

## The WTO challenge to agriculture

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### A REVIEW OF CHINA'S AGRICULTURAL SECTOR

Agriculture is very important in China because it is still the major source of income for half of the country's 1.26 billion people. From 1952 to 2000, the share of agriculture in GDP decreased from 51 per cent to 16 per cent, whereas the share of agricultural workers in China's total employment only decreased from 84 per cent to 47 per cent.<sup>1</sup>

The disparity between the share of agriculture in GDP and the share of agricultural workers in total employment indicates how low agricultural labour productivity is when compared with other sectors. In 2000, rural per capita net income (similar to disposable income) was only 2253 yuan (US\$272), or just 36 per cent of the average urban per capita disposable income. Agricultural income accounted for 50 per cent of rural per capita net income, and income from farming accounted for 39 per cent. Thanks to rapid rural industrialisation over the past 20 years, non-agricultural activities provide 44 per cent of farmers' incomes.

### Grain output, yields and labour productivity

Grain production has been the most important component of agriculture. Rough calculations indicate that in gross value terms total grain output accounted for 65 per cent of total farm output and 38 per cent of agricultural output in 1998. China is the largest grain producer in the world; it accounts for over one-fifth of total world grain output. Grain output in China increased from 300 million tonnes to 512 million

tonnes between 1978 and 1998 (but declined to 462 million tonnes in 2000). The large increase in grain output can be mainly attributed to four effects: market-oriented reforms and the adoption of the Household Responsibility System in the early 1980s; increases in domestic grain prices; technical progress (for example, development of hybrid rice); and continued increases in inputs (see for example Sicular 1988; Lin 1992, 1996; Rozelle and Boisvert 1993; Huang, Rosegrant and Rozelle 1998; and Wang 1999).

The average grain yields for China as a whole reached 4.95 tonnes per hectare (measured by sown areas) in 1998–99, significantly higher than in most developing countries and close to that of industrialised countries.<sup>2</sup> Yield per cultivated land unit is much higher, because the multiple-cropping ratio is high, usually 1.5 to 1.6. On average, three farmers in China share one hectare of arable land. Labour intensity has been one of the highest amongst the world's major grain producers—60 per cent higher than the world average, 20 times higher than the United Kingdom, Germany and France, 50 times higher than in the United States, and 100 times higher than Australia and Canada (World Bank 1997a; International Labour Office 1998). Because of natural limitations to the arable land area and the huge agricultural population, labour productivity in the agricultural sector is very low.

### Inter-sectoral transfer of agricultural labour

A major challenge to China's agricultural sector is to shift to its huge redundant labour force to non-agricultural sectors. Rapid rural industrialisation resulting from the market-oriented reforms of the past 20 years has caused 100 million rural labourers to move from the agricultural sector to the Township and Village Enterprise (TVE) sector. Total TVE employment was 128 million in 2000. Following the relaxation of policy restrictions, rural–urban migration has increased rapidly since the late 1980s. The numbers of so-called 'floating labour' are statistically unavailable, but based on data from surveys, the author estimates that there was 14 million in 1990 and around 47 million in 2000.<sup>3</sup>

During the period 1980–2000, the total rural labour force increased from 347 million to 519 million, and the agricultural labour force increased from 317 million to 344 million.<sup>4</sup> The growth rate of rural labour will now slow due to the family planning policy and urbanisation. Estimates by the author indicate that there will be a total of 530 million rural workers by 2010.

While the natural growth of rural labour is slowing, rural industrialisation has also

stagnated since the mid 1990s. Total employment in the TVE sector grew at an annual rate of 12 per cent in the 1980s, but only 3 per cent in the 1990s (and was negative in 1996 and 1997). There seems no reason to believe that the growth rate will recover in the medium term. We may assume an average 1.5 per cent growth rate of TVE employment from 2001–10, to reach a total of 149 million by 2010. Due to the weaker demand for, and oversupply of, unskilled labour in urban areas, rural–urban migration is unlikely to grow faster in the near future.

