

TRADE REFORM, THE WTO AND CHINA'S FOOD ECONOMY IN THE TWENTY-FIRST CENTURY

JIKUN HUANG[†] *Chinese Academy of Sciences, Beijing, China*

SCOTT ROZELLE* *University of California, Davis, California, USA*

Abstract. The main goal of the paper is to address the policy changes that accompany China's accession to the World Trade Organization (WTO) and evaluate the various impacts of the agreement. To do so, we review the contours of past policies and describe the nature of the promises it has made to the WTO. We show that China's WTO commitments are very much an extension of past policies. Second, we show that most impacts will be relatively minor and in most cases the positive effects will outweigh the negative ones. Various institutions will buffer producers from suffering too much.

1. INTRODUCTION

Since China's leaders initiated economic reforms in the late 1978, its economy has been growing rapidly. The annual growth rate of its GDP was 8.5% for the period 1979–84, 9.7% for 1985–95 and 8.2% for 1996–2000 (SSBa 2001). China's foreign trade has been expanding even more rapidly than its overall economic growth. The nation's trade-to-GDP ratio increased from 13% in 1980 to 44% in 2000 (SSBa 2001). During the same period, the total value of China's agricultural trade grew by about 6.0% annually.

As China enters the twenty-first century, its trade is poised to grow even faster, though there are concerns about the impact of an increasingly open economy. After 15 years of negotiation, China joined the WTO in December 2001. The size of China's economy and its rapid growth will make it a crucial player in the future development of world markets for inputs and outputs of agricultural products, agribusiness and industry. There has been also growing concern about the impacts of China's WTO accession on its rural economy, concerns that have raised a number of questions. For example, what are the impacts of trade liberalization in general, and the WTO in particular, on China's agricultural production? What is the implication of China's accession for the nation's food security and world trade? What effect would the WTO have for China's agricultural policies?

* *Address for correspondence:* Department of Agricultural and Resource Economics, University of California, Davis, CA 95616, USA; email: rozelle@primal.ucdavis.edu. We would like to thank Kym Anderson, Min Chang, Ruifa Hu, Will Martin, Yuping Xie and Shujie Yao. We are grateful to the staff of the Center for Chinese Agricultural Policy who worked so hard on collecting the data. The authors acknowledge the financial support of the National Natural Science Foundation of China (70024001) and the EC (INCO: ICA4-CT-2001-10085).

[†] Jikun Huang is a professor and Director of the Center for Chinese Agricultural Policy, Institute of Geographical Sciences and Natural Resources research, Chinese Academy of Sciences. Scott Rozelle is a professor at the Department of Agricultural and Resources Economics, University of California, Davis, USA and a member of the Giannini foundation.

The answers to these questions are by no means clear. Some researchers claim that the impacts of China's accession to the WTO on China's agricultural production and world trade will be marginal (Anderson 1997; Huang *et al.* 1999, 2000). Others believe that these impacts should not be understated and could be quite large (Wang 1997; Li *et al.* 1998).

The overall goal of this paper is to examine the impacts of trade reform on China's agricultural trade patterns during the past two decades and to explore the effects of trade liberalization on China's food balance in the early twenty-first century. The paper is structured as follows. Section 2 presents an overview of the reforms in China's external sector and their impacts on agricultural trade during the past two decades. In sections 3 and 4 the effects of trade liberalization on China's agriculture are analyzed using a partial equilibrium model of the agricultural sector. Recognizing that China's accession agreement is far short of full liberalization, our paper attempts to clarify the nature of the agreement as it pertains to agriculture, and to assess its possible effects on the agricultural sector. The final section concludes.

2. REFORM IN CHINA'S EXTERNAL SECTOR AND AGRICULTURAL TRADE PATTERN

2.1 *China's foreign trade reform*

After the founding of the People's Republic of China in 1949, China adopted an 'import substitution' industrialization strategy and established a highly centralized, plan-based foreign trade regime. Exports financed imports, and foreign trade was conducted primarily to meet the nation's industrialization goals (Lardy 1992, 1995). The foreign trade regime was carried out under the direction of the Ministry of Foreign Trade. To carry out its duties, the Ministry granted trading rights to only 12 state-owned trade corporations. Three agencies – COFCO, China's National Native and Animal Products Import and Export Corporation, and China's National Textiles Import and Export Corporation – monopolized the foreign trade of agricultural products. Foreign trade was managed directly by government agencies (Huang and Chen 1999a).

