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**Roots of
Competitiveness:
China's Evolving
Agriculture
Interests**



Daniel H. Rosen
Scott Rozelle
Jikun Huang

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Institute for International Economics
Washington, DC
July 2004

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Preface

Several of the most powerful forces shaping the global economy converge on the subject of China's agricultural transformation. Agricultural policies were one of the keys that opened the door to broader reforms that shaped the Chinese manufacturing juggernaut and growing world trade power we know today. In addition, these policies contributed the most significant achievement in development economics in the world economy over the past two decades: the emergence of nearly 300 million Chinese peasants from poverty.

Yet despite the momentum and importance of China's economic reforms in the agriculture sector, misunderstandings about China's agrarian competitiveness abound, and the consequences of its structural adjustment for the world trade agenda are little appreciated. These facts motivated the Institute to undertake this volume by Daniel Rosen, Scott Rozelle, and Jikun Huang on China's agricultural transformation and its implications for the international economy in general and the current world trade talks in the Doha Round in particular.

By assembling a systematic review of China's reform in the agricultural sector, performance under its newly adopted World Trade Organization (WTO) rules and obligations, and negotiating positions in WTO talks on agriculture now under way, our authors hope to inform trade policy audiences and observers of China on these significant developments. Their conclusions provide reason for optimism that a new force is emerging for liberalization in world agricultural trade—the major bastion of distortion and hence lost economic opportunities for developed and developing countries alike: In the short term, China's comparative

advantage, its already-accepted WTO obligations, and a confidence derived from two decades of successful policy reform all point toward China's taking a strong liberalization posture on agriculture in trade forums, including the WTO. This volume also concludes that underestimating the momentum of China's agriculture strengthening is risky: Just as in manufactured goods, China is poised to displace production elsewhere in labor-intensive agriculture. China will press for liberalization in agriculture to afford its farmers the benefit of realizing their comparative advantage.

This study complements a number of other Institute efforts on China and on agriculture, though it is the first to bring the two together. A number of studies on global agricultural trade have been produced, including the recent *Food Regulation and Trade: Toward a Safe and Open Global System* by Tim Josling, Donna Roberts, and David Orden, and the policy brief *This Far and No Farther? Nudging Agricultural Reform Forward* by Josling and Dale Hathaway. The Institute's work on China has been important for over a decade, from Nicholas Lardy's *China in the World Economy* (1994), to Rosen's *Behind the Open Door: Foreign Enterprises in the Chinese Marketplace* (1998), to recent work by Lardy and Morris Goldstein on Chinese currency issues. *Roots of Competitiveness: China's Evolving Agriculture Interests* is an important continuation of the Institute's commitment to understanding the world's most important emerging economy.

The Institute for International Economics is a private, nonprofit institution for the study and discussion of international economic policy. Its purpose is to analyze important issues in that area and to develop and communicate practical new approaches for dealing with them. The Institute is completely nonpartisan.

The Institute is funded largely by philanthropic foundations. Major institutional grants are now being received from the William M. Keck, Jr. Foundation and the Starr Foundation. A number of other foundations and private corporations contribute to the highly diversified financial resources of the Institute. About 18 percent of the Institute's resources in our latest fiscal year were provided by contributors outside the United States, including about 8 percent from Japan.

Major support for this study came from Cargill, Inc., Mars, Inc., and Monsanto Co. In addition to funding, each of these firms contributed importantly by sharing their commercial experience with the authors, including providing them access to staff in China. The American Farm Bureau Federation provided an additional contribution.

The Institute's Board of Directors bears overall responsibilities for the Institute and gives general guidance and approval to its research program, including the identification of topics that are likely to become important over the medium run (one to three years), and which should be addressed by the Institute. The director, working closely with the staff and outside Advisory Committee, is responsible for the development of

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The Institute hopes that its studies and other activities will contribute to building a stronger foundation for international economic policy around the world. We invite readers of these publications to let us know how they think we can best accomplish this objective.

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DANIEL ROSEN
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July 2004

Introduction

To many, China's agricultural sector is a 19th century relic that remains averse to liberalizing trade where the manufacturing sector storms ahead. Some see China's rural economy as a time bomb of discontent ready to explode; others think feeding China is still the most pressing concern. What these observers miss is the newfound strength of China's agricultural sector, complementing its known achievements in manufacturing. The direction of change in Chinese agriculture is manifestly toward reform, structural adjustment, and economic rationalization. In fact, China is further along toward the end point of these processes than is generally recognized and is deeply and probably irreversibly committed to them.

