

Chapter 3

Policy Impacts

This chapter reports analysis on the potential economic impact of reducing China's agricultural trade protection and domestic support and comparing the effects with those that might accompany widespread reductions in support afforded farmers in OECD countries. Section 3.1 investigates, with the use of an economy-wide general equilibrium model (GTAPEM), the source and size of the sectoral and economy-wide gains to China from multilateral trade liberalisation. The estimated changes in prices and quantities due to liberalisation are then used as inputs to simulate how welfare gains and losses are distributed across various types of rural households in China.

The last two sections of the chapter are devoted to an analysis of the potential impact on China's main agricultural commodity markets of hypothetical reforms to agricultural trade and domestic policy both within China and globally (Section 3.2), and to an investigation of the impact of China's grain policies on mid-term projections of its grain imports and the implications for grain self-sufficiency (Section 3.3).

3.1. Welfare impacts of trade and agricultural policy reforms

Simulated impacts of multilateral and multi-sectoral policy reform

Results reported here were obtained in analysis undertaken as part of a larger OECD project aimed at measuring distributional impacts of agricultural policy reforms – both among and within selected OECD and non-OECD countries. A report done for that project, (OECD, 2005b) contains a comprehensive description of the model, the data and the policy simulation experiments performed. The GTAPEM model used to estimate reform impacts is a modified version of the GTAP global general equilibrium model widely used in applied agricultural and trade policy analysis (Hertel, 1997).

Initial rates and pattern of trade protection

The estimated market effects of policy reform are determined in large measure by: a) the initial level and pattern of trade protection and b) the reform scenario implemented. (The policy reform scenarios are discussed in the following sub-section.) The data presented in Table 3.1 indicate the initial level and pattern of trade protection in China, in the OECD and in the non-OECD regions respectively. The table displays averages of tariffs levied and faced by China, and compares these with the averages of tariffs levied and faced by OECD and non-OECD countries.¹

Generally speaking, the rates of trade protection for China's agriculture are relatively lower than what it faces in foreign markets. In primary agriculture, the tariffs levied by China are somewhat lower than those applied to processed agricultural commodities and even lower when compared to averages of tariffs levied on both primary and processed agricultural products entering OECD countries. On the other hand, China levies tariffs in non-agriculture sectors that are somewhat higher than the average for OECD countries. Finally, the tariffs faced by China in non-agriculture sectors are somewhat higher than those faced on average by either OECD or non-OECD countries.

These initial conditions for border protection imply a potential gain for China's agricultural economy from global agricultural liberalisation (higher tariffs faced than

Table 3.1. **Tariffs levied and faced (%)**

	Tariffs levied			Tariffs faced		
	China	OECD	Non-OECD	China	OECD	Non-OECD
Agriculture	8	39	12	28	12	18
Primary agriculture	5	36	7	24	19	17
Processed	12	44	17	33	26	20
Non-agriculture	9	2	10	8	3	3
Textiles and wearing apparel	14	8	18	17	7	11

Source: GTAP version 6 database.

levied).² However, given the relatively large economic weight of the non-agriculture sector (see related discussion in Chapter 1), important gains should also be realised here. China's abundant labour supply gives it a potentially important competitive edge in certain sectors, such as textiles and wearing apparels. Here, the tariffs faced by China's exporters are relatively high, particularly to important markets such as the US (12.3%) and the EU (9.5%). However, the success of these sectors also depends on other key factors such as appropriate investment in modern capital and management practices, and reasonably free movement of labour from surplus areas (typically rural).

Policy reform scenarios

The policy scenario comprises a multilateral 50% reduction in domestic farm support for OECD and select non-OECD countries, and a 50% reduction in tariffs (*ad valorem*, specific and TRQ) and export subsidies for all sectors. The results should be interpreted as the medium term impact (about 5 years) of the policy change after all necessary adjustments on consumption and production have taken place.

Table 3.2 contains estimates of the combined impacts of the reform scenario on incomes globally, for the OECD and non-OECD regions and for China. For each country/region, the total income gain in the first column is decomposed into the impact due to OECD and non-OECD agriculture and non-agriculture reforms respectively. The global gains are about USD 44 billion, three-quarters of which go to OECD countries. For these countries, most of the gains arise from reforms of their agricultural policies, and reform of non-OECD non-agriculture policies. In contrast, the largest gains for non-OECD countries are due to liberalisation of OECD non-agriculture sectors.

The overwhelming share of the estimated welfare gains in China are attributed to the assumed reductions in trade protection afforded non-agricultural merchandise, particularly textiles and wearing apparels both in OECD countries and in China itself. The results are illustrated in Figure 3.1.

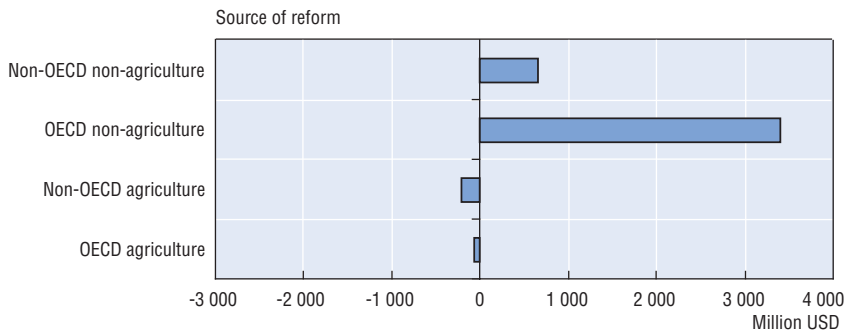
The potential implications for China of combined global and domestic agricultural policy reforms have been the subject of many analyses in recent years. In some analyses, including the one reported here, the net welfare effects are slightly negative; in others slightly positive. To understand this outcome, it is useful to recall that the total welfare effect adds the impacts across both consumers and producers. The higher world market prices for agricultural goods that would come with global agricultural policy reform bestow

Table 3.2. **Welfare effects of multilateral policy reform, USD millions**¹

	Total welfare	OECD agriculture	Non-OECD agriculture	OECD non-agriculture	Non-OECD non-agriculture
World	44 268	23 361	3 124	6 694	11 357
OECD	33 459	21 407	1 871	-248	10 680
Non-OECD	10 809	1 954	1 253	6 943	677
Brazil	1 730	1 178	94	367	96
China	3 739	-73	-199	3 373	635
India	1 723	72	544	378	735
South Africa	253	69	25	23	137

1. Welfare is measured in terms of the "equivalent variation" in monetary income.

Source: OECD Secretariat.

Figure 3.1. **Welfare gains (losses) by source of liberalisation**

Source: OECD Secretariat.

economic benefits on most of China's farmers (e.g. those producing exportable agricultural commodities), but also higher costs of agricultural imports on some consumers. Because agricultural trade constitutes only a relatively small share of total agricultural output in China (domestic agricultural production largely equals domestic consumption), these two effects offset each other leaving small net impacts on China's overall economy from agricultural trade reforms. There is no doubt, however, that global agricultural policy reform is in the interest of China's agriculture.

As the discussion in Chapter 1 makes clear, the past ten to fifteen years of rapid economic growth in China occurred in a situation of persistent, even widening, divergence in returns to labour employed in agriculture versus non-agricultural sectors of the economy. That discussion also highlighted the necessity for structural adjustment and the pressures created by rural to urban migration arising from the higher potential earnings from off-farm jobs. A critical question therefore is whether further, multi-sectoral reductions in trade protection will ameliorate or attenuate these intersectoral adjustment pressures. Figure 3.2 contains estimates showing that the simulated policy reforms would boost returns to labour and capital employed, whether this was to occur in China's agriculture or non-agriculture sectors. Importantly however, the estimated gains are uniformly spread both across sectors and factors suggesting that this particular reform scenario might add little to ongoing pressures for inter-sectoral factor adjustment and hence for rural to urban migration.

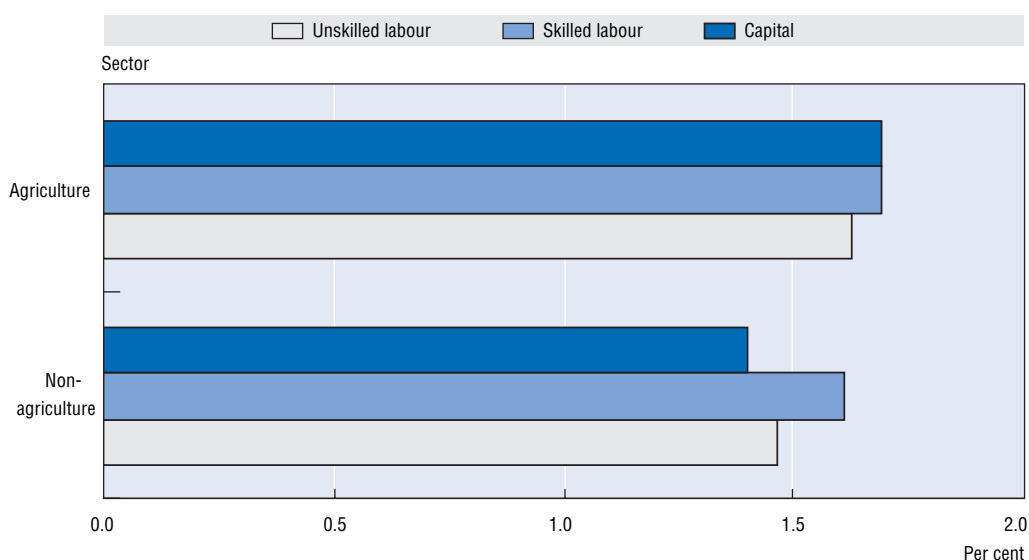
Distributional effects of policy reform across various types of households in rural China

Introduction

Since the start of economic reforms, inequalities in income and consumption have been rising in China, while poverty has been falling. Most poverty reduction was achieved through growth in the rural economy, including in agriculture. But rising rural inequality has been shown to slow down poverty reduction (Ravallion and Chen, 2004). Given this record, the impact of ongoing trade and domestic reforms on agricultural prices, and through these on rural inequality and poverty, are important.

Various studies suggest that ongoing economic reforms may bring overall gains, but need to be accompanied by policies targeting pockets of poverty and vulnerable

Figure 3.2. **Changes in factor returns to agriculture and non-agriculture resulting from multi-sectoral reduction in trade protection**



Source: OECD Secretariat.

households in order to minimise localised and temporal trade-offs between border price liberalisation and poverty reduction. This section draws on household and village survey data to explore distributional effects and identify the characteristics of winners and losers from reforms.