During the early reform period, 1978–84, leaders gradually changed the highly centralized foreign trade system. In particular, reformers partially decentralized trade by establishing new ports with the authority to handle imports and exports, and by granting trade rights to more trading corporations and manufacturing firms. From 1979 to 1987 China's leaders established more than 2,200 foreign trade corporations, an increase of more than ten-fold during the period. During this time a new system, in which the plan acted mainly as a guidance mechanism, replaced the previous one that was based strictly on the plan. In the new system a role emerged for the market that was supposed to make trade responsive to both domestic and international prices and resource scarcities. To promote exports, China introduced an export tax rebate measure in the early 1980s.

In 1987 China's leaders initiated the foreign trade contract responsibility system. This system increased the incentives for trade corporations to engage

profitably in trade. Firms began to share in the profits that were earned. Under the system, bonuses were given for the profitability of trade and the level of foreign exchange earnings. Those firms that increased exports were allowed higher rates of retention for foreign exchange, which could either be used to engage in import or be sold in the government-managed foreign exchange market, a policy that remained effective until the unification of exchange rate in 1994. In December 1996 RMB became convertible for the nation's current accounts. Other policies liberalized the FDI rules and regulations that controlled quotas and licenses for importing materials for export processing.

2.1.1 *Export subsidies and export tax rebate*

Although at one time China relied heavily on export subsidies to conduct international trade, in the late 1980s it fixed its level of export subsidies for 1988–90 to a level equal to about 4% of the total export value in 1987. It also announced its plan to phase out export subsidies to all foreign trade corporations by 1991. Instead, China started to use an export tax rebate system. Beginning in 1983, initially it granted export rebates for 17 export commodities on an experimental base with the goal of promoting exports and increasing the competitiveness of its external sector. In the mid-1980s trade officials extended export rebates to cover more export commodities, and after 1988 it offered them for all products.

2.1.2 *Foreign exchange policies*

Reformers also targeted the foreign exchange system with a series of reforms during the 1990s, and exchange rate movements have heavily influenced China's record on trade. Historically, an overvaluation of domestic currency for trade protection purposes has acted to reduce the incentive to export. Real exchange rates remained constant and even appreciated during the thirty years prior to the reforms. It was not until after the reforms that China's real exchange rate depreciated rapidly (with the exception of a few years following spells of high inflation in the 1980s). From 1978 to 1992 the real exchange rate depreciated more than 400%. These movements in the early years were mostly by government edict, since China's government directly managed its foreign exchange. Within Asia, China has been second only to Indonesia in aggressively adjusting exchange rates over the last two decades. Except for the past five years, when the real exchange rate appreciated, falling exchange rates have increased export competitiveness and contributed to China's export growth and its impressive economic performance in the 1980s. With the unification of the two-tier foreign exchange rate systems, the foreign exchange retention system was finally abolished in 1994, and the RMB has been convertible on the current account since 1996.

2.1.3 *Tariffs and non-tariff measures*

China's policy-makers have also aggressively managed their tariff schedule. In 1991 China's average tariff was 47.2%, one of the highest of any country in the world (Nyberg and Rozelle 1999). Since then, however, China has gradually reduced import tariff rates. After a gradual reduction in the early 1990s, in

April 1996 China reduced its import tariff rates from 35.9% to 23%. In 1997 it further reduced its rates to 17% (23.6% for agriculture).

Historically, China also had protected its borders with other measures until it began to reduce the scope of non-tariff barriers in the 1990s. During the 1980s China used quotas and licensing to control trade. Since then reformers have reduced the number of items subject to export and import quotas and licensing administration. By 1998 the products that were subject to quotas, licensing and other import control measures accounted for only 5% of total import tariff lines.

2.2 *Agricultural protection*

Price and market reforms are key components of China's policy shift from a socialist to a market-oriented economy. These reforms included increases in the levels of quota and above-quota procurement prices, reductions in quota procurement levels and the introduction of negotiated procurement of surplus production of grains, oils and most other commodities. Private traders were encouraged to enter markets. Reformers also gave producers greater flexibility in the production and marketing of nearly all categories of agricultural products.