After deducting those who have been employed by TVEs and those who migrated to urban areas, nearly all the remaining rural labourers are in the agricultural sector. This is because they are entitled to a small parcel of arable land under the Household Responsibility System (HRS), which provides them with a form of minimum insurance. Therefore, the agricultural sector hosts the majority of the underemployed labour. Table 6.1 shows the growth (and expected growth) of the rural labour force, TVE employment, estimated rural–urban migration, and estimated agricultural labour. Assuming that the speed of the transfer of agricultural labour to the urban sector between 2001 and 2010 will be slightly slower than in the 1990s (that

**TABLE 6.1** **RURAL LABOUR, TVE EMPLOYMENT AND RURAL–URBAN MIGRATION (MILLION PERSONS)**

Year	Agricultural labour	Rural labour (statistics)	Rural labour (adjusted)	TVE employment	Rural– urban migration
1980	318	347	30	-	317
1990	473	473	93	14	366
2000	499	519	128	47	344
2010 (assumption 1)	n.a	530	149	77	304
2010 (assumption 2)	n.a	530	149	107	274

**Notes:** Rural labour is adjusted according to the national census data (see Wang 2000). The number of rural–urban migrants was estimated by the author based on MLSS and NBS (1999). Agricultural labour is calculated from rural labour after the deduction of TVE employment and rural–urban migration. For the period 2001–10, the growth rates assumed for rural labour and TVE employment are 0.2 per cent and 1.5 per cent, respectively. Rural–urban migration under assumption 1 is assumed to be 3 million per year. Under assumption 2, it is 6 million per year, while other assumptions remain the same.

**Sources:** Department of Training and Employment of the Ministry of Labour and Social Security, and Rural Social and Economic Survey Team of the National Statistical Bureau, 1999. *The Situation of Rural Labourers' Employment and Flow in China, 1997-1998*, printed report, Beijing.; and National Bureau of Statistics, 1999, 2001. *Statistical Yearbook of China*, Statistics Press, Beijing; Wang, X., 2000. 'The sustainability of China's economic growth and institutional changes', in X. Wang and G. Fan (eds), *The Sustainability of China's Economic Growth*, Economic Science Press, Beijing; and author's estimates.

is, 3.0 million instead of 3.3 million per year), then the agricultural labour force in 2010 will be 304 million—a 40 million reduction from 2000. This will mean only a minor improvement in agricultural labour productivity.

More optimistically, if urbanisation can be significantly accelerated, with rural–urban migration increasing from 3 to 6 million per year between 2001 and 2010, then the agricultural labour force will be reduced to 274 million by 2010. Agricultural labour productivity will be further increased.

## IMPORTS, EXPORTS AND PRICES OF GRAIN

### Grain trade

In the 20 years from 1981–2000, there were net grain imports in 11 years and net exports in 9 years. From 1995–2000, average annual net imports were 0.79 million tonnes. Annual gross grain imports have never reached the WTO tariff quota of 22.2 million tonnes over the past half a century. Only in 1995 were imports close to the quota, although this caused a serious oversupply of grain in the domestic market.

### Grain prices

Domestic prices of grain (farm-gate prices) took three forms in the past: the state quota price, the state above-quota price, and the rural market price. Between 1985 and 1993, state quota prices decreased in real terms by 20.3 per cent on average because the nominal price increased slowly while there was high inflation. Due to supply shortages, the state progressively increased its quota and above-quota prices from 1994–1996. Market prices also increased in 1994 and 1995 because market supplies were squeezed by the increased state purchases and increased state grain stocks. The weighted average of the state and market prices in real terms reached its highest level in 1996 (Table 6.2). At that time, major grain prices exceeded world market prices by 38–45 per cent, except for rice, which was 8 per cent lower (Wu, Liu and Ke 1997).

In 1997, quota prices increased even further despite market prices declining in 1996. This led to quota prices exceeding market prices in 1997 and 1998. In 1997, quota prices in real terms were 50.8 per cent higher than in 1993, and 20.2 per cent higher than in 1985. However, in real terms, market prices declined to their 1985 levels.

The increases in grain prices over the 1994–97 period resulted in historically high output levels (above 500 million tons) between 1996 and 1999. Together with the



large grain imports in 1995 and 1996 (20.8 and 12.2 million tonnes, respectively), this caused large surpluses in the domestic market. As a result, state purchase prices in real terms fell by 19 per cent from their highest levels in 1997 to the recent lows of 2000, and the real market price dropped by 43 per cent from its highest level in 1995 to the 15-year low in 2000, which was 20 per cent lower than its 1985 level (Table 6.2). Detailed discussion on the price fluctuations can be seen in Wang (2001).