Method

In this section, a procedure modified from McCulloch (2003) is employed to assess the impact of structural reforms on household incomes, applicable to data sets with household-level information on production and consumption. The policy scenario assumed is a global 50% liberalisation as described above, and the GTAPEM results presented above are used as input into this analysis of welfare implications in a simple household model.

A change in household income in the neighbourhood of its optimum, with given endowments, is calculated. Household income changes due to the exogenously (by GTAPEM) given changes in both the prices and quantities of output (most household are agricultural producers), factors (including wages) and consumption goods. Thus, both first and second order effects of policy reform are incorporated in the analysis. Rising (falling) incomes increase (decrease) the consumption bundle that households can consume and imply a positive (negative) income effect of price policy reform. Rising (falling) prices of consumption goods decrease (increase) the consumption bundle that households can consume and imply a negative (positive) consumption effect of price policy reform. The total welfare effect, for each household, is the sum of the consumption and production effects. Then, the distributional effects of policy reform within the sample are evaluated.

Data

Data originate from a November-December 2000 rural household survey among 1 200 households, covering 4 387 people, in 60 townships in six Chinese provinces across the country: Hebei, Hubei, Liaoning, Shaanxi, Sichuan and Zhejiang.³ In the household survey, information was collected on a range of productive activities, consumption, household members' demographic situation, labour market status, and land use. A parallel village survey collected information on size, infrastructure, agricultural potential, labour flows, access to utilities as well as other information concerning the villages in the sample. Data on both consumption and production were available for a subset comprising slightly less than half the total sample, as in Chang (2004). Table 3.3 summarises the household and village survey frames.

The survey data provide detailed insight into households' economic activities and the incomes that they derive from them. In line with the proposed method, three main income categories were defined: employment (agricultural or otherwise⁴) providing a wage income; non-farm enterprise and agricultural production, both providing a profit income; and transfers (gifts and social payments).

Wages comprise both conventional employment income (reported individually and aggregated over households) and *corvée* labour (*yi wu gong* or *ji lei gong*), which many households supply to local authorities, mostly for the construction of local infrastructure. In some cases households reported paying money in lieu of supplying *corvée* labour. This was treated as negative income.

Typical of agricultural household incomes, particularly in smaller farms in low and middle-income countries, is the large importance of produce that is consumed by the farm household. Valuing this correctly is a challenge since there is no market price for subsistence production. One solution is to value at official, nationally published prices. But regional variation of retail prices is typically large, and this is especially true in this sample of households across China, a huge country with imperfectly liberalised markets. In order

Table 3.3. The 2000 rural household survey frame

Province	Number of townships	Number of households	Number of people
Hebei	10	200	746
Hubei	10	200	667
Liaoning	10	200	701
Shaanxi	10	200	770
Sichuan	10	200	744
Zhejiang	10	200	759
Total Sample	60	1 200	4 387
Sub sample			
Hebei	10	98	369
Hubei	10	92	306
Liaoning	10	87	299
Shaanxi	10	75	270
Sichuan	10	110	421
Zhejiang	10	79	309
Sub Sample	60	541	1 974

Source: Survey findings.

to approximate local product prices in this study, home-consumed output was valued at unit values implied by households' reported quantities and revenues (as in Ravallion and Chen, 2004) aggregated by province.

Agricultural profit based on these prices derives from five categories of productive activities:

- Hog production, where net income is the value of pork consumed by the household plus revenues from hog or pork sales, net of all costs connected to hog production.
- Grain crop growing. Grain crops include rice, wheat, millet, sorghum, and others, depending on the household's location. Net income from crop production is the value of grains consumed or exchanged by the household plus revenues from grain sales and from sale or is of its by-products (such as chaff), net of all costs connected to crop production. In the Chinese dual marketing system, grains are sold both on the open (typically local) market and to "grain stations", typically at different prices (Chapter 2).
- Production of orchard fruits, with identical profit definition.
- Livestock rearing, other than hog production but including fowls. Revenues included sale of meat and of live animals and meat consumed by the family, valued at sale prices averaged by province.
- Income from "overhead" factors, including income from renting out land (in money or in-kind) net of land rent paid, depreciation and maintenance costs of productive assets, and agricultural tax.

Income from agricultural production⁵ is the sum of the above five items. Non-agricultural enterprise income consists of both profit from production and sale of processed goods (mainly food products) closely connected to the household's farming activities, and profit from other typically micro-enterprise independent activity. Transfers included pensions and other social payments, and the balance of gifts received and given. Based on these definitions, it is possible to construct the structure of household income, represented by income shares of each of the above categories. Table 3.4 summarises results by province.

Table 3.4 demonstrates that there is large variation in the composition of net income over provinces. On average, revenues from crop production contribute more to agricultural income than revenues from livestock rearing. The importance of wage income equals that of

Table 3.4. Structure of household income, provincial averages (% of total income)

Province	Crops and orchards revenues	Livestock revenues	Non-farm enterprise revenues	Capital outlays	Job income	Transfers	<i>Corvée</i> income	Total
Hebei	27.4	28.1	-2.9	-2.5	34.4	15.3	0.0	100
Hubei	52.3	33.7	8.7	-62.9	52.8	15.4	0.0	100
Liaoning	20.1	8.9	39.6	-16.4	36.5	11.6	-0.5	100
Shaanxi	-77.3	-3.6	-13.1	140.4	48.2	6.8	-1.4	100
Sichuan	38.0	36.4	12.0	-49.7	54.5	9.0	-0.2	100
Zhejiang	237.8	72.5	9.0	-285.9	52.8	14.7	-0.9	100
Sample	48.8	29.7	9.3	-46.2	46.5	12.2	-0.4	100

1. Totals may not sum to 100 due to rounding. The sample average is the population-weighted average of provinces. Source: Survey findings.

crop revenues. Also non-farm enterprise and non-earned income contributes considerable shares of income. The table also shows that both the revenues and the cost side of net income will matter in the determination of income effects below. The level of outlays on capital goods for both agricultural production and non-agricultural enterprise is a factor in total net household income of equal magnitude as wage income and crop revenues.

The survey provides detailed data on consumption. Consumption of food included money expenditures, home consumption of own produced food, exchanged food, and gifts. Food consumption in the last three categories (i.e. not paid for by money expenditure) was valued at unit values imputed from households' reports in the survey, averaged over provinces. Food consumption recorded in the survey included 32 separate items or categories. Non-food consumption included expenditure on 35 goods and services. Table 3.5 shows per capita consumption levels, poverty rates, and shares of food consumption in households' budgets, per province.

Table 3.5. Consumption and poverty, provincial averages

Province	Consumption per capita (yuan)	Poverty rate (%)	Share of food in consumption (%)
Hebei	2 028	7.0	49
Hubei	1 512	30.4	38
Liaoning	2 227	2.3	47
Shaanxi	1 510	20.7	55
Sichuan	1 261	28.8	46
Zhejiang	2 128	2.7	29
Sample	1 770	15.2	45

Note: The sample average is the population-weighted average of provinces.

Source: Survey findings.

Table 3.5 shows that the sample is roughly divided into three high-welfare provinces, one medium-welfare and two relatively poor provinces. The absolute measure for defining poverty used is the official poverty line for 2000 of CNY 625 consumption value per person (NBSC, 2004). According to this measure, 13.1% of rural Chinese households (15.2% of people) in these provinces are in poverty. This compares to a 2004 figure calculated by Ravallion and Chen (2004) of 12.5%, based on a CNY 850 per capita poverty line.⁶ Table 3.5 shows that poverty varies much over provinces in line with provincial-average consumption levels, reflecting China's regional development differences. There is no clear link between provincial-average welfare levels and the provincial-average share of consumption budgets spent on food. This cautions against using the food share as a poverty proxy, as is often done. The variation in food shares also suggests that consumption effects of agricultural price reforms will vary markedly by region.

Analysis

The price and quantity changes resulting from the general equilibrium model cover 16 agricultural product categories, 4 non-agricultural product categories, and factor inputs (land, labour and capital – separately for agriculture and non-agricultural sectors). The general equilibrium model produces simulated price and quantity changes, from which changes in household income are calculated through cost and revenue changes (the income effect) as well as changes in consumption through consumption price changes (the consumption effect). To give a flavour of the changes involved, the

general equilibrium model output includes an average 0.7% increase in agricultural revenues, a 1.7% increase in wages of agricultural unskilled labour, a 2.0% increase in the prices of paddy rice and wheat for consumption and a 10% decrease in the prices of other cereals for consumption. These figures show in the GTAPEM scenario that households' income components are increasing while changes in the prices of various items for consumption are mixed.

Applying these results to our sample, the calculated welfare effects are presented in Table 3.6. On average, the consumption effect is close to zero because of offsetting price changes resulting from GTAPEM. Depending on households' budget composition, consumption effects vary between plus 0.2% and minus 0.3%. The income effects are positive because the revenues from the goods and factors the households sell, and the wages they earn, mostly rise. Total welfare gains add up to an average welfare gain of 2.8%, varying between 2.2% in Shaanxi and 4.0% in Hubei province.

Only 9% of the sample households are net losers from the changes (i.e. they experience negative welfare effects). While the share of households gaining increases continuously over consumption levels, the difference between 89% among the poorest quintile and 95% among the top quintile is small. Poor households gain significantly more in relative terms than non-poor households: their welfare levels increases by 4.6% on average, compared to a 2.6% increase among non-poor households. This is due to the income effect; in contrast, the tiny consumption effect is negative for the poor but positive for most of the others, thereby slightly increasing inequality.

Welfare effects are conventionally expressed as percentages of the before-change consumption levels, as above. We also examine the distribution of welfare gains in absolute value terms in Table 3.7. It is shown that money metric welfare gains add up to an average CNY 137 extra consumption per household per year. While percentage welfare gains decreased with incomes, money metric welfare gains increase continuously over income groups. Poor households gain just over half the amount of non-poor households,

Table 3.6. Proportional welfare effects of price changes

	Consumption effect (%)	Income effect (%)	Welfare effect (%)	% of households gaining
Total	0.0	2.8	2.8	91
... by province				
Hebei	0.2	2.7	2.9	93
Hubei	0.1	4.0	4.0	96
Liaoning	0.1	2.4	2.5	89
Shaanxi	0.0	2.2	2.2	90
Sichuan	-0.3	2.7	2.4	87
Zhejiang	0.0	3.3	3.3	89
... by poverty status				
Non-poor	0.0	2.5	2.6	91
Poor	-0.2	4.8	4.6	89
... by quintile				
1st quintile (poorest)	-0.2	4.6	4.5	89
2nd quintile	-0.1	3.8	3.7	88
3rd quintile	0.1	2.6	2.7	90
4th quintile	0.1	2.3	2.3	90
5th quintile (richest)	0.1	1.4	1.5	95

Source: Survey data and OECD Secretariat's calculations.