As a result of these liberalization reforms, the level of protection of China's own markets has fallen sharply during the reform era. Tables 1 and 2 show the estimates of nominal protection rates based on various producer prices from 1985 to 1999 and early 2000 for selected agricultural commodities. The nation's policy to induce farmers to submit a mandatory delivery quota at below-market prices has consistently amounted to a tax on farmers. The introduction of negotiated procurement in the mid-1980s reduced the tax from government procurement operations by raising the price offered to farmers for commodities sold in excess of the quota. In the 1990s the negotiated price became the same as the market price and since then it has been determined mainly by supply and demand. Not surprisingly, the most heavily taxed commodities are the exportable ones, especially rice and livestock products; wheat, cotton and soybeans, China's main imported commodities, have received more favorable treatment. The national protection rates (NPRs) for wheat and maize at free market prices have ranged from 19% to 32% since the mid-1990s.

In the long run, Chinese domestic prices have been moving toward world prices as a result of substantial efforts to liberalize the price and market structure of the agricultural sector. Even in the late 1990s, major agricultural commodities continued to be penalized by commodity-specific policies through procurement (except for 1998–2000, when there was a retrenchment of grain marketing policy). When the impact of the overvaluation of the domestic currency resulting from the trade protection system is considered, the agricultural incentives have to be judged even more harshly (see section on 'NPRs at the effective exchange rate' in Table 1).

2.3 *Agricultural trade trends*

Agricultural trade has always been an important contributor to China's foreign trade. Despite the fact that the share of agricultural trade in China's total

Table 1. Nominal protection rates (NPRs) of grain in China, 1978–2000

	<i>Quota procurement price</i>				<i>Negotiated procurement price</i>				<i>Wholesale market price</i>			
	<i>Rice</i>	<i>Wheat</i>	<i>Maize</i>	<i>Soybean</i>	<i>Rice</i>	<i>Wheat</i>	<i>Maize</i>	<i>Soybean</i>	<i>Rice</i>	<i>Wheat</i>	<i>Maize</i>	<i>Soybean</i>
<i>NPR at official exchange rate</i>												
1980–84	-43	-3	-15	13	2	50	28	25	9	58	46	44
1985–89	-30	4	-13	-13	-5	34	17	15	-4	52	37	39
1990–94	-37	-14	-35	-32	-16	14	-7	7	-7	30	12	26
1995–97	-23	-12	-14	-22	-4	6	3	8	-1	19	20	19
1998–00	-3	10	22	33	-16	9	19	39	-6	26	32	49
<i>NPR at effective real exchange rate</i>												
1980–84	-73	-54	-60	-47	-52	-30	-40	-41	-49	-26	-32	-32
1985–89	-69	-54	-61	-61	-58	-42	-48	-49	-57	-34	-40	-38
1990–94	-70	-59	-69	-67	-60	-46	-55	-49	-56	-38	-46	-40
1995–97	-45	-38	-38	-45	-32	-25	-27	-24	-30	-16	-15	-16
1998–00	-26	-16	-7	2	-36	-17	-9	6	-28	-4	1	14

Note: Border prices are averages prices of export (rice and some time maize) or import (wheat, soybean and some time maize) for the varieties that are comparable with domestic grains. Data for year 2000 are the first 6 months of the year.

Table 2. Nominal protection rates (at official exchange rate) of cotton and live-stock products in China, 1997–1999

<i>Year</i>	<i>Cotton</i>	<i>Pork</i>	<i>Beef</i>	<i>Chicken</i>
1997	20	-19	-2	-34
1998	11	-25	-10	-37
1999	4	-17	24	-30
1997–99	12	-20	4	-33

Note: Export prices of pork, beef and chicken, and import prices of cotton are used as border prices. Domestic prices are prices at urban wholesale markets. Cotton wholesale price is estimated as state procurement price times 1.25. A factor of 0.9 is used for quality adjustment of chicken meat.

trade has declined, the country's agricultural trade increased in absolute terms during the past two decades (Table 3). Annual agricultural trade value increased from US\$9,112.8 million in the early 1980s to US\$25,772 billion during the period 1995–97, an annual growth rate of 6.0%. During the same period, the annual growth rate of agricultural exports was 8.0%. As a result, China's agricultural trade balance has been in a surplus position since 1983; during the 1990s, in fact, its annual surplus reached about around US\$5 billion. The ratio of agricultural trade to agricultural gross domestic product increased from 10.3% in 1980 to 14.9% in 1997.