China's agricultural sector does face daunting challenges that range from inefficient and vested state entities, to primitive public and private financial infrastructure, to pockets of extreme rural poverty and environmental degradation. Domestic adjustments and the entry of foreign products into local markets have dislocated many producers.

Despite these challenges, China is reforming its agricultural economy, thus laying the foundations for much greater competitiveness internationally. Demonstrated successes in raising incomes, overall welfare, and productivity are more than sufficient for China to consider it worthwhile to endure the pain of further adjustment.¹ In addition, the country increasingly has the policy skills to at least manage, if not minimize, the adjustment costs that come with progress.

1. According to the National Bureau of Statistics (NBS) of China, overall welfare has improved in all income deciles. See *Rural Household Income and Expenditure Survey*, various issues, 1980–2002.

How the complex elements that make up China's agricultural sector play out on the world stage—particularly in terms of international trade negotiations—is the logical starting point for a policy analysis of China's evolving interests in the liberalization of global agricultural trade and is of great importance to policymakers and trade negotiators in developed and developing countries alike. Therefore this volume begins with an overview of China's policy behavior in recent World Trade Organization (WTO) negotiations. The chapter that follows compares China's interests and negotiating positions during recent WTO agriculture talks (part of the Doha Round of negotiations) with the overall direction that those talks have taken as well as with efforts made at that forum to broker compromises.

Is China's recent penchant for proliberalization talk on agriculture going to last? To answer this question, we must look back at the reforms that got China to this point, including their effect on overall public welfare and the country's comparative advantage in agriculture. After providing such a review, this study turns to look at the likely future impact of China's structural adjustments in agriculture.

A more detailed examination follows of China's WTO commitments, the status of their implementation, and their possible effects on the nation and the world. Where will China's interests ultimately take it? Is its forward-looking agenda compatible with a workable global agenda for agricultural trade liberalization? The aim in examining these issues is to shed some light on the uncertainty that often surrounds interpretations of China's underlying interests in agricultural trade liberalization and suggest whether it will stay the current course, go faster, slower, or even backward. A number of points made in the course of this analysis are surprising—even to China specialists not focused on agriculture—and warrant the readers' attention at the outset:

- China's interests lie in robust liberalization of the three "pillars" of WTO agricultural negotiations: market access, reduced export subsidies, and lower domestic supports.
- China is already bound by WTO commitments that put it ahead of the pack in terms of openness. Neither a collapse of talks nor a modest outcome will put China on a more even footing—only an ambitious reform outcome will accomplish that.
- China's analytical skills in agricultural policymaking have improved significantly in recent years. Although still far behind many nations, including some developing ones, China for the first time has the indigenous expertise to make quantitatively derived choices about the best directions for its welfare. With this foundation of support, Chinese leaders are in a better position than ever before to pursue the nation's agricultural interests with new confidence.

- Chinese agriculture is rapidly evolving in the direction of national comparative advantage in terms of sown area, investment in research and development, and exports. China is shifting toward labor-intensive and high value-added production, instead of the land-intensive crops previously emphasized despite a lack of comparative Chinese advantage in growing them.
- The negative impact on Chinese agriculture expected by some after China joined the WTO in 2001 has not occurred; in fact, the nation's agricultural sector is actually doing well post-WTO.
- As its competitive exporters face more tariff and nontariff barriers in the region and worldwide, China is increasingly concerned about market access problems abroad.
- In its regional free trade agreements, China is showing more readiness for early and aggressive agricultural trade liberalization than almost all other developing countries, especially in the Asia-Pacific region.
- Like all economies, China must address the acute economic pain from structural adjustment at home if it is to push further reform. However, China has sufficient WTO-consistent means to respond effectively to its national constituents while remaining a good actor internationally.
- Food security, an overarching noneconomic concern that trumps rational arguments about agricultural reform in many countries, is less critical as long as China remains a net food exporter with high productivity growth.
- Rural development is benefiting from strong growth in the secondary (industrial) and tertiary (services) sectors, which will gradually reduce the need to sustain peasants through agricultural services.
- While a handful of practices not compliant with WTO obligations continue to fuel disputes with trading partners, the list of such problems is shrinking relative to the volume of agricultural trade that is trouble-free. It must also be kept in mind that such issues are more transparent and reported today than they used to be in China. Such disputes could well increase in number in the future, but they will be fewer relative to the overall volume and value of trade. China should be able to manage residual problems well enough to be a positive player in international reform efforts.