Table 3.7. **Money metric welfare effects of price changes**
(yuan per household)

Welfare bracket	Consumption effect	Income effect	Welfare effect
Non-poor	7	139	146
Poor	-4	83	79
1st quintile	-4	92	88
2nd quintile	-2	122	120
3rd quintile	4	124	128
4th quintile	6	148	154
5th quintile	19	159	178
All	6	132	137

Source: Survey data and OECD Secretariat's calculations. There may be differences between the sum of the income and consumption effects and the total welfare effects due to rounding.

and the highest-income fifth quintile households have more than twice the gains of poorest-quintile households. Still, this difference in gains is smaller than the difference in consumption levels, so that the poor still gain more proportionally than the non-poor, as Table 3.6 showed. The table also shows the small absolute values of consumption effects, which rounded to zero in percentage terms.

The survey data were finally used to construct a profile of the 9% of households who did not gain from reforms. Compared to households who did gain, they were found to live in communities which on average:

- Are smaller (1 160 compared to 1 220 inhabitants).
- Have a third less arable land per 1 000 population.
- Live further from the nearest paved road (1.4 compared to 1.2 km) and from the nearest town (30 km compared to 25 km).
- Have less mobile labour forces, with fewer emigrants and immigrant per 1 000 population (19% and 25% less, respectively).

This suggests that households in communities poorly endowed with agricultural potential, infrastructure and human capital are particularly vulnerable to any negative side effects of reforms. Although sample size, as well as the small share of households who did not gain from reforms, prohibits a more detailed analysis, these and similar data could be used to guide policies targeted to support vulnerable households during reforms that bring long-run overall benefits.

Summary

In this section, results from GTAPEM estimations of changes in prices and quantities due to trade reforms were used as inputs to simulate the welfare effects in a sample of rural Chinese households. Due to increasing output and supply prices and falling consumption prices for some goods resulting from GTAPEM, absolute welfare changes are substantial at 2.8% of current welfare levels. Virtually all of the gains come from increasing incomes. The reform reduces inequality since poorer households receive larger relative welfare gains even though their absolute value welfare gains are lower. There are few losing out from the reform (9% of the sample), and the percentages of those who lose are similar among the poor and the non-poor. Additional analysis suggests that these

households typically live in communities poorly endowed with agricultural potential, physical infrastructure and human capital.

3.2. The impact of liberalisation on Chinese agricultural commodity markets

As China's domestic grain and livestock markets become increasingly integrated with world markets, agricultural policy developments there can have effects that spill over to other countries. Domestically, food security issues remain important for the large population and will continue to significantly influence development of Chinese agricultural policies (Chapter 2). Internationally, the sheer size of the Chinese markets makes world markets sensitive to changes in the Chinese trade regime induced by even small relative adjustments in domestic supply and demand. Such effects may need to be considered when discussing Chinese policy alternatives even from the domestic perspective. This section discusses the implications of potential agricultural market and policy developments based on simulations undertaken with the AGLINK model.

Baseline projections

The starting point for the analysis was a ten-year baseline projection that embodied specific assumptions about future trends in a wide range of economic and policy variables applying to all the individual countries in the AGLINK model, including for China. Some of the features of the baseline projection are described in Box 3.1. It should be noted that the baseline projections generally assume average macroeconomic and weather conditions and status-quo policies, and therefore do not represent forecasts.

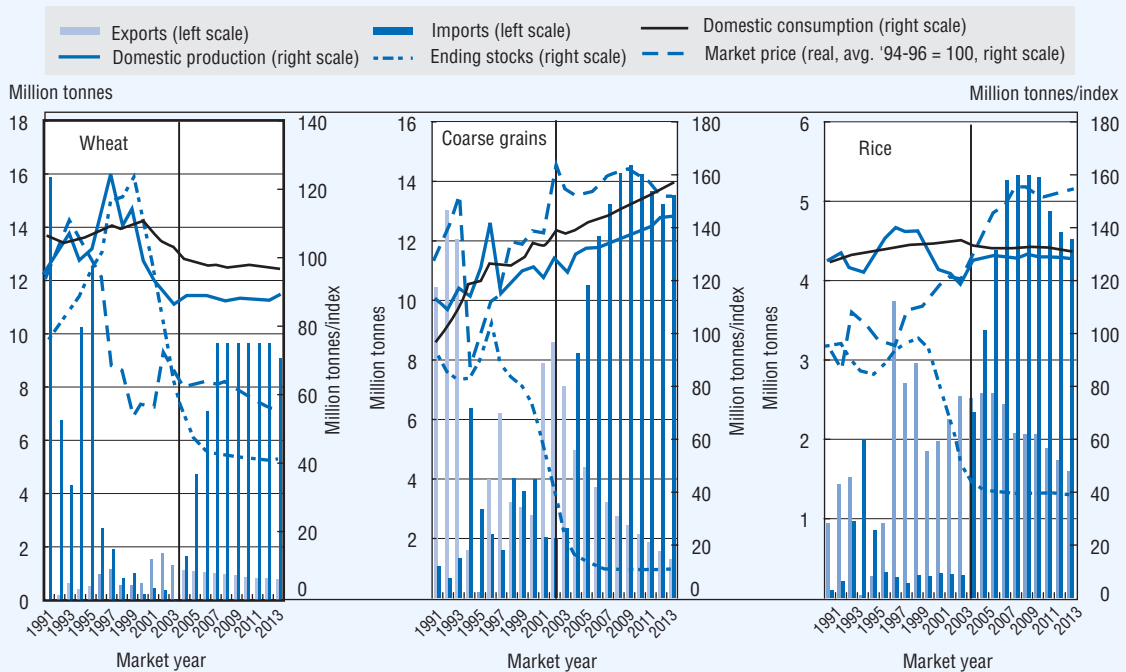
Using the baseline projections described in Box 3.1 as a reference, the following section describes how these market outcomes over the medium term are affected by changes in the policy assumptions that underlie the projections. To assess the impacts of reforms in different countries or groups of countries, three different scenarios are analysed: first partial liberalisation is assumed in OECD countries, leaving China's and other non-OECD countries' policies unchanged. Secondly, China is assumed to unilaterally liberalise. Finally, a third scenario assumes a multilateral liberalisation including policy changes in China, India, South Africa, and OECD countries. The main assumptions of the liberalisation scenarios are presented in Table 3.8.

It should be noted that reductions in the border measures examined in this section start from the bound levels agreed to in the URAA. In contrast, reductions in domestic supports start from actual levels. Thus, the scenarios examined here are somewhat different from those considered for the GTAPEM simulations reported in the previous section. There, tariff cuts were assumed to be made to the actual tariff, export subsidy and domestic support rates applied. Here, reductions up to 50% of tariffs and export subsidy commitments and increases in TRQs may lead to much less or even no effective reductions in actual protection rates, depending on the commodity and country. This is because in many cases there is considerable latitude to reduce binding levels without significantly altering effective protection. Furthermore, all instruments, although reduced, remain in place. Thus, in the scenario, in some cases, even though a commitment (say, on export subsidies) may be reduced and actual use of that policy instrument may increase up to the commitment level in the simulation, thus counter-acting the liberalisation effects of other instruments and leading to lower effects on world and domestic markets that may have occurred otherwise.

Box 3.1. The baseline projections for Chinese and world agricultural markets

China has recently seen the beginning of stagnating consumption of rice, and declining use of wheat – two major staple food commodities. Projections are for a continuation of these recent trends, with food consumption of wheat and rice declining by 8% each between 2003 and 2013 (Figure 3.3). This is partly compensated by an increase in feed use, which however is relatively small in the case of wheat.

Figure 3.3. Chinese grain market developments: past and projections



Feed use of coarse grains is also projected to increase significantly over the decade to come. With livestock production continuing its rapid growth (see below), feed use growth of 19% is expected over the 10-year period – compared to stagnating food consumption. Total cereal use therefore is projected to increase at a moderate pace and to reach 385 million tonnes by 2013, compared to 376 million tonnes in 2003.

Even though grain production is projected to increase more strongly than domestic use, it is not expected to close the current deficit. Chinese production of wheat, coarse grains and rice is projected to reach 362 million tonnes by 2013 with stronger growth for coarse grains than for wheat and rice. While in the recent past the deficit was balanced by significant stock sales, stock declines are projected to slow down and to end by 2008. Consequently, most of the gap between consumption and production needs to be filled by increased imports and decreased exports.

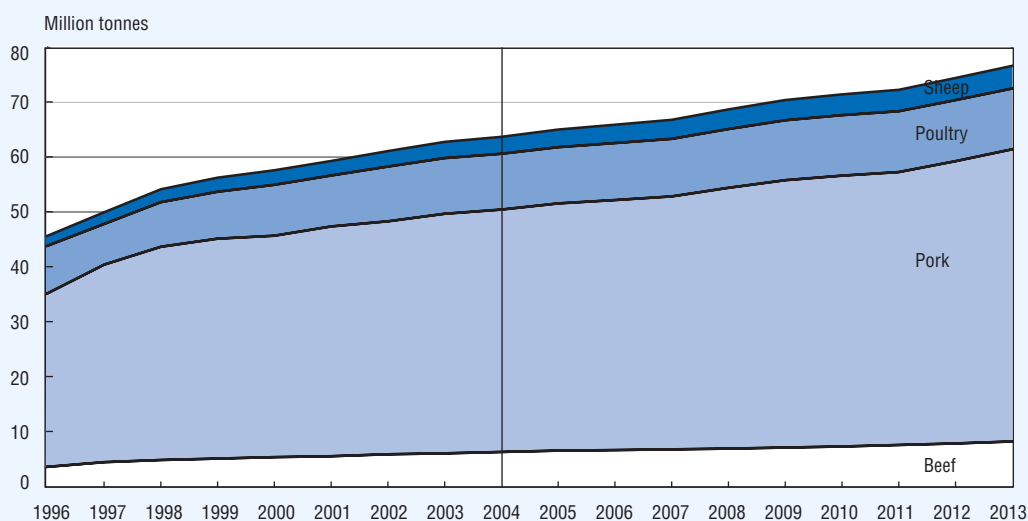
Tariff rate quotas for wheat and rice are assumed to become filled by 2007 and 2008, respectively, even though they should remain binding only for a few years as domestic use slows down. Coarse grain imports are projected to reach more than 14 million tonnes per year, and hence twice the TRQ for maize, in 2008-2010, before slowing down somewhat as well. Consequently, the baseline assumes significant amounts of other feed grains to be imported, mainly barley.

