on state-owned enterprises to become more efficient and this will certainly mean more layoffs.



Without a social security system in place to provide food security for former employees, WTO accession may hasten the growth of what has up to now been almost nonexistent in China: urban food insecurity.

### Conclusions

China has made important gains in providing food security to its vast population, most of whom live in farm households with only small plots of land. Still, given the size of the population, there were over 100 million living on less than \$1 a day in 1998 and over 40 million living under China's lower poverty line standard. Various policies to bring the remaining people out of poverty since the initial surge of poverty reduction in the early 1980s have been marginally effective, but those remaining will be more difficult to reach since they generally live in more remote areas.

The policies China uses to promote food security are expensive and do not effectively provide food security to poor rural households, and may even worsen their food security by discouraging growth and market development. Practically the only truly effective policy that promotes development and food security to targeted poor areas are the food-for-work projects coordinated by the PADOs. Grain reserves, marketing, and self-sufficiency policies often are not intended to provide food security for the rural poor and certainly do not promote entitlement to food. Land tenure policies do promote food security by providing all rural households with access to land, but also have negative effects on the growth of rural incomes.

The fastest growing and most promising component of rural incomes is nonagricultural income. Nonagricultural incomes are expected to continue growing, especially with China's accession to the WTO. But these nonagricultural jobs have been, and will continue to be, concentrated in the coastal provinces, so policies that encourage migration are the best way to help households in poor inland areas access these jobs. Education is repeatedly shown to be one of the biggest determinants of the decision to migrate, and public education will play a key role in China's future success at bringing more people out of poverty. While WTO accession is expected to spur job growth, it will also spur layoffs from inefficient state-owned enterprises. Urban workers laid off from these firms may begin to form a new food security problem in China—unemployed urban workers.

### References

- Banister, J. *China's Changing Population*. Berkeley, CA: Stanford University Press, 1987.
- Becker, J. *Hungry Ghosts*. New York: The Free Press, 1997.
- Brown, L. *Who Will Feed China: A Wake-Up Call for a Small Planet*. New York: W. W. Norton and Company, 1995.
- Carter, C., F. Zhong, and F. Cai, 1996. *China's Ongoing Agricultural Reform*. San Francisco: The 1990 Institute.
- Crook, F. W. (ed.). *Agricultural Statistics of the PRC, 1949-1986*. Washington, DC: U.S. Department of Agriculture, Economic Research Service, 1988.
- Crook, F. W. "China's Grain Stocks: Background and Analytical Issues," *China Report*. Washington, DC: U.S. Department of Agriculture, Economic Research Service, 1996.
- Crook, F. W. "Agricultural Policies in 1998: Stability and Change," *China Report*. Washington, DC: U.S. Department of Agriculture, Economic Research Service, 1998.
- Lin, J. and D. Yang, 2000. "Food Availability, Entitlements and the Chinese Famine of 1959-61," *The Economic Journal*. v110, January, 2000: 136-158.
- Lin, J. 1992. "Rural Reforms and Agricultural Growth in China," *American Economic Review*, v82(1) March, 1992: 34-51.
- Lohmar, B., S. Rozelle, and C. Zhao. "The Rise of Rural-to-Rural Migration in China," *Asian Geographer*. v20, 2001.
- Nyberg, A. and S. Rozelle. *Accelerating China's Rural Transformation*. Washington, DC: World Bank, 1999.
- Rozelle, S., L. Zhang, and J. Huang. "China's War on Poverty." Center for Chinese Agricultural Policy, Working Paper Series, No. WP-00-E23, 1998.
- World Bank. *China: Strategies for Reducing Poverty in the 1990s*. Washington, DC: World Bank, 1992.
- World Bank. *China: Overcoming Rural Poverty*, World Bank Country Study, Washington, DC: World Bank, 2001.