Changes in trade and other policies also have affected the composition of China's trade. Disaggregating by crops indicates a changing composition of trade and suggests an export trend toward products in which China has a comparative advantage (Table 4). The net exports of land-intensive bulk commodities, such as grains and oilseeds, have fallen. At the same time, exports of higher-valued, more labor-intensive products, such as horticultural and animal products, have risen. For example, the proportion of grain exports, which was only around 20% of total agricultural exports in the 1990s, is now about half of what it was in the early 1980s. By 1997 horticultural, animal and aquatic products accounted for around 80% of agricultural exports (Table 4). These trends are even more evident when the trade data is reorganized on the basis of factor intensity of the production (Table 5). Clearly, exports of land-intensive agricultural products have fallen while exports of labor-intensive (vs. land or capital) agricultural products have risen.¹

Taken as a whole, we believe the trends of China's agricultural trade over the past two decades reveal that the changes that are expected to be experienced as a result of WTO entry are not new. Changes in the level and patterns of agricultural trade suggest that China was already moving toward a point that is more consistent with its domestic resource endowments long before it joined the WTO. To the extent that the new trade agreement reduces barriers to allow

¹ The grouping is based on the relative intensive use of land, labor and capital in the production. Land-intensive agricultural products include mainly cereals, edible oil crops, cotton and other fibers. Labor-intensive agricultural products include mainly animals and their products, fruits and vegetables. Labor/capital-intensive agricultural products include mainly processed agricultural and food products.

Table 3. Annual agricultural trade indicators in China, 1980–1997

	<i>Agri. trade</i> (million US\$)	<i>Agri. share</i> <i>in total trade</i> (%)	<i>Agri. exports</i> (million US\$)	<i>Agri. share</i> <i>in total exports</i> (%)	<i>Agri. imports</i> (million US\$)	<i>Agri. share</i> <i>in total imports</i> (%)	<i>Agri. trade balance</i> (million US\$)
1980–84	9,113	21.0	4,368	19.8	4,745	22.4	–378
1985–89	11,906	13.4	7,664	19.7	4,243	8.5	3,421
1990–94	17,048	10.4	11,625	13.7	5,423	7.0	6,201
1995–97	25,772	8.7	14,908	9.3	10,864	7.9	4,044

Sources: Huang and Chen (1999a).

Table 4. China's agricultural trade (million US\$) by commodity grouping, 1985–1997

	<i>Grains and vegetable oils</i>		<i>Horticultural products</i>		<i>Animal products</i>		<i>Other agricultural products</i>	
	<i>Value</i> (\$ m)	<i>Share</i> (%)	<i>Value</i> (\$ m)	<i>Share</i> (%)	<i>Value</i> (\$ m)	<i>Share</i> (%)	<i>Value</i> (\$ m)	<i>Share</i> (%)
Agricultural exports								
1985	1927	33.1	2004	34.5	1302	22.4	582	10.0
1990	2020	21.2	3785	39.7	2947	30.9	789	8.3
1995	1860	12.7	5924	40.4	6218	42.4	672	4.6
1997	3178	20.7	5294	34.5	6203	40.4	663	4.3
Agricultural imports								
1985	1154	47.2	398	16.3	642	26.2	253	10.3
1990	3503	62.5	373	6.7	552	9.8	1181	21.1
1995	6879	57.0	895	7.4	1982	16.4	2313	19.2
1997	5419	55.2	870	8.9	1873	19.1	1648	16.8

Table 5. *China's agricultural trade (US\$ million) by factor intensity, 1985–1997*