Box 3.1. The baseline projections for Chinese and world agricultural markets (cont.)

With the increased reliance on foreign imports, Chinese market prices for grains are expected to increase beyond the inflation rate over the projection period, largely in line with developments on international grain markets. Average cereal prices are projected to increase by 4% per year in nominal terms or 1.2% per year in real terms between 2003 and 2013. Market prices are projected to strengthen particularly for rice, whereas wheat prices should decline in the medium term. All market prices develop more strongly in the first years of the projection when import rise, compared to the later years when import dependency declines. With domestic cereal prices being increasingly determined by international grain price developments, implications for world markets become more and more important when discussing Chinese market and policy changes (see below).

Chinese meat markets are characterised by substantial growth in both domestic production and consumption, and this growth is projected to continue over the next decade, though at somewhat lower rates. Total meat production could reach 77 million tonnes by the end of the projection period in 2013, some 22% more than produced in 2003. The strongest growth is expected for ruminant meat: both beef and sheep production are expected to grow at more than 3% p.a., while pork and poultry are projected to increase by 2% and 1% p.a., respectively. Still, more than two thirds of the additional meat between 2003 and 2013 would be pork (Figure 3.4).

Figure 3.4. Development of Chinese meat production



Source: Historical data from OECD, AGLINK database, projections from OECD (2004c)

While growth in Chinese meat consumption is projected slightly higher than production growth, foreign trade remains small compared to the domestic disappearance. In particular, net pork exports are expected to decline by about one third and net poultry exports to increase from almost zero to about 0.5 million tonnes over the decade to come – but even that represents less than 5% of total poultry use by Chinese consumers.

Table 3.8. **Principal assumptions of the liberalisation scenarios**

Policy	Scenario assumptions, relative to 2004 policy levels
OECD and other countries	
Tariffs (in-quota, over-quota and non-quota)	Reduction by 50%
Tariff rate quotas	Increase by 50%
Limits on subsidised exports	Reduction by 50%
Direct payments	Reduction by 50%
Support prices, target prices, loan rates	Reduction of total support benefits by 50%
China	
Tariffs (in-quota, over-quota and non-quota)	Reduction by 50%
Tariff rate quotas	Increase by 50%
Adjustment path developed countries	5 equal steps of 10%-points each, starting from 2005
Adjustment path developing countries	10 equal steps of 5%-points each, starting from 2005

Source: OECD Secretariat.

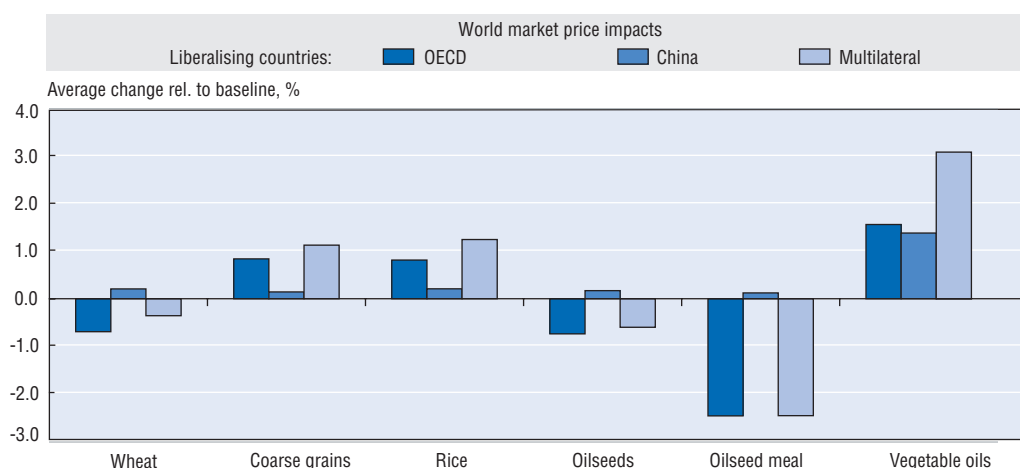
Impacts on Chinese and world crop markets⁷

Liberalising OECD markets

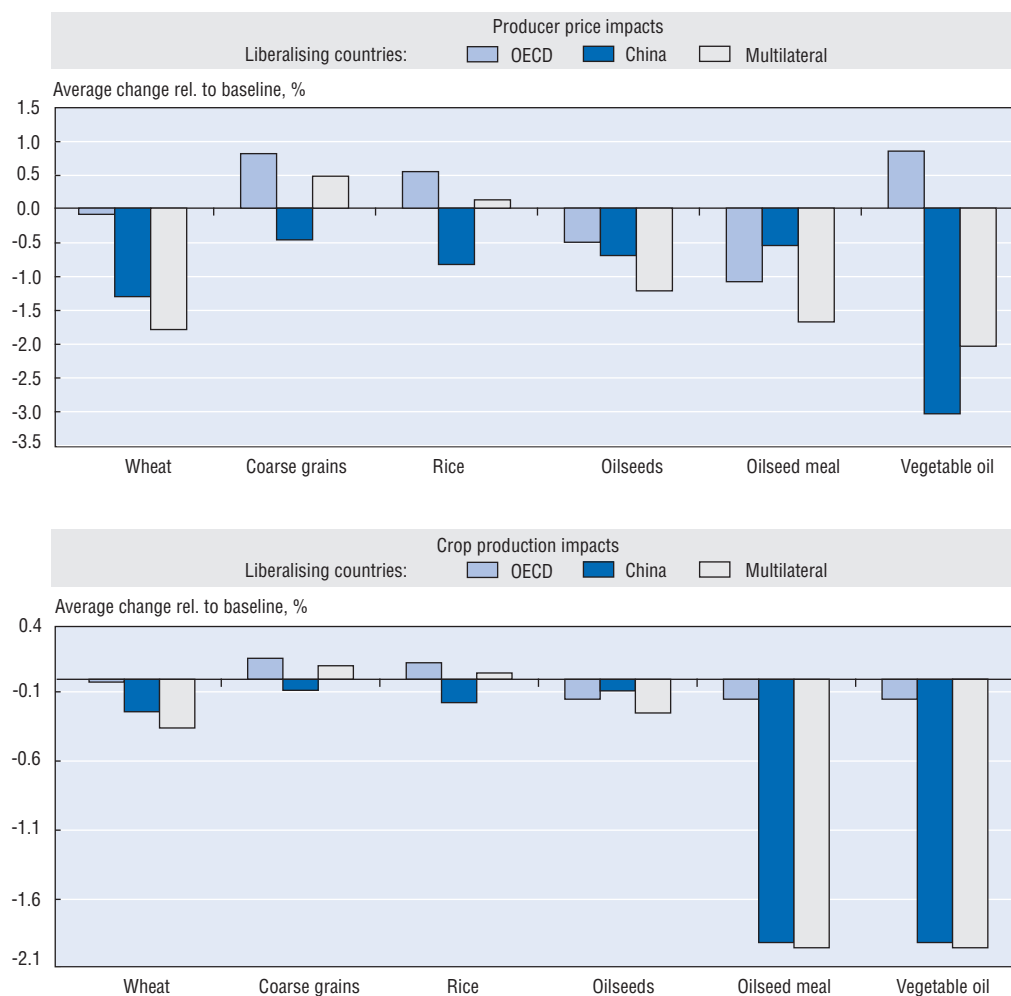
A partial liberalisation of OECD policies by 50% confirms the fact that the biggest changes take place in the OECD countries where reforms occur and for products with relatively high levels of protection. For example, dairy is among the most protected sectors in many OECD countries. Partial OECD liberalisation leads to declining domestic prices in countries that reform their dairy policies. On average, the US domestic butter price is some 5% below the baseline, in Canada, the domestic cheese price is some 20% below its baseline level, the EU butter price is some 15% below and coarse grains is some 6% below their baseline levels and in Japan, the rice price is some 9% lower. In each of these cases, of course, larger price changes are evident in certain years.

The effects of OECD liberalisation on world markets are muted by producer and consumer response in other countries. For example, OECD liberalisation has relatively small impacts on world cereal prices. It triggers slightly higher world prices for coarse grains (0.8%) and rice (0.8%) on average for the 2005-2013 period (Figure 3.5). In the case of coarse grains, the changes in the EU dominate. Production in the EU falls 2.7% on average, leading to lower exports (down 25% on average). Other countries, notably the US respond by expanding production and exports thus mitigating the rise in the world price. In the rice market, increased imports by Japan dominate the results. OECD rice policies represented in the model are Korea's and Japan's. For Korea, the rice quota is assumed to remain unchanged. Japan's rice TRQ is partially liberalised through expanding the quota and lowering the tariffs. These policy changes are sufficient to generate larger rice imports in Japan leading to the higher world price reported. But, the OECD countries comprise a small share of the world rice market, hence the relative modest changes reported.

At the same time, as support reduction leads to land reallocation in the EU, EU production and exports of wheat would grow (exports increase about 15% on average), mostly offsetting falling exports from other exporting countries leading to slightly declining world wheat prices of about 0.7% on average. Assuming no change in Chinese policies, the price increases for coarse grains and rice would be largely transmitted to the domestic markets in China (Figure 3.6), causing some reduced domestic (mainly feed) use

Figure 3.5. **Impact of 50% liberalisation on world crop markets, average 2005-2013**

Source: AGLINK simulation results, OECD.

Figure 3.6. **Impact of 50% liberalisation on Chinese crop markets, average 2005-2013**

Source: AGLINK simulation results, OECD.

but increased production of these commodities. Given that wheat imports to China are largely determined by the tariff rate quota (TRQ), however, domestic wheat prices are little changed. Consequently, wheat production is unaffected but higher coarse grain prices lead to a slight increase in the feed use of wheat.

Oilseeds are relatively less protected than other crops in OECD markets. OECD liberalisation leads to oilseed area and production expansion in the EU resulting in a lower world price. Higher domestic oilseed production and falling feed demand leads to lower oilseed meal imports by the EU. Similarly, lower feed demand for oilseed meal by Japan also contributes to the modestly lowers world prices, and both of these price developments are passed on to the Chinese domestic markets. The slight oilseed price decline does not materially affect crushing demand. Hence, production of oilseed meal and vegetable oils remains relatively constant. The prices of vegetable oils in international markets on the other hand are higher following OECD liberalisation. Most of this is transmitted to the Chinese market which in turn reduces domestic use of vegetable oil.