There was a recovery in domestic grain prices in 2001. Up to September 2001, grain prices were 5.7 per cent above the levels at the end of 2000 (Center for News Gathering and Editing 2002). The recovery in prices has been modest, as total grain stocks were still large at the end of 2001.<sup>5</sup> If there is not a major increase in imports, further recovery in grain prices could be expected in the near future.

One may conclude that either the 1995–96 domestic market prices or the 1997 quota price significantly exceeded their intermediate internal equilibrium levels, whereas the 2000 domestic prices were far below equilibrium levels. To compare with world prices, we can use the average domestic market price level (in constant terms) during the period 1985–2000 to represent an intermediate internal equilibrium price level. This average level is equal to 110 per cent of 1985 market prices, 79 per cent of 1995 market prices, and 137 per cent of 2000 market prices. It happens to be equal to the mean of market prices between 1995 and 2000.

We should note that farm-gate prices are not comparable with world market prices because the former does not include the domestic purchase, transport and wholesale costs, and the latter does not include the transport, insurance and other costs when grain is imported to China. It would be better to compare domestic wholesale prices and the import C.I.F. prices; however, wholesale prices in the past were either similar to, or lower than, the rural market prices due to state subsidies in earlier years or supply surpluses in recent years.

In Table 6.3, the means of real rural market prices between 1995 and 2000 are compared with C.I.F. prices. Except for rice, the mean of rural market prices between 1995 and 2000 for all major grains is higher than the 2000 C.I.F. prices. If the domestic charges of purchase, transport and wholesale costs are added, the domestic prices would be even higher. Note that there are also quality differences between domestic and imported grains; for example, imported rice and wheat is usually of a higher quality than domestic rice and wheat.

In general, it is reasonable to accept the points of many Chinese experts, who believe that China has a comparative advantage in rice production, compared with

TABLE 6.2

**REAL PRICE CHANGES: STATE AND MARKET (1985  
PRICE = 1.00)**

	State quota price	Market price	Average
1985	1.000	1.000	1.000
1990	0.784	1.158	0.909
1993	0.797	0.965	0.853
1994	0.929	1.140	1.000
1995	0.969	1.399	1.112
1996	1.090	1.290	1.157
1997	1.202	1.028	1.144
1998	1.140	0.964	1.081
1999	1.001	0.912	0.971
2000	0.975	0.802	0.917

**Notes:** Both the state and market price indexes are derived as a weighted average of the price index of rice, wheat, corn and soybean according to their output. The rural consumer price index is used as the deflator. For the average index, the weights are two-thirds and one-third for the state and market, respectively.

**Source:** Calculated from annual and monthly data from the Ministry of Agriculture (various years), and data from the Information Centre of Ministry of Agriculture; Wu, L., 2001. 'Price Comparison Between World and Domestic Grain Markets', prepared for the ACIAR project on China's grain market, The Australian National University and National Bureau of Statistics, various years; *Statistical Yearbook of China*, Statistics Press, Beijing.

TABLE 6.3

**COMPARISON OF RURAL MARKET PRICES WITH C.I.F.  
PRICES, 1995–2000 (YUAN/TONNE)**

	Rural market price	2000 C.I.F. price
Rice	2452	3859
Wheat	1477	1375
Corn	1265	976
Soybean	2341	1785

**Note:** Rural market prices are calculated as the mean of 1995 and 2000 rural market prices in 2000 constant prices. C.I.F. prices are derived from the imported volumes and values in 2000, converted from US dollars to renminbi. For corn, the C.I.F. price is for 1999 since the 2000 data are unavailable.

**Source:** Calculated from annual and monthly data from Ministry of Agriculture (various years), data from the Information Centre of Ministry of Agriculture, Wu, L., 2001. 'Price Comparison Between World and Domestic Grain Markets', prepared for the ACIAR project on China's grain market, Australian National University and National Bureau of Statistics, various years; *Statistical Yearbook of China*, Statistics Press, Beijing.

all other major grain products. Even for rice, due to the quality differences between domestic and imported products, a large volume of imports is still possible in the medium term. Thus, the WTO tariff quota will have a substantial impact on domestic grain production.