	<i>Land-intensive products</i>		<i>Labor-intensive products</i>		<i>Labor/capital-intensive products</i>	
	<i>Value</i>	<i>Share (%)</i>	<i>Value</i>	<i>Share (%)</i>	<i>Value</i>	<i>Share (%)</i>
<i>Agricultural exports</i>						
1985	2119	36.4	2199	37.8	1497	25.7
1990	1689	17.7	4971	52.1	2881	30.2
1995	875	6.0	7095	48.4	6704	45.7
1997	2158	14.1	6538	42.6	6642	43.3
<i>Agricultural imports</i>						
1985	1072	43.8	680	27.8	695	28.4
1990	4032	71.9	642	11.5	935	16.7
1995	6575	54.5	3278	27.2	2216	18.4
1997	4644	47.3	2179	22.2	2987	30.5

more land-intensive products into the domestic market, and that the fall in restrictions overseas stimulates the export of labor-intensive products, the WTO's main impact will be to push forward trends that had already begun on their own. In short, we believe the nature of the changes in agriculture that will be caused by WTO entry is more of a continuation of past trends than a radical policy change.

3. IMPACTS OF TRADE LIBERALIZATION ON CHINA'S AGRICULTURE

In order to evaluate the effects of trade liberalization on China's agriculture in the future, we applied CCAP's Agricultural Policy Simulation and Projection Model (CAPSiM). CAPSiM is a partial equilibrium model. It explicitly accounts for urbanization and market development (demand side), technology, agricultural investment, environmental trends and competition for labor and land use (supply side), as well as for the price responses of both demand and supply. Details of the model description can be found in Huang and Li (2000), and Huang and Chen (1999b).

3.1 *Defining projection scenarios*

3.1.1 *Baseline scenario*

In our model we use a number of basic assumptions to establish a baseline scenario. Relying on the United Nation's demographic predictions, the annual rate of population growth is assumed to be 0.88% in 2001–05. The shares of urban population are expected to rise from 31% in 2000 and to 35% in 2005 and 46% in 2020. Per capita income growth rate is assumed to be 4% in the rural sector and 4.5% for urban residents. The current tariff rates and non-tariff barriers are assumed to remain intact, meaning in trade terms that we are assuming the status quo. Supply will respond most to prices, new technology and irrigation investment. Technological change has significantly contributed to China's agricultural growth in the past (Huang and Rozelle 1996; Fan and

Pardey 1997) and is expected to continue in the future. The annual growth rates of research and irrigation expenditure in real terms are assumed to be 4.0% and 3.5% respectively in the future.

3.1.2 *Alternative scenarios*

We assume that China will reach a free trade environment by the year of 2005. This scenario represents a *maximum* impact of trade liberalization on China's agriculture.² The actual impact of trade liberalization and China's joining the WTO will locate somewhere between the simulation results of the baseline scenario and the free trade scenario, and is discussed below. Two sub-scenarios are further formulated under the free trade scenario, one without and one with the improvements in agricultural productivity enhancing investments. The latter assumes that the annual growth rate of agricultural research expenditure will rise from 4% (the baseline assumption) to 6%.

3.2 *Impacts of trade liberalization on production, demand and trade*

3.2.1 *Baseline*

According to the analysis, the baseline model predicts that per capita food grain consumption in China hit its zenith in the late 1990s and will fall over the forecast period. In contrast, per capita demand for meat is forecast to rise sharply throughout the projection period, mainly as a result of income growth and urbanization. The projected rise in meat demand will stimulate aggregate feedgrain demand. Baseline projections of the supply of grain show that, although China's domestic total grain production will increase to 464 million metric tons (mmt) in 2005, with an annual growth rate of 1.44% between 2000 and 2005 (Table 6), it falls below the domestic grain consumption growth rate (1.60%). Consequently, grain net imports will rise to 20 mmt in 2005, but the self-sufficient level for grain will remain as high as 95%–96% in the early part of this century. Indeed, for foodgrains (rice and wheat) that have the greatest significance for national food security, the baseline foodgrain self-sufficiency level will reach as much as 95%–100% in 2010 and will be about 100% in 2020. Only feedgrains such as maize will fall below 95% of the self-sufficiency level in the long term.

It is worth noting that, although the baseline scenario would ensure a high level of grain self-sufficiency in the coming years, the costs related to this scenario should not be underestimated. All domestic grain prices, except rice, will exceed those of international markets. For example, in 2005 maize, wheat and soybean domestic prices will exceed international prices by about 26%, 20% and 21%, respectively, and the gap between the domestic and international prices will widen notably after 2005, particular for maize.