Liberalising Chinese markets

Compared to a partial liberalisation in all OECD countries, liberalising Chinese trade policies by 50% would have a positive effect on the world prices of the crops reported in Figure 3.5, albeit with much less of an effect. However, in the case of vegetable oils, Chinese liberalisation has an impact on world markets almost on par with those generated by OECD country liberalisation. In this case, Chinese policies play an equally strong role in world markets as the average world price increase following Chinese trade reform is almost the same as that generated by OECD reform.

In contrast, the effects of Chinese liberalisation on domestic markets results, as expected, in lower prices and the impact on Chinese markets is found to be larger, particularly in the case of wheat and vegetable oils (Figure 3.6). An expansion of the wheat quota in addition to the reduction of in-quota tariffs would reduce domestic wheat prices by some 1.3% on average. Consequently, wheat production is reduced, while consumption (and particularly feed use) would be higher, resulting in wheat imports expanding some 7% above baseline levels (as much as 15% higher in 2009). Similarly, lower in-quota tariffs result in vegetable oil price falling some 3.0% on average, even as the world price increases, leading to an average drop in production of 2% while consumption expands some 3% above the baseline on average (but it is more than 8% greater in the last two years). The net effect is that imports expand almost 18%. Price and trade effects for rice and coarse grains similar in direction but smaller in magnitude. Note that none of the expanded TRQs for wheat, vegetable oils, and rice would become binding.

In the case of oilseeds and oilseed meals, tariff reductions for these commodities lead to a decline in domestic meal and seed prices by 0.6% and 0.8% on average, respectively, leading to lower output, especially of oilseed meal (Figure 3.6). Oilseed meal consumption is little changed as lower output is compensated by higher imports which on average are some 40% above the baseline. Lower oilseed production coupled with lower oil meal and vegetable oil prices result in lower crushing and hence lower production of vegetable oils as well.

Liberalising all markets

A multilateral liberalisation would result in market impacts that very much represent the total of the abovementioned scenarios. While world price changes would be dominated

by the effects of liberalising OECD markets, domestic markets within China would be equally affected by the Chinese policy changes. The impact of the Chinese liberalisation is particularly pronounced for wheat, where the expansion of China's TRQ, which was binding from 2008 to 2011 in the baseline, has a strong influence on the Chinese market projections. Lower international prices would put some limited pressure on domestic market prices which would be about 1.8% lower than under baseline conditions on average resulting in more demand, especially for feeding. Feed use of wheat, although relatively low in absolute terms, would increase by 1.7% on average, mostly at the expense of coarse grains.

Conclusions

To a certain extent, liberalising OECD and Chinese agricultural policies would have opposite, and therefore partly offsetting, effects on Chinese domestic markets for crops and, in particular, meat and milk. For a number of commodities, the effects of a partial multilateral liberalisation would therefore be rather small. The effects of OECD and Chinese policies individually are generally more pronounced in crop markets than in livestock. Higher meat prices would generally follow from a liberalisation of OECD policies, but decline following a Chinese policy cut. Given that feed prices generally change in the same direction but more strongly than meat prices, Chinese meat production would decline as a response to higher feed prices due to an OECD liberalisation, but increase with lower feed costs if Chinese policies were partly liberalised.

A partial liberalisation in OECD countries would generally result in higher world and domestic prices for most agricultural products and would therefore not only benefit Chinese producers, but at the same time negatively affect food consumers. This potential negative effect would be largely eliminated in a multilateral liberalisation scenario where prices for the main food commodities would be either reduced (vegetable oils and wheat) or little affected on average (particularly rice, and most meats). Unilateral Chinese liberalisation on the other hand will have minor effects on world prices but lead to larger declines in domestic prices.

The relatively small effects reported may be a reflection of the partial nature of the reform. All policies remain in place in the scenarios, only their levels differ. Complete liberalisation would be expected to have a more substantial impact. In addition, the results are conditional on the underlying baseline. A different baseline may lead to different results. Furthermore, the results are dependent upon the commodities represented in the model which does not include all agriculture. Although the commodities represented are among the most protected, a fuller set of commodities would give a more complete picture of the effects of liberalisation.

It should be noted that both the baseline projections themselves and the impacts of the partial liberalisation of Chinese policies strongly depend on the actual implementation of Chinese TRQ policies. Within WTO, large shares of the agreed grain TRQs remain under control of STEs, and hence of the government. As in the past these entities have been found to be rather restrictive with respect to grain imports, it remains unclear whether, in case of grain shortages on the Chinese markets, TRQs would become filled as assumed in the baseline projections. Another uncertainty is related to the actual levels of Chinese grain stocks; data for them have been revised several times in the past in light of the large stock sales observed since the end of last

decade. An analysis of both these issues and possible implications for the Chinese grain markets can be found in the following section.

3.3. Domestic and world market implications of alternative grain stock estimates and trade policies in China

This section discusses the impact on China's and the international market from changes in two factors driving Chinese grain imports. First, an alternative set of market projections based on the recent estimates of Chinese grain stocks is compared to the projections discussed below to verify the validity of the baseline. Second, an analysis is provided of the market implications that would arise from a significant under-fill of import quotas for technical or political reasons, for example because the Chinese state traders could prevent imports within the TRQ shares that remain under their control, or from an overfill if Chinese authorities decided to expand the import quotas.

Recent developments on China's grain markets

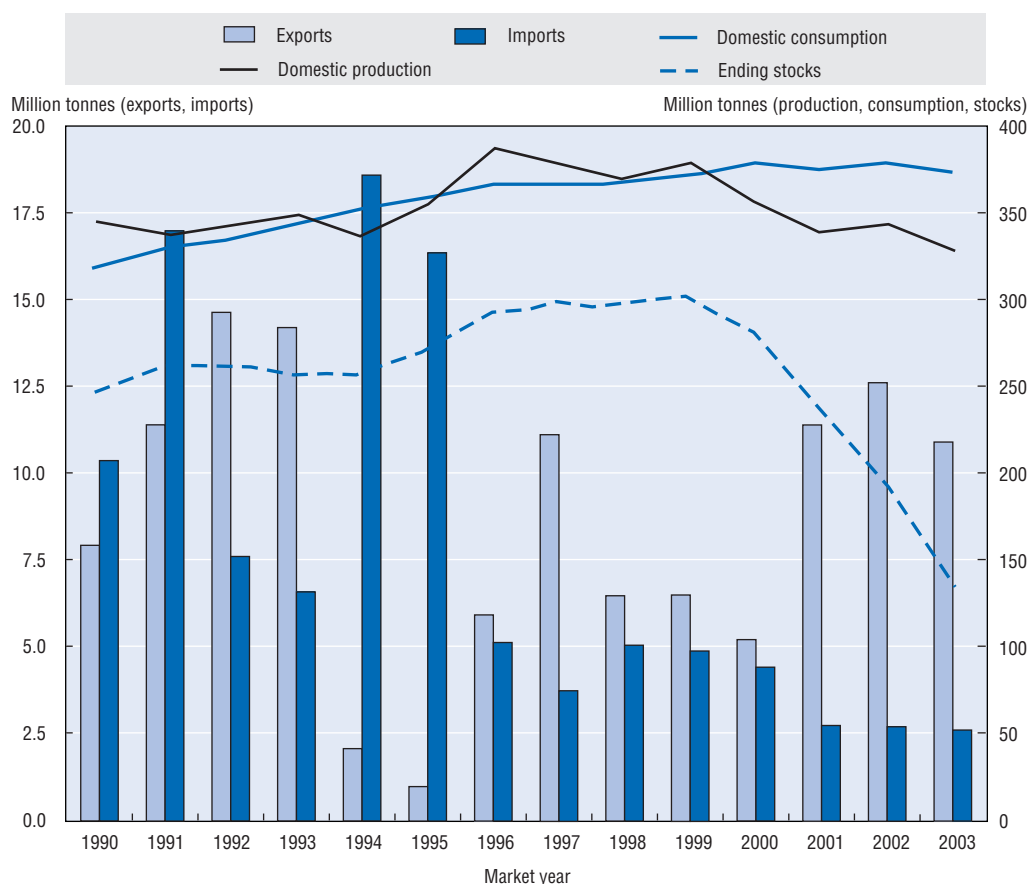
Recently, Chinese grain markets were characterised by a significant deficit in domestic production when compared to consumption. Despite production failing to meet consumption by 34 million tonnes per year, on average, between 2000/01 and 2003/04, China remained an important net exporter of grains, exporting 10 million tonnes of wheat, coarse grains and rice per year, on average, in the same period, while at the same time reducing imports to the lowest levels since the mid-1970s. Obviously, the deficit is filled from large cereal stocks built up during the 1990s in particular when domestic production outperformed consumption by significant amounts (Figure 3.7).

Clearly, with consumption remaining larger than production, China's status as a net exporter cannot be maintained forever. Once stocks are reduced to levels considered to be minimum reserves by Chinese authorities, the deficit will have to be filled by imports from abroad. Recent developments indicate that Chinese grain prices have increased significantly over the past several months, indicating the first signs of scarcity in the domestic markets. Between February 2003 and February 2004 maize and wheat prices increased by 12% and 36%, respectively, while rice prices rose between 40% and 60%. If the domestic supply-demand ratios remain as in the past four years, the drop in stock supplies would mean a switch from 7 million tonnes net exports to 34 million tonnes net imports. This change in the net trade position by some 40 million tonnes per year compares to current global trade quantities of around 230 million tonnes of wheat, coarse grains and rice – a ratio that indicates the relative importance of the issue.

When China joined the WTO, it agreed to open its domestic market through the introduction of TRQs for wheat, maize and rice, totalling to some 22 million tonnes per year, with a certain and, in the case of maize, increasing share of import quotas allocated to private traders other than the official Chinese state trading enterprise. In addition, any STE quota shares unused by the third quarter of a given year were to be opened to non-STE traders.

Indeed, the OECD *Agricultural Outlook 2004-2013* (OECD 2004c) projects a significant rise in cereal imports. With vanishing supplies from domestic stocks, the *Outlook* expects both wheat and rice import quotas to become filled, and coarse grain imports (comprising both maize and other coarse grains) to far exceed the TRQ for maize (see next section for details). There are several unanswered questions, though. First, the exact magnitude of

Figure 3.7. Recent developments in the Chinese grains balance, 1990/91-2003/04



Note: Grains include wheat, coarse grains and rice.