## THE DIRECT IMPACT OF THE WTO QUOTA ON GRAIN IMPORTS

### Major changes after WTO accession

The most important change in agriculture following from China's WTO accession is that China will adopt a tariff quota for total grain imports at a 1 per cent token tariff rate. The quota will be 18.3 million tonnes in 2002, 20.2 million tonnes in 2003, and 22.2 million tonnes in 2004 (Table 6.4). According to the accession agreement, the tariff quota is to be shared between the state and private trading enterprises, and all unused state quotas are to be transferred to private enterprises.

Other major commitments are

- above-quota tariff rates for the major grains will be 65 per cent. For soybeans the tariff rate will be 3 per cent
- the average tariff rate for all agricultural products is to be reduced from 22 per cent to 17.5 per cent
- the average rate of domestic support for agricultural products will be zero. There will be no export subsidies
- other non-tariff restrictions on imports of agricultural products, such as licensing, are to be eliminated. This includes restrictions on imports of wheat from the north-west areas of North America, which may have TCK disease.

The economic impact of the latter changes is not clear and the issues are strongly debated. More detailed information and analysis are needed. The above-quota tariff rate may not be important because past experience indicates that there is little likelihood of imports exceeding the quota.

### Size of the import quota compared to domestic grain market

To assess the impact of the 22 million tonnes grain import quota on the domestic grain market, a calculation of the size of the domestic market (grain traded both by the state dealers and in the free market) is necessary. The domestic market is far smaller than the total output, because a substantial part of the grain output is

**TABLE 6.4****TARIFF QUOTAS FOR GRAINS, 2002–04 (MILLION TONNES)**

	2002	2003	2004
Wheat	8.468	9.052	9.636
Corn	5.850	6.525	7.200
Rice	3.990	4.655	5.320
Total	18.308	20.232	22.156

**Source:** World Trade Organization, 2001. 'Accession of the People's Republic of China, decision of 10 November 2001', cited from <http://www.moftec.gov.cn/>

**TABLE 6.5****ESTIMATION OF THE VOLUME OF NON-TRADED GRAIN, 2000, (UNPROCESSED GRAIN, MILLION TONNES)**

	Rural consumption	Self-consumption ratio	Non-market grain
Rural food grain	201.9	0.8	161.5
Feed grain	..	..	83.4
Meat	85.7	0.5	51.4
Poultry & eggs	22.4	0.5	13.4
Cultivated fish, etc.	13.0	0.3	3.9
Milk	9.2	0.3	0.8
Draught animals	17.4	0.8	13.9
Seed grain	16.3	0.6	9.8
Total			254.7

**Note:** Rural food consumption of grain is derived from household survey and rural population data. Feed grain is derived from livestock production data. The quantity of meat (pork, beef and lamb) is converted from the gross weight (with bones) at a conversion ratio of 0.5. The weight conversion ratios between feed grain and meat are assumed to be 2.8 for meat production, 1.0 for poultry, egg, cultured fish and shrimp, etc., and 0.3 for milk production. The feed consumption of draught animals is assumed to be 0.5 kg per animal per day. The consumption of seed grain is derived from the areas sown to grain in year 2000 and an estimated average 0.15 tonnes per hectare. Self-consumption ratios are the proportions of on-farm consumption of grain they produce on the farm themselves. They are based on the author's personal experience.

**Source:** Calculated from National Bureau of Statistics, 2001. *Statistical Yearbook of China*, Statistics Press, Beijing.

consumed by farmers and does not enter the market. There are no statistics on the quantity of grain sold in the domestic market, so that it has to be estimated following an estimate of the volume of non-market grain consumed by farmers in 2000 (see Table 6.5). The volume of traded grain is derived and converted to a trade weight as 186 million tonnes for 2000. From Table 6.6 it can be seen that the tariff quota for imported grain (2004) accounts for 5.5 per cent of total domestic demand and 12 per cent of total market demand.