² The CAPSiM model is a country model. The impacts of China's trade liberalization on world market prices are not examined, given the nature of the model. It is expected that the increase in the grain import will raise international market prices. Therefore the results from this scenario should be considered as the upper limit of the free trade scenario.

Table 6. Projections of grain production, demand, and net imports under various scenario, 2010–2020

	2005	2010	2020
Baseline:			
Production (mmt)	464	499	560
Net import (mmt)	20	20	18
Demand (mmt)	484	519	578
Food (mmt)	257	266	279
Feed (mmt)	151	175	217
Others (mmt)	76	78	83
Grain self-sufficiency (%)	96	96	97
Free trade regime			
Grain net import (mmt)	60	55	48
Maize (mmt)	39	47	64
Grain self-sufficiency (%)	88	89	92
Free trade regime + increase agri research expenditure (annual growth rate 4% → 6%)			
Grain net import (mmt)	60	52	17
Maize (mmt)	39	46	51
Grain self-sufficiency (%)	88	90	97

Table 7. Impacts of the trade liberalization (free trade) on livestock production, consumption, and trade, 2000–2005

Commodity	Baseline		Free trade scenario	
	2005 (‘000 tons)	Annual growth rate, 2000–05 (%)	2005 (‘000 tons)	Annual growth rate 2000–05 (%)
Pork				
Production	27,703	3.39	31,984	6.33
Consumption	27,462	3.43	25,727	2.16
Net imports	–241		–6,257	
Beef				
Production	3,015	4.49	3,090	4.94
Consumption	2,998	4.54	3,119	5.49
Net imports	–17		29	
Poultry				
Production	7,595	4.66	8,683	7.42
Consumption	7,885	4.61	7,502	3.66
Net imports	290		–1,181	

Note: the production and consumption data used in CAPSiM model are significantly different from the data published by the State Statistical Bureau. The database in CAPSiM on the livestock production and consumption correct for the problems on over-reporting productions and under-estimating consumption of these products.

In the livestock sector, the increases in the domestic production nearly match the increases in demand (Table 7). The sector will continue to be an exportable one, but the amount of exports will be minimal, owing to higher feed prices, than otherwise would be experienced if China’s domestic producers could buy feedgrains on international markets.

3.2.2 *Free trade scenario*

Under the free trade scenario, domestic grain prices (except for rice) will fall by a magnitude implied its NPR (those reported in Tables 1 and 2). The fall in the domestic price of grain will raise grain consumption and slow down production. Imports, the gap between consumption and production, will rise from the baseline rate of 20 mmt to 60 mmt in 2005, about 12% of total grain consumption (Table 6).

The largest gap arising from trade liberalization will occur in the cases of maize, soybean and wheat. Maize production will grow by only 0.69% annually; in contrast, consumption will grow by 5.91%. Most of the slowing on production and rise in consumption growth rates will occur because of falling maize prices (down by 26% compared with the baseline). Surging feed demand for livestock production after trade liberalization will lead to a large rise in imports. Under the trade liberalization scenario, imports of maize are projected to increase dramatically to 39 mmt by 2005.

Full trade liberalization would challenge China's food security goals. Although even with trade liberalization the grain self-sufficiency rate will rise gradually after 2005, owing mainly to a decline in the nation's population growth rate and falling income elasticities (as well as urbanization), there will be still about a 8% shortfall between demand and supply by 2020. In other words, under trade liberalization imports will have to make up 8% of China's grain consumption. On the other hand, our projection shows that policy options for reducing grain import do exist. The most effective policy option is to increase the agricultural productivity enhancement investment such as agricultural R&D, rural infrastructure and water control (i.e. irrigation). In an alternative trade liberalization scenario, China could achieve its grain self-sufficiency target in the long term (after 2015) if the annual growth rate in agricultural research investment increased from 4% to 6%.

The impacts of trade liberalization on China's livestock sector also are significant. In contrast to the grain sector, however, the increase in the prices of major animal products and a decrease in the feed price resulting from lower imported maize will stimulate domestic production and dampen the consumption of livestock products. Livestock product exports will expand (Table 7). For example, under the free trade scenario China's annual growth rate of pork production will reach 6.33% (3.39% in under the baseline scenario), while at the same time the annual growth rate in pork consumption will decline from 2.43% in the baseline to 2.16% over the period 2000–05. The impact on the pork export will amount to 6.0 mmt in 2005.