China's approach to exploiting its agricultural advantages is a departure from that which led to its successes in manufacturing. China did not need to "make rules" in the international system to enjoy its comparative

advantage as a factory to the world. Instead, it merely “took rules” and adapted its domestic economy in such a way to profit from the system for trade in goods that leading WTO members had crafted over half a century.

In agriculture, the situation is different. China’s commitments under its agreement to join the WTO are more far-reaching than those of other developing countries in terms of agricultural trade liberalization. As a result, China has taken a more liberal position than other—especially developing—countries on major agricultural policy issues. A collapse of WTO efforts to accelerate liberalization for developed and developing countries—that is, continuation of the status quo—would essentially leave China alone out front and fail to address its interests. A diluted WTO outcome with modest reductions in protection by developed economies (the biggest distorters) and with weak new commitments by developing countries would do little more for China than no agreement at all.

Only a robust agreement to liberalize agricultural trade would enable China to actualize its comparative advantage in agriculture in the same way that it has in manufacturing. Such an outcome, however, is not the default case for current WTO talks on agriculture. Privileges secured by developed economies and exceptions to WTO disciplines for many developing economies (exceptions that China has already largely forgone) are likely to be sustained.

To avoid the scenarios mentioned above, China must become actively involved in WTO talks, not as a passive follower of the rules but as a proponent of reform. While new to the WTO, China has the leverage to be proactive. China can concede still further liberalization, for example, by reducing subsidy ceilings or opening trade in commodities for which it has no advantage (e.g., sugar, dairy, or wool). It can further increase the size of its tariff rate quotas on some major commodities (e.g., maize, wheat, and rice). China also can remind WTO members eager to sell Airbuses, BMWs, GE power plants, and Toshiba laptop computers that it has a comparative advantage in higher value-added and labor-intensive agriculture that it must be allowed to benefit from in order to be a full participant in reciprocal world trade.

It remains to be seen whether other WTO members will see the writing on the wall in terms of trade in agriculture, and try to respond to it while there is time to do so—or if they instead will wait until talk of agricultural trade wars becomes as common in Beijing as it is in Washington and Brussels. Regardless, China’s stance on international agricultural trade can be expected to be different in the future from what has been seen in the past. This volume aims to help policymakers appreciate the context of this evolution of China’s interests.

China and the WTO Agriculture Agenda

China's decision makers increasingly act based on careful analysis as opposed to "crossing the river by feeling the stones," the Chinese metaphor for the intuitive, step-by-step approach that characterized earlier reform efforts. Modern thinking about agricultural policy is on the rise, while the fixation of the past on food security has diminished and nationalistic restrictions on foreign investment in the seed and biotechnology sectors have been scaled back. While firms and other nations still object to a number of China's practices in the agricultural sector—including some that may not comply with its commitments to the World Trade Organization (WTO)—these problems are now the exception not the rule. The extent of such disputes and the residual distortions to trade are fairly small compared with the growing role of foreign trade and domestic marketization. Since China became a WTO member in 2001, the country appears to be in a position to achieve its agricultural policy aims while remaining a WTO member in good standing.

This chapter compares China's interests—based on its earlier policy reforms discussed in more detail in subsequent chapters—and its negotiating positions in WTO Agriculture Committee talks with the actual direction those talks are taking. The conclusion is not only that China is likely to be a force for agricultural trade liberalization in current Doha talks, but also that this position is more a continuation of the past than a departure from it. China has been perhaps the most ardent agricultural-sector reformer the world has seen in decades, albeit from a highly distorted starting point. Advocating a protrade Doha outcome on agriculture would be consistent with policies at home and would likely be well received internationally.

The present Doha agriculture talks are an extension of the Uruguay Round, which ended in 1994 with built-in instructions to hold further discussions on agriculture.¹ The WTO Doha ministerial in November 2001 provided a new mandate for negotiations, and that mandate then became the focus of efforts leading to the Cancún ministerial meeting in September 2003.² This meeting failed primarily because of disputes over agriculture, so it is the agriculture agenda that is key to restarting negotiations.³

The Doha mandate specifies market access, reduction of export subsidies, and reduction of domestic supports as the three principal goals of agriculture talks. The mandate takes into account special and differential treatment for developing members as integral to each of these pillars, as well as nontrade concerns such as food security and rural development. After all, the Doha mandate in more formal terms is the Doha Development Agenda, whose mission is to redress weaknesses in the trading system that undermine developmental benefits of trade to poorer members. Other WTO bodies besides the Agriculture Committee will address sanitary and phytosanitary rules and technical barriers whose misuse can distort agricultural trade.