## The impact of the tariff quota on domestic grain prices

In estimating the impact of the WTO import quota on domestic prices, it is assumed that the 22 million tonnes of grain against the quota is an external shock at a time when the domestic market is in equilibrium. The domestic equilibrium prices are based on the calculation in Table 6.3 plus a 15 per cent increase to include the domestic purchase, transport and wholesale costs. Thus, the wholesale price of rice before the shock will be 27 per cent lower than the price of imported rice (but the average quality of domestic rice is also lower). Prices of wheat, corn and soybean before the shock will be higher than the imported prices by 24, 49 and 51 per cent, respectively. Thus, we may assume that the entire wheat and corn quotas, and 50 per cent of the rice quota will be used. These sum to 19.5 million tonnes. Together with other grain imports (soybean imports for example, may increase dramatically), total grain imports in 2004 will be above 21 million tonnes—that is, an 18 million tonne increase from an average of 3.5 million tonnes between 1998 and 2000 equal to 9.6 per cent of market demand and 4.4 per cent of total demand.

Grain consumption in China is price inelastic. Based on estimations of China's grain demand elasticity reported in the literature, the author used 0.37 as a weighted average elasticity of total demand for grain (alternatively, we can use 0.81 as the elasticity of market demand, which can be derived from the ratio between total demand and market demand).<sup>6</sup> On this basis, the price effect of the 18 million tonnes of imports will lead to a 12 per cent decline in prices in the domestic market.

Alternatively, we may assume that the external shock occurs when the domestic market is still in surplus (as is more likely to be the case). The domestic price level will be lower than in the first case, and imports will be less. However, because the remaining quota can be used at any time when domestic prices are rising, the effect of imports will be similar to that in the first case except that it will prevent the price from recovering instead of pushing the price level down. For simplicity, only the first case will be considered.

## The impact of the tariff quota on domestic production

According to the estimate by Wang (2001), the total price elasticity of grain supply is 0.52, and the effect of price changes on output is fully attained in two years. Based on this, grain output will decline by 6.2 per cent in two years. There is likely to be a 'cobweb effect' because the price elasticity of demand is smaller than the price elasticity of supply. In this case, both production and price levels may

TABLE 6.6

**ESTIMATING THE SIZE OF THE DOMESTIC GRAIN  
MARKET, 2000, (MILLION TONNES)**

	Unprocessed weight	Trade weight
Total production	462	400
Non-traded consumption	255	221
Change in stocks	-20	-17
Net exports	12	10
Domestically traded	215	186
Total domestic demand	470	407
Tariff quota (2004 and later)	..	22.2
TQ as % of traded grain	n.a.	11.9%
TQ as % of total demand	n.a.	5.5%

**Note:** Trade weights are derived from the unprocessed weight. Rice is converted from paddy at a conversion ratio of 0.68, other grains are unprocessed. The change in grain stock is assumed.

**Source:** Calculated from Table 6.5 and National Bureau of Statistics, 2001. *Statistical Yearbook of China*, Statistics Press, Beijing.

fluctuate increasingly and never converge to the equilibrium. However, this effect may be reduced by the government operation of a price stabilisation scheme and improvement in information services to farmers. For simplicity, we may consider the case where, on average, the price level declines by 6 per cent and output falls by 3.1 per cent as an equilibrium result.<sup>7</sup>

### Producer losses

The producer losses can be approximately derived from the following formula: (price before shock) x (percentage price reduction) x (volume of market grain before shock – net import) + (output reduction) x (domestic price after shock) – (material input cost) + (fixed cost that cannot be reduced) – (net incomes from new jobs after shock).

Using the 2000 production and consumption data, we can calculate:

$[1815 \times 6\% \times 215 + (462 \times 3.1\%) \times 2006 \times (1 - 6\% - 40\% + 10\%)] \times (1 - 30\%) = 28.0$  (billion yuan),

where 1815 is the mean of 1995 and 2000 real grain price levels as a weighted average (constant yuan of 2000 per tonne), which is used for the assumed internal equilibrium price before the shock; 6 per cent is the calculated price reduction due to the import shock; 215 is the calculated volume (million tonnes) of market grain that is produced domestically before the shock; 3.1 per cent is the calculated

reduction in total grain output; 40 per cent is the ratio of material input costs derived from the ratio between gross output value and value-added of agriculture in 1998; 10 per cent is the assumed ratio of fixed costs to the reduced output, which cannot be proportionally reduced; and 30 per cent is the assumed proportion of farmers who can move to the non-grain sector in the short run and obtain the same income as before. In this calculation, farmers' self-consumed grain is excluded because it is offset by their own production.