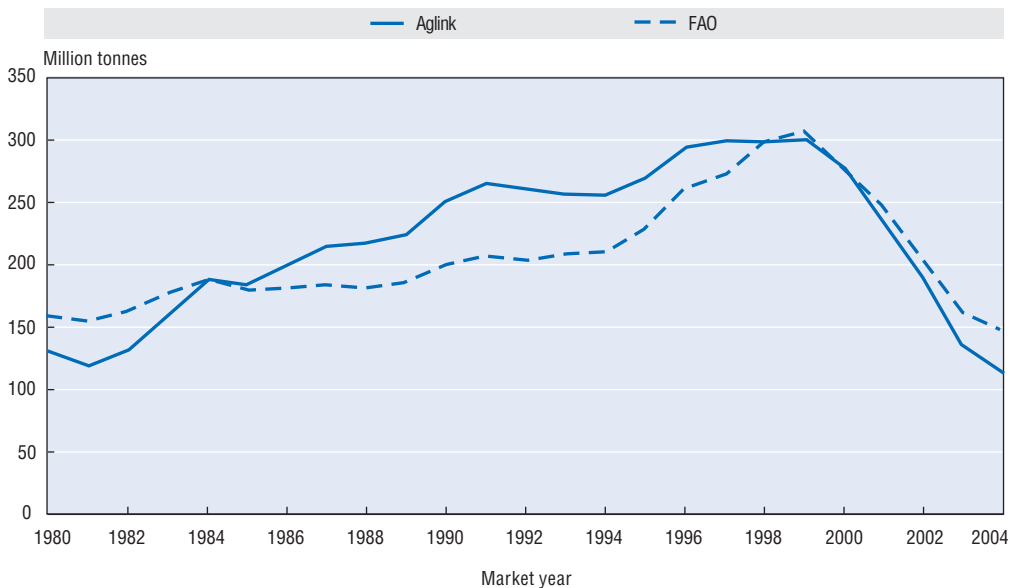
Source: AGLINK database, OECD.

current Chinese grain stocks is unknown (and is indeed regarded as a state secret by the Chinese authorities). Recent revisions of Chinese grain stock estimates provided by the UN Food and Agriculture Organisation (FAO) could therefore lead to a reconsideration of the Outlook projections for China, as any change in the total stock figures obviously may result in a change in the pressure for cereal imports. Second, opening up TRQs may not be sufficient to allow for the necessary grain imports; domestic policy reforms, *e.g.* the reduction of trade control power of the current Chinese STEs, as well as improvements in infrastructure are equally necessary to allow the import quotas to be actually filled.⁸

Recent grain balance estimates

More recently, FAO has provided new estimates on Chinese grain balance data. In particular, and unsurprisingly given the debate on the issue in the past, stock estimates have been revised. In 2003 and 2004, total stocks are now estimated at 163 and 148 million tonnes, respectively, some 19% and 30% above the data currently used in AGLINK (Figure 3.8). While wheat stocks are actually revised downwards, it is coarse grain stock estimates that have more than doubled for 2003 and 2004.

Such important data revisions obviously could trigger significant revisions in the baseline projections presented in Box 3.1. A scenario analysis taking into account the

Figure 3.8. **Chinese total grain stocks: recent FAO revisions**

Note: Grains include wheat, coarse grains and rice.

Sources: AGLINK database, OECD; FAO.

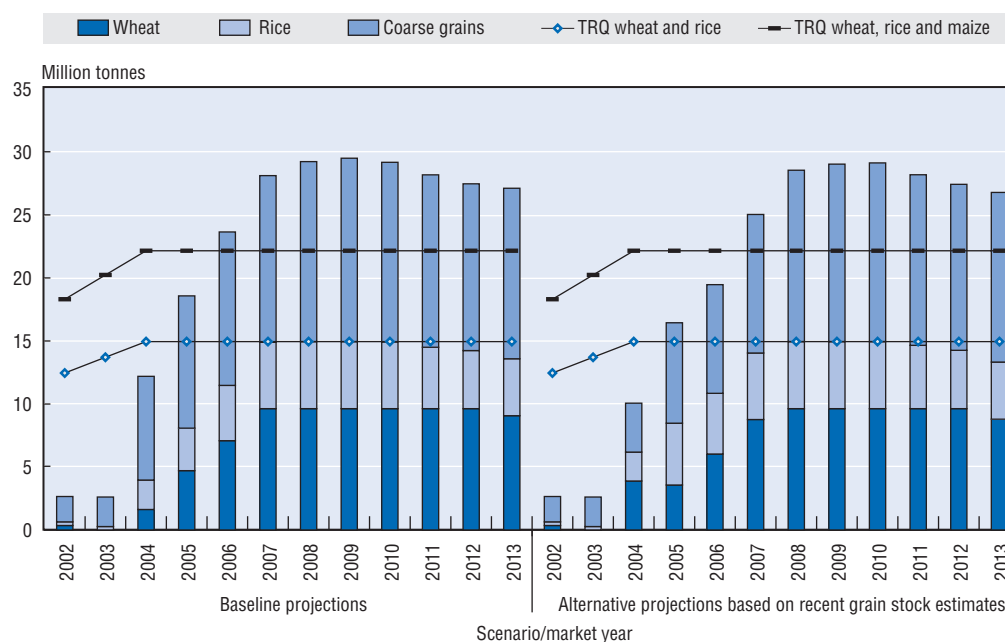
revised stock numbers as well as new estimates on long-run stock levels considered as minimum requirements in buffer stocks shows, however, that the main findings of the baseline projections still hold. While particularly in the early projection years stock sales could be higher than assumed for coarse grains, and somewhat lower in the case of rice, projections for production, consumption and trade as well as domestic and international prices would change only modestly. Both domestic and world market prices for all grains could be slightly lower than projected in the first couple of years, with the exception of wheat in 2004 and rice in 2005 following the lower stock sales for those commodities. But changes for the baseline would remain below 2% in almost all cases and years.

Medium-term projections for Chinese grain imports in general remain valid as well. The larger availability of coarse grain stocks would, however, result in lower imports by some 10% on average. In particular, the increase in Chinese coarse grain imports could be expected to follow a less rapid path, although very similar levels would be reached by the end of this decade. In contrast, imports of wheat and rice could fill the tariff rate quotas more quickly given the lower stock availabilities for these commodities (Figure 3.9). Projections for meat markets and trade are barely affected by the grain stock revisions. Lower feed grain prices would trigger slightly higher production of beef, pork and poultry, but the impact would not exceed 0.2% on average for any of the meat types.

Market implications of alternative licensing policies for Chinese grain TRQs

As mentioned above, the baseline assumptions (Box 3.1) of completely filled TRQs for cereals may not be entirely realistic if the introduction of the TRQs is not supported by domestic reforms and necessary infrastructure development. In particular, it was said that the persistent system of STEs controlling large shares of the total TRQs might represent a *de facto* reduction of the import quotas.⁹ On the other hand, in a severe deficit situation the Chinese authorities may opt to expand imports at in-quota tariffs beyond the agreed TRQ levels.

Figure 3.9. **Impact of Chinese grain stock revisions: import projections of wheat, coarse grains and rice**



Source: AGLINK simulation results, OECD (2004c).

Obviously, there is no reason to assume that the share of TRQs that is left under STE control would remain entirely unfilled even if domestic market conditions would ask for the respective imports. In fact, given the possibility of non-STE traders to import within the unfilled STE quota shares after the third quarter of any given year, it seems very unlikely that the STE shares would remain completely unfilled in a Chinese deficit situation. Nor does this analysis aim to suggest that the non-STE shares would become completely filled under all circumstances. For illustrative purposes, however, the first scenario discussed in this section assumes effective TRQs for wheat, maize and rice to be reduced to the non-STE shares as given in the last column of Table 3.9. In contrast, a second scenario assumes an expansion of import quotas to a degree that would make the TRQs unbinding.

Table 3.9. **Development of Chinese grain tariff rate quotas after WTO accession**

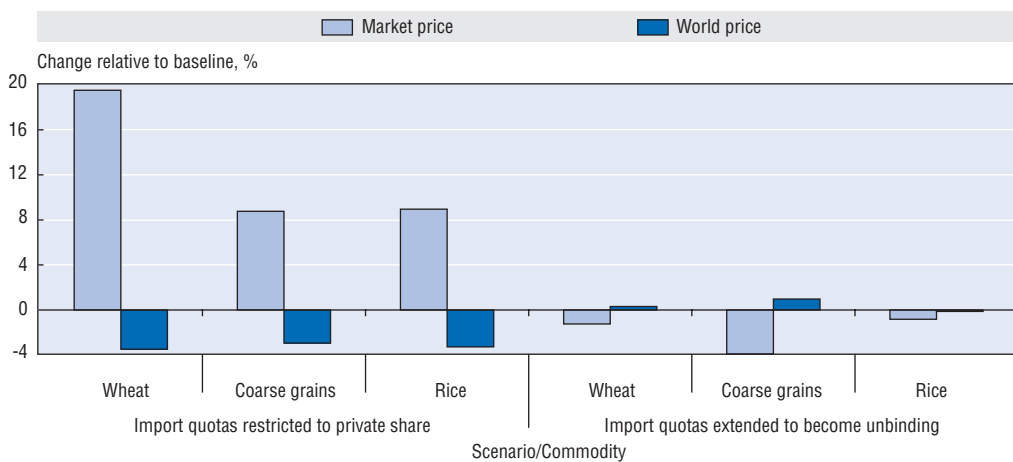
Commodity	Year	Total import quota 1 000 t	Share reserved to STEs %	Remaining non-STE quota 1 000 t
Wheat	2002	8 468	90	847
	2003	9 052	90	905
	From 2004	9 636	90	964
Maize	2002	5 850	68	1 872
	2003	6 525	64	2 349
	From 2004	7 200	60	2 880
Rice	2002	3 990	50	1 995
	2003	4 655	50	2 328
	From 2004	5 320	50	2 660

Source: Schedule of the People's Republic of China.