The devil is in the details, however, and there are devilishly detailed agendas surrounding each of these pillars in WTO agriculture talks. The first step is simply to agree to the formula, or modalities, for negotiating reductions in trade distortion and what targets to shoot for. At Doha, ministers instructed that modalities be determined by March 31, 2003, so that comprehensive draft commitments could be completed for the Cancún ministerial. The aim was to conclude agriculture talks by January 1, 2005 as part of a single undertaking. However, members failed to agree on modalities for agriculture talks in time, and as a result draft commitments were not forthcoming in Cancún. Fearing that formulas for negotiation would influence the balance of concessions, major players could not reach consensus.

Agriculture Committee Chair Stuart Harbinson produced an effort at compromise in the “revised first draft of modalities” released in March 2003,⁴ and Cancún Ministerial Chairman Ernesto Derbez then took a turn at consensus building in the form of Annex A to his draft ministerial text entitled a “Framework for Establishing Modalities in Agriculture.”⁵

1. For a more complete and updated analysis of WTO Doha Round agriculture talks, see “Agriculture negotiations background: The issues, and where we are now”; www.wto.org/english/tratop_e/agric_e/negoti_e.htm.

2. Irrespective of Doha, Article 20 of the Uruguay Round agreement mandated the restart of agriculture talks in 2000 as part of the “built-in agenda.”

3. See Josling and Hathaway (2004) for a policy analysis of the various positions and texts on agriculture talks that came out of Cancún.

4. The draft is available at www.wto.org/english/tratop_e/agric_e/negoti_mod2stdraft_e.htm.

5. The revised “Derbez text” of September 13, 2003, is available at www.wto.org/english/thewto_e/minist_e/min03_e/draft_decl_rev2_e.htm.

While neither of these efforts forged a consensus on modalities, together they do provide a baseline against which to gauge whether China's interests incline toward a liberal or less liberal posture in the talks. The analysis that follows uses the Group of 22 (G-22) "markup" of Annex A, to which China agreed, to further examine China's position.

Pillars of the Doha Agriculture Talks

Market Access

Part of the Uruguay Round agreement creating the WTO called for increasing agricultural market access by significantly cutting tariffs, converting nontariff barriers to tariffs (known as "tariffication"), and binding maximum tariffs on almost all agricultural products. Developed countries agreed to a 36 percent average tariff reduction for all products over 1995 to 2000, with a minimum reduction of 15 percent per product. For developing countries, the average reduction was 24 percent, phased in through 2004, with a minimum reduction of 10 percent per product.

The agreement also included an agenda to continue negotiations, laying the groundwork for further talks under way as part of the Doha talks. The formula of "average cuts" used in the Uruguay Round, however, resulted in low tariffs being reduced more than high ones, disappointingly small reductions in overall average tariffs, and worsening tariff escalation (relatively higher tariffs on processed versus unprocessed goods).

Central market access issues in Doha talks are the formula for negotiating further reductions in tariffs and in the system of tariff rate quotas (TRQs) that were used in the past to help convert high nontariff barriers to tariffs (especially high out-of-quota tariff rates and TRQ administration). TRQs are minimum market opportunities for foreign exporters. As in other pillar areas, special treatment for developing countries and nontrade concerns are considered within each subarea. Members remain divided on many issues, not least the basic modalities for negotiation. Harbinson's draft compromise was a hybrid of approaches, with cuts of between 40 and 60 percent over five years for developed countries and between 10 and 40 percent over 10 years for developing countries. There were minimum cuts as well for all products, but they were not much lower than the average reductions. Regarding TRQs, the draft proposed small reductions for in-quota duties, expanded TRQ volume of at least 10 percent of domestic consumption value phased in over five years (6.6 percent over 10 years for developing countries), some flexibility in reaching these goals, and some special and differential treatment. These modalities, it was hoped, would result in more liberalization than did the average reduction approach from the Uruguay Round.

In several ways, the Derbez text was less liberalizing than the Harbinson draft in that it employed an “average tariff cut” approach to improving market access that would reduce the overall opening of developed-country markets by averaging in reductions of inordinately high tariffs and also zero tariff items across the entire spectrum of tariffs on agricultural goods (the Uruguay Round approach). It also introduced latitude for a limited number of products exempt from normal disciplines—a loophole that could have a major impact on the value of a deal.

China’s Position

China has been making deep and unilateral reductions in its agricultural tariffs dating back to the start of its reform process in 1979. Prior to joining the WTO, China already had lowered average agricultural protection levels to below those of most developing countries and even below many industrial economies.⁶ After WTO accession, China