The derived 28.0 billion yuan of net losses is equal to 0.3 per cent of GDP and 4.2 per cent of farmers' net income from farming. For those pure grain farmers who have no other employment opportunities, they would incur 9.1 per cent net income losses on average.

Producer losses could be much smaller if grain farmers could efficiently shift to non-grain production with the same available resources. Currently, the number of grain farmers (those fully or mainly engaged in grain production) is still very large, accounting for at least 60 per cent of the total of 350 million farmers, and they are concentrated in the less-developed central and west regions. Their productivity and incomes are very low, annually producing only 2 tonnes of grain per farmer. The transfer of these farmers to other sectors has been slow. The major obstacles are

- limited employment opportunities for unskilled and less educated labour
- poor information, telecommunication and transport services in the remote rural areas for access to domestic or world markets of non-grain products
- government quotas on grain production, although these have been relaxed in recent years.

## Consumer gains

Consumer gains from increased imports can be approximately calculated from the difference in grain prices before and after the import shock times the market consumption of grain after the shock:

$$1815 \times 6\% \times 215 \times (1 + 9.6\% - 6.8\%) = 24.1 \text{ (billion yuan)}$$

where 9.6 per cent is the ratio of imported grain to domestic market grain before the shock, and 6.8 per cent is the ratio of output reduction to the market grain before the shock. Again, farmers' consumer gain is excluded for the reason mentioned earlier.

The 24.1 billion yuan of consumer surplus is equal to 0.27 per cent of GDP, and 0.83 per cent of urban residents' income.

## Impact on employment

If we assume that the imported grain will proportionally crowd out farmers without reducing the remaining farmers' income, then 4.4 per cent of the grain farmers (9.2 million) will be forced off the farm; although the increase in imports can only marginally increase employment opportunities in the grain export countries due to their much higher labour productivity. Assuming that all these grain imports would come from the United States, for example, this would create only 40,000 new jobs in the US farming sector according to its average productivity per capita.

## Summary of the direct impact of grain imports

The above results are summarised in Table 6.3. Although the results show some net losses in the short-run, this will not be the major problem. The major problem is the unbalanced distribution of losses and gains. The cost directly affects low-income farmers, resulting in a relatively large percentage decline in their income, whereas the benefit mainly goes to urban consumers who have a much higher income, and therefore accounts for only a small proportion of their income. In addition, due to the inelastic adjustment, job losses will exert pressure on the economy in the years ahead.

## STRUCTURAL ADJUSTMENT

In the long run, inefficiencies in agricultural production must be addressed, and the opening of China's agricultural sector is unavoidable. The most important issue is how to adjust China's economic structure so that more efficient use is made of resources.

### Adjustment in the agricultural structure

According to China's comparative advantage, rice production could expand to replace other grains. Some adjustment is already underway. From 1995 to 2000, the area sown to wheat decreased by 7.6 per cent whereas the rice area was only reduced by 2.5 per cent. Further adjustment can be expected but the capacity is limited, due to the lack of water resources in most wheat and corn producing areas in north China.

Grain may also be replaced by other agricultural products. The share of area sown to grain in the total sown area has fallen from 80 per cent to 69 per cent over the past 20 years, with grain being replaced by cash crops, vegetables, tea and fruits. The government has abolished grain quotas in the major grain importing coastal

provinces. In fact, quotas to the major grain producing provinces have also been dropped, because of grain surpluses. Further market-oriented adjustment can be expected in the future.

Export-oriented agriculture has had limited development in most provinces. In 2000, exports of food and food animals from China accounted for only 4 per cent of the value of agricultural output. Future adjustment should be directed to increases in exports of labour-intensive products with low land intensity. To achieve this, major efforts are needed, especially for remote inland areas, to develop business connections with world markets, and also to develop related human resources, infrastructure and other facilities. These are long-run tasks, needed not only to overcome import shocks, but also as a means of modernising traditional agriculture.