4. WTO IMPACTS

Should China worry much about the impacts of its WTO accession on agriculture, the income of its farmers and national food security? Given the results on the impacts of free trade on China's agriculture presented in the last section, it seems that China's WTO accession will have a modest rather than a large effect on its agriculture. First, while the rural population as

agricultural producers may lose in net terms as a result of the net price falls in key commodities, they will gain as consumers of these same agricultural products; also, rural workers will gain if they are able to find more employment opportunities in sectors that thrive as a result of lower restrictions for China's exportable industrial goods. Second, the fact that models often do not account for the semi-subsistence nature of households tends to overestimate the price responsiveness of households. Third, the continued ideological commitment of China's leadership to self-sufficiency (whether warranted or not) will almost assuredly elicit a policy response, one that might or might not be in the spirit of trade liberalization (either 'Green' and 'Amber Box') policies.

For example, in the same way that China's top leaders increased spending on water control and agricultural R&D in the 1990s when they perceived that macroeconomic imbalances threatened the nation's food security, higher investments could make China's farmers more competitive in the world market. Infrastructure investments are not only WTO-consistent, they are encouraged as 'Green Box' measures. China is also permitted to support domestic agricultural production to a level of 8.5% of agricultural output value through 'Amber Box' policies. This means that China could invest up to 200–250 billion yuan annually through 2005. This is much more than the government is currently investing. Alternatively, if the investment programs were not successful, or if their effects were perceived to be too slow, there are other actions that China's government could take under the existing agreement. Under the current agreement, when imports exceed the nation's tariff rate quota (TRQ) commitment, China can still legally raise tariffs up to a pre-determined binding rate, which currently averages about 65% for most major farm commodities.

More fundamentally, it is often easy to overlook the fact that China's accession to the WTO affects protection policies not only at home, but also in countries to which China is currently exporting, and could export even more. Undoubtedly, wheat, maize and soybean producers are the most vulnerable to changes that will follow China's entry into the WTO. However, China's horticultural and livestock producers could find themselves with greater market opportunities and could become more profitable and more competitive in international markets. Especially if the WTO helps break down international and domestic barriers to investment, it is likely that the quality of China's fruits and vegetables and processed food products will improve and will be better able to compete in world markets.

It is also expected that farmers could benefit from access to more and cheaper imported technologies in the coming years. At present imports of pesticides and herbicides are restricted, and foreign direct investment opportunities in the agricultural input sector are limited by inadequate intellectual property rights, lack of regulation and antiquated distribution systems. Today's policies in China are curiously protecting certain agricultural technology industries. The WTO not only will subject China's farmers to greater competition on the output side, but also could increase their competitiveness around the world by increasing access to the world's input markets.

5. CONCLUDING REMARKS

Reform and trade liberalization in China's external sector has proceeded progressively. Through twenty years of reform, the country's trade regime has gradually changed from a highly centralized, planned and import substitution regime to a more decentralized, market-oriented and export promotion oriented one. These changes in trade and other policies have significantly affected the amount and composition of China's trade in favor of the products in which it has a comparative advantage.

While at first glance China's accession to the WTO seems to represent a great leap forward in liberalization, we have shown that the nature of the changes in agriculture that will be caused by entry is more a continuation of past trends than a radical policy change. But that does not mean that it will win or lose unequivocally. Unfortunately, we do not provide a definitive estimate of the aggregate impact of the WTO on China's agriculture, but we do provide an assessment of the impacts of the free trade regime on China's agriculture. If one considers China's accession to the WTO as a point midway between the baseline and free trade regime scenarios, we can conclude that the impacts of the WTO on farmers' income will be very modest. In the aggregate, when considering both the indirect benefits and increased opportunities from trade, most households may benefit.

The government has a role to play, however. In trying to maintain the competitiveness of its farmers, it can increase investment in agricultural research, water control and other infrastructure-related investments. Many parts of the WTO agreement will help the farming community if implemented as the agreement was written. If China does not drag its feet in implementing liberalizing changes for input imports and those that will increase the flow of technology into the country, farmers will benefit. Also, China needs to pursue its right to gain access to markets throughout the world, especially markets for agricultural products in developed countries that have erected barriers around themselves even as the rest of the world is being forced to open their borders.

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