Grain imports restricted to the shares reserved for private traders

With effective TRQs and hence imports significantly reduced, domestic market prices for grains would be markedly higher than under baseline conditions. While the TRQs for wheat and rice would remain binding, prices for these food grains would increase by 20% and 9% on average, respectively (Figure 3.10), resulting in market prices moving closer to, though still significantly below, the price levels that would be defined by the over-quota tariffs. The impact on Chinese coarse grain prices is similar to that for rice, with an average increase of 8%: despite some substantial substitution between maize and other coarse grains, particularly barley, assumed in the baseline projections, total coarse grain imports would be significantly smaller if the maize TRQ would be restricted to the 50% share available to private traders.¹⁰

Figure 3.10. **Impact of restricted and extended import quota access on Chinese and world grain prices, average 2004-2013**

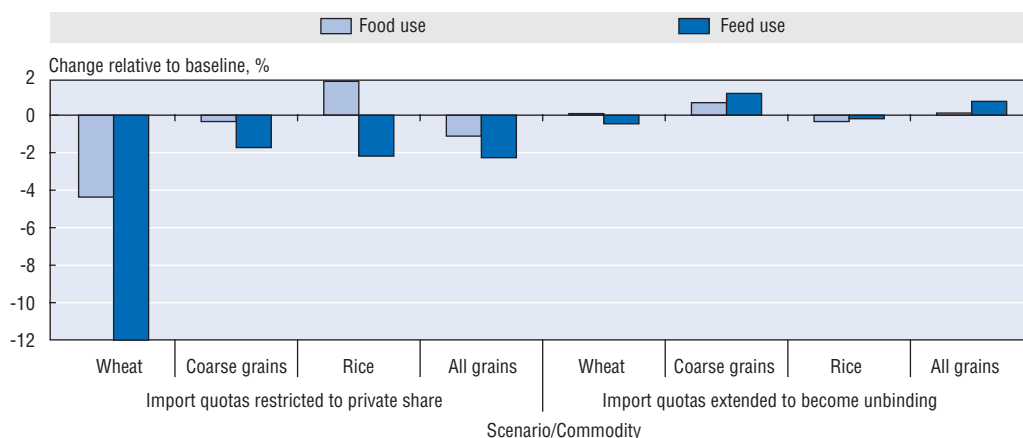


Source: AGLINK simulation results, OECD.

Internationally, the decline in Chinese grain imports reduces world cereal prices by 3% to 4% on average for the simulation period. The impact on international prices is particularly strong for wheat – due to the large change in Chinese imports – and rice – due to the smaller world market for this commodity. Impacts on world coarse grain prices would be less pronounced given the smaller impact on Chinese import levels relative to wheat, and the much larger world markets relative to rice. These price effects are strongest during the 2007-2010 when TRQs would be binding in the baseline projections. It should be noted that due to the more restrictive trade regime for wheat, maize and rice, these lower world market prices would be of little relevance to both domestic producers and consumers. With the exception of coarse grains where some substitution between maize and other feed grains could be expected, domestic market prices would be determined internally and largely de-linked from international price developments.

These significantly higher prices create larger incentives for domestic producers. Chinese cereal production would on average be about 2% higher than in the baseline, with stronger effects on wheat output than for coarse grains and rice following the different price effects on the domestic markets. However, there is a strong negative effect on domestic use of grains, as shown in Figure 3.11. In particular, with reduced livestock production (particularly beef, pork and poultry), feed use of cereals would be reduced by

Figure 3.11. **Impact of restricted and extended import quota access on Chinese grain consumption, average 2004-2013**



Source: AGLINK simulation results, OECD.

more than 2% on average. While the strong decline of wheat feed use is of lesser importance given the small share of wheat in the Chinese feed mix, feed use of rice and particularly of coarse grains would fall by about 2%. Food consumption would decline as well, though less strongly. As a consequence of the different price impacts on the domestic market, wheat consumption would be affected most significantly and would average more than 4% below baseline levels. In contrast, rice consumption would be higher than under baseline conditions as relative prices trigger a shift from wheat to rice as the staple food.

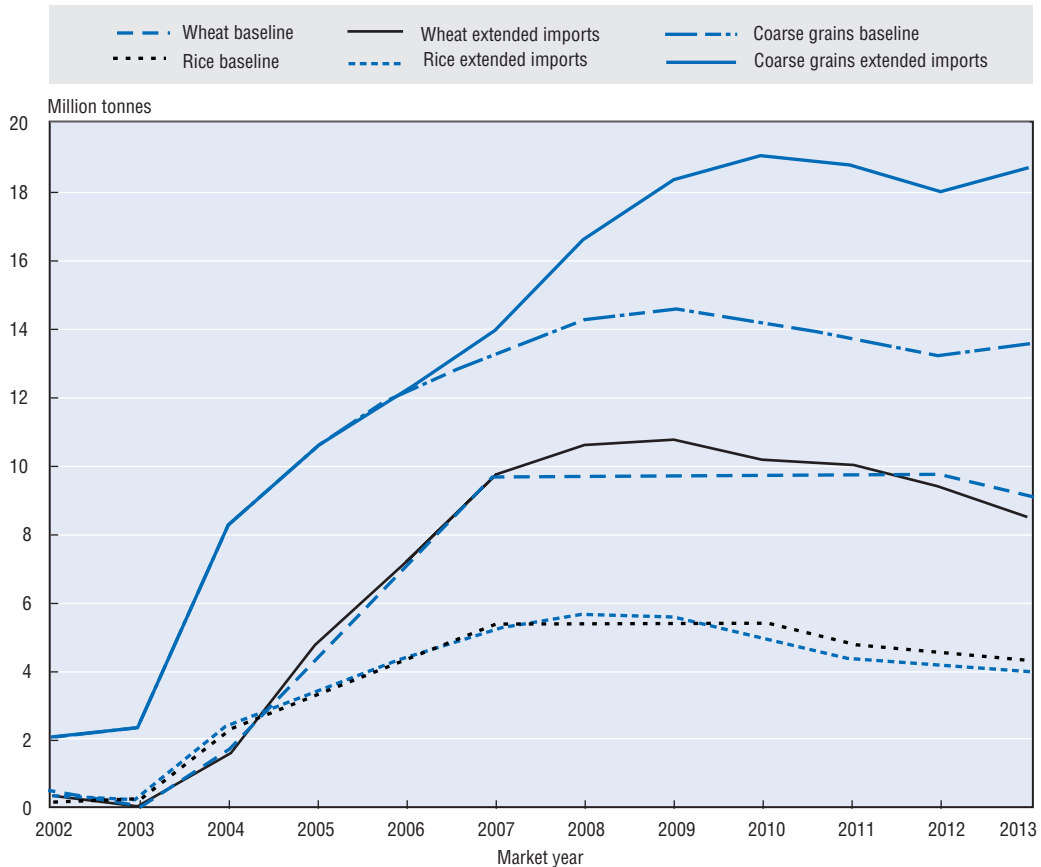
The lower meat production and corresponding higher meat prices would also result in a – though smaller – reduction of domestic meat consumption. At the same time, pork exports would decline more quickly, and poultry imports would expand faster. On average, total net meat imports would be some 35% higher than under baseline conditions, even though again these changes would occur on relatively low levels of trade.

Grain imports at in-quota tariffs possible beyond TRQ levels

In contrast to restricted access to TRQ imports, a second policy scenario considers the case of unlimited imports at in-quota tariffs. Allowing for demand-driven imports at in-quota tariffs would obviously result in imports larger than current TRQ commitments. Wheat imports could be up to 11% higher than with binding TRQs, whereas the increase in rice imports could reach 5%. Coarse grain imports, which are only partly determined by the TRQ for maize, would increase by up to 38% if the in-quota tariff were applied to all maize imports (Figure 3.12). Note that in the long run the imports of wheat and rice would be lower than under baseline assumptions (Box 3.1) following cross-commodity effects with coarse grains (see below).

With larger imports for wheat and rice, and particularly for coarse grains, domestic market prices would be lower than under baseline assumptions. For wheat and rice, domestic prices would become determined by world market price levels adjusted by the in-quota tariffs and would decline by about 1% on average relative to the baseline projections. The impact on coarse grain prices is larger at 4% on average (Figure 3.10). Consequently,

Figure 3.12. **Impact of unlimited import quota extension on Chinese grain imports, 2002-2013**



Source: AGLINK simulation results, OECD.

domestic cereal use would be somewhat higher, but the impact is small. Most notably, following the meat production increased by 0.3% on average, feed use of coarse grains would be about 1% higher on average compared to the baseline, more than offsetting the slightly lower feed use of wheat and rice following the higher relative prices for those commodities. In contrast, food grain consumption as well as domestic grain production on average would be barely affected by these changes.

It is interesting to note that in the longer run cross-price effects offset the impact of lower wheat and rice prices on domestic consumption. This is particularly evident for feed use, which in the cases of wheat and rice end 3% and 1% below baseline levels by 2013, but food use would also be reduced in the longer run due to the much lower coarse grain prices. Consequently, given the small response of domestic grain production in general, the extension of in-quota imports would result in lower imports of both rice and wheat as of 2010 and 2012, respectively.

Implications for world market prices are small particularly for wheat and rice. Given the small changes in Chinese imports, world wheat and rice prices would change little. Somewhat stronger impacts are found for world maize prices which on average would be 1% higher than projected in the baseline, with a stronger increase from 2008 when Chinese coarse grain imports would be significantly above baseline import levels. Nonetheless,

domestic markets would benefit from cheaper imports as the TRQs particularly for maize would no longer be binding. Meat trade, though again remaining at low levels relative to domestic markets, is affected in the opposite direction: while net pork exports would be slightly higher (+1.3% on average), net poultry imports would be somewhat lower (-1.6% on average) compared to the baseline projections.

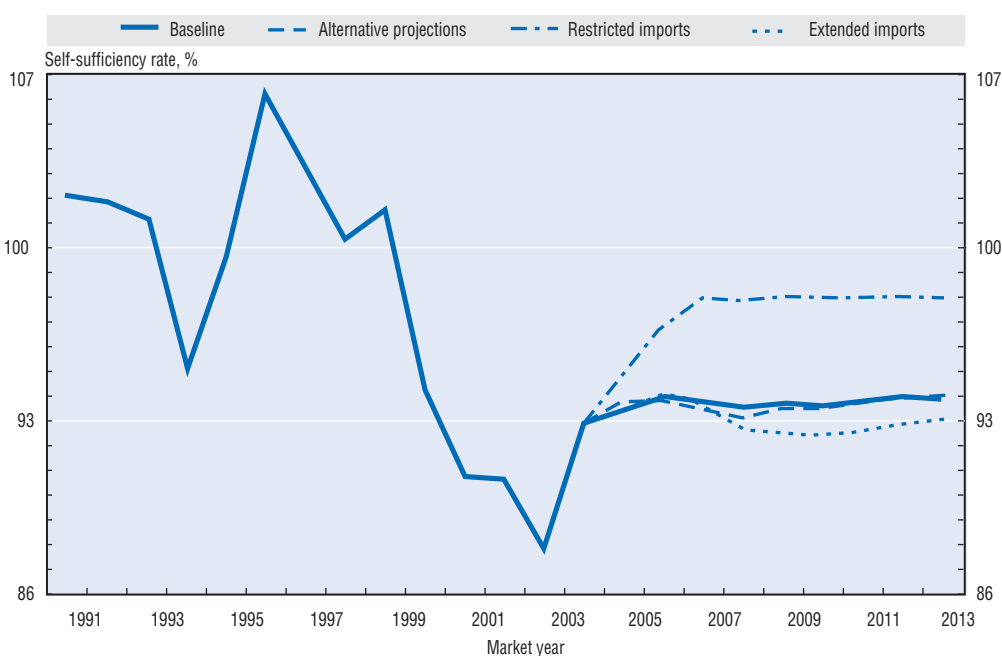
Implications for Chinese self-sufficiency rates

China's food security is sometimes defined as 95% self-sufficient in grain production. While it is broadly agreed that such self-sufficiency rates cannot be considered a good indicator of food security (in fact, a high self-sufficiency rate is neither a necessary nor a sufficient condition for all people having reliable access to sufficient and affordable food), they do provide a meaningful aggregate indicator of the overall supply-demand balance.

The Chinese self-sufficiency rate for grains, defined as the total production of wheat, coarse grains and rice divided by the total domestic consumption of these crops, was quite variable in the past. Given a relatively stable growth in domestic use (Figure 3.7), these variations essentially mirror production conditions. During the last three decades of the 20th century, self-sufficiency rates fluctuated between 91% and 109%, with an average just over 100%. More recently, as described above, the Chinese grain markets were characterised by substantially lower rates which were largely offset by stock sales. The lowest self-sufficiency rate for decades was observed in 2003/04 when it dropped to less than 88%.

The baseline projections discussed above (Box 3.1) suggest that the Chinese self-sufficiency rate for grains would remain at levels between 93% in 2004/05 and 94% in 2014/15 (Figure 3.13). This result is only slightly affected by recently changed estimates of Chinese

Figure 3.13. **Self-sufficiency rates of Chinese grain markets, 1991-2013, in different scenarios**



Source: Calculated from AGLINK database and AGLINK simulation results, OECD.

grain stocks. Higher stock levels and hence larger supplies from stock sales would slightly reduce average self-sufficiency rates following lower prices, less production and higher domestic consumption, but these differences are small. In other words, the self-sufficiency rate for Chinese grain markets is quite likely to be established below the 95% benchmark. While domestic production will represent almost 98% of domestic consumption in the case of rice, self-sufficiency rates for coarse grains and wheat are likely to remain substantially lower at about 92% and 90%, respectively.

Alternative trade policies could have a major impact on the self-sufficiency rates, as shown in Figure 3.13. If imports were restricted to the TRQ shares reserved for non-STE traders rather than to the full TRQs agreed by China, aggregate self-sufficiency rates would be significantly higher at some 98%, particularly after 2007. These higher self-sufficiency rates are the direct consequence of substantially smaller imports. In contrast, a policy that would allow imports at in-quota tariffs beyond the quota levels would result in somewhat lower rates of about 93%.

Conclusions

With baseline projections influenced by the marked increase of Chinese cereal imports after available supplies from grain stocks run out, the focus of this section is on two main factors that are likely to impact these trade quantities. Alternative projections that take into account recent revisions of Chinese grain stock estimates show that these revisions in general have only a minor impact on the market outlook and that the basic trends outlined in the baseline projections remain valid. The main difference is found in the speed of grain imports filling up the import quotas for wheat, maize and rice agreed for the Chinese accession to WTO. Projections for Chinese grain production, consumption and prices as well as for world market prices remain broadly unchanged.

The two scenarios have focussed on the levels of available cereal import quotas. For several reasons, actual imports could be more limited than suggested by the TRQ quantities even if domestic markets would ask for larger supplies from exporting countries. One of them is the remaining large shares of TRQs that are controlled by STEs and that might maintain an import-limiting strategy. On the other hand, Chinese authorities may opt to allow for larger than agreed imports at in-quota tariffs if the domestic market shows significant grain deficits. The scenario results show that a restrictive import policy would have severe implications on domestic markets, with livestock producers as well as consumers suffering from significantly higher grain prices. Clearly, such implications cannot be in the interest of China which repeatedly has made clear the high priority it accords to food security issues. In contrast, allowing for larger imports at low tariffs would benefit grain users through lower prices. While this would have only small consequences for food consumption, lower grain prices would be particularly beneficial for livestock producers; with higher feed consumption due to larger meat production, both the livestock industry and domestic meat consumers would gain, and net meat imports could be reduced.

Self-sufficiency rates for Chinese grain markets are likely to remain below the 95% sometimes used as a benchmark for Chinese food security. Only fairly restrictive assumptions on the country's import policies would result in self-sufficiency rates above that level. A more open import policy as assumed in the last scenario would result in an aggregate self-sufficiency rate of about 93%. Much of the imports would be of coarse grains for which the international markets are large, and imports of which therefore should

remain readily available. At the same time, more liberalised markets would benefit from a more efficient allocation of resources; in particular, farmers close to urban areas and export ports could play off their comparative advantage in more labour intensive products, such as livestock and vegetables, rather than cereal commodities.

Notes

1. In constructing these averages bilateral trade flows were used to weight tariffs actually applied. Moreover, special procedures were used in calculating tariff averages for commodities covered by tariff rate quotas in order to better account for distinctions between out-of-quota and in-quota tariff rates. The combination of trade-weighting and the special procedures for TRQ's means that the estimates obtained may differ from results obtained using other averaging procedures such as, *e.g.*, used for constructing the estimates of China's agricultural tariffs reported in Chapter 2.
2. Even if China were to levy higher tariffs than it faces it might gain from global liberalisation, though its farmers might lose.
3. The survey team was led by Loren Brandt of the University of Toronto, Scott Rozelle of the University of California at Davis, and Linxiu Zhang of the Center for Chinese Agricultural Policy, Chinese Academy of Sciences. The OECD Secretariat thanks them for making the survey data available. Chang (2004) provides information on the survey frame and procedure.
4. The data did not distinguish between agricultural employment and non-agricultural employment.
5. Note that this excludes income from employment in farms, which comes under "wages" and was not separated out in the raw data.
6. The difference is due to Ravallion and Chen's (2004) larger and different data set, application of a rural rather than national poverty line and regional cost of living corrections derived from their own data.
7. All of the products represented in AGLINK are included in the analysis. However, the discussion below focuses only on the crop markets because the interactions between world and Chinese livestock markets are rather limited. This is due partly to China's relatively small trade in some of these markets, partly due to the linkages between China and world markets as represented in AGLINK and partly due to limited representation of Chinese policies in AGLINK.
8. See OECD (2001) p. 21 and OECD (2002a) p. 115, for discussions on possible implications of the introduction of TRQs in China.
9. Note that protection of Chinese markets against grain imports is created not only by TRQs and other tariff measures. For example, differences in the value-added tax (VAT) charged for imported, exported and domestically produced and consumed products, as well as export subsidies, are reported for several commodities. While the tax difference is considered important by some authors (*e.g.*, Huang, Rozelle and Chang, 2004), others note that the actual differences of about 3 percentage points for grains may be considered small (*e.g.*, van Tongeren and Huang, 2004). In Chapter 2 the difference is estimated at 9% (see Box 2.4). In any case, the present analysis does not take into account these tax differences nor export subsidies.
10. Note that the AGLINK model does not represent maize markets explicitly. Instead, the effective import tariff is represented as a function of the in- and over-quota tariffs for maize and the non-TRQ tariff for other coarse grains, as well as the total coarse grains imports relative to the maize TRQ. Results obtained for the coarse grains market therefore need to be interpreted with greater care than those for wheat and rice.

Acronyms and Abbreviations

ABC	Agricultural Bank of China
ACFSMC	All-China Federation of Supply and Marketing Co-operative
ADBC	Agricultural Development Bank of China
AGVA	Agricultural Gross Value Added
AQSIQ	National Administration for Quality Supervision, Inspection and Quarantine
ASEAN	Association of South-East Asian Nations
CCCPC	Central Committee of the Communist Party of China
CCTV	China Central TV
CEREOLS	China National Cereals, Oils and Foodstuffs Import & Export Corporation; now COFCO
CIF	Cost, Insurance and Freight
CITES	Convention on International Trade and Endangered Species
CNY	Yuan Renminbi
COFCO	China National Cereals, Oils and Foodstuffs Import & Export Corporation
CPC	Communist Party of China
CSE	Consumer Support Estimate
DRC	Development Research Centre of the State Council
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	FAO statistical database
FDI	Foreign Direct Investment
FOB	Free on Board
GAO	Gross Agricultural Output
GDP	Gross Domestic Product
GGBRs	Governor's Grain-Bag Responsibility System
GMO	Genetically Modified Organisms
GSSE	General Services Support Estimate
GVA	Gross Value Added
HACCP	Hazard Assessment Critical Control Point
HPRS	Household Production Responsibility System
ISO	International Standards Organisation
JGIEC	Jilin Grain Group Import and Export Company
MFN	Most Favoured Nation
MLR	Ministry of Land Resources
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MOFCOM	Ministry of Commerce
MOFTEC	Ministry of Foreign Trade and Economic Co-operation; now MOFCOM

MOH	Ministry of Health
MPS	Market Price Support
MWR	Ministry of Water Resources
NBSC	National Bureau of Statistics of China
NDRC	National Development and Reform Commission
NPC	National People's Congress
NTBs	Non-Tariff Barriers
OECD	Organisation for Economic Co-operation and Development
OIE	International Office for Epizootics
PBC	People's Bank of China
PPP	Purchasing Power Parity
PRC	People's Republic of China
PSE	Producer Support Estimate
RCGs	Rural Credit Co-operatives
RCRE	Research Centre of Rural Economy
SARS	Severe Acute Respiratory Syndrome
SAGR	State Administration of Grain Reserves
SASAC	State-owned Assets Supervision Administration Commission
SEPA	State Environmental Protection Administration
SFDA	State Food and Drug Administration
SGA	State Grain Administration
SGEs	State Grain Enterprises
SINOGRAIN	China Grain Reserve Corporation
SMCs	Supply and Marketing Co-operatives
SOEs	State Owned Enterprises
SPS	Sanitary and Phytosanitary (measures)
STEs	State Trading Enterprises
TBT	Technical Barriers to Trade
TFP	Total Factor Productivity
TRQ	Tariff Rate Quota
TSE	Total Support Estimate
TVEs	Township and Village Enterprises
VAT	Value Added Tax
WB	World Bank
WTO	World Trade Organization

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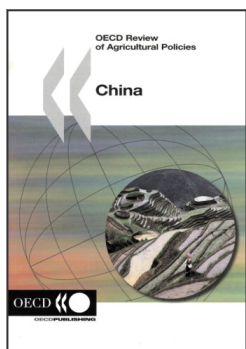
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