### Removing price supports

Past experience indicates that government protection of grain prices has had a negative impact on farmers' incomes, because it has distorted market prices and sent the wrong signals to producers. Government grain prices set at levels higher than market prices encourage farmers to produce grain in excess of market demand, eventually resulting in market surpluses and declines in prices. The inelastic government adjustment in prices has also resulted in large fluctuations in production and has seriously injured farmers (Wang 2001). Under the WTO commitments, price support is ruled out. This will have a positive effect on the agricultural sector.

To help low-income farmers, more effective measures may include improving information, technical and training services to farmers to promote their production adjustment towards more efficient production areas.

**TABLE 6.7                    THE DIRECT IMPACT OF GRAIN IMPORTS**

Costs and benefits	Producer losses	Consumer gains
Value (billion yuan)	28.0	24.1
As % of GDP	0.31	0.27
As % of all farmers' income	4.2	n.a.
As % of pure grain farmers' income	9.1	n.a.
As % of all consumers' income	n.a.	0.52
As % of urban consumers' income	n.a.	0.83
Rural employment opportunities	Domestic losses	Foreign gains
1000 persons	9240	40

**Note:** Foreign gains in employment opportunities are calculated using labour productivity in US farming sector as an example.

**Source:** Author's calculations.

## Industrialisation and urbanisation

A major structural adjustment that can be expected is the further transfer of agricultural labour to the industrial and service sectors, especially in urban areas. At present, only 36 per cent of the total population lives in urban areas. This ratio has been 10–20 percentage points lower than in other countries with the same level of per capita GDP. In the cities with a population of one million or more, the more developed services sector provides 41–45 per cent of employment opportunities, whereas the service sector in small cities of less than 200,000 only provides 23 per cent of job opportunities. The statistics imply that urban development in China—particularly development of medium and large cities—has been insufficient. In the long run, urbanisation will provide substantial opportunities for further transfer of the agricultural population (Wang and Xia 1999).

Under normal circumstances rural industrialisation and urbanisation could reduce the agricultural labour force by 4 million annually from 2001–10. To absorb the grain import shock fully, at least an additional six million farmers will have to be employed by the TVE and urban sectors between 2002 and 2004 (assuming that 3.2 million can move to non-grain agricultural production). However, over a longer period, urbanisation may be accelerated via policy adjustments, such as by removing restrictions on rural–urban migration, eliminating policy biases against medium and large-sized cities, and improving urban infrastructure. In this case, the grain shock may be fully absorbed and there will be greater improvements in agricultural productivity.

## Notes

- <sup>1</sup> Data are from the National Bureau of Statistics (NBS). The same source is used below unless specified otherwise.
- <sup>2</sup> This is according to the official statistics. However, according to the 1996 National Agricultural census (and supported by satellite imaging data), the cultivated land area was understated by 27 per cent in the official statistics in the past (NBS 1999, 2001). Using the same ratio to adjust sown areas, the average yield becomes 3.61 tonnes per hectare, which is still higher than in most developing countries.
- <sup>3</sup> ‘Floating labour’ includes rural labour working outside their hometown including those who have moved to urban areas without having urban residential registration. Major sources for the estimation were a surveys by the Department of Training and Employment of the Ministry of Labour and Social Security, the Rural Social and Economic

Survey team of the National Bureau of Statistical (MLSS and NBS 1999), and the 1990 national census data (NBS 1991).

- <sup>4</sup> These are the author's estimates. The official data for these two years are 318 million and 499 million, respectively, for rural labour. For agricultural labour, they are 291 million and 334 million, respectively. See Wang (2000b).
- <sup>5</sup> From a speech by Du Runsheng, the former director of the Rural Development Research Centre of the State Council, at the symposium 'Agriculture and Private Enterprises in China' in Guangzhou, 18 December 2001.
- <sup>6</sup> Lin et al. (2001) estimated the price elasticity of rural demand for wheat, corn, paddy rice and beans as  $-0.857$ ,  $-0.044$ ,  $-0.155$  and  $-0.549$ , respectively. The fact that elasticities of wheat and beans are far higher than those of corn and rice, appears to be because that the former can be substituted by cheaper grains. This is not the case for rice because rice is the only major food grain in south China. The weighted average of these elasticities is 0.34, and it is adjusted to 0.37 to include urban demand.
- <sup>7</sup> The impact of price fluctuations on production and farmers' incomes would be far more serious if the government incorrectly responds to the price changes. For a description of past experience see Wang (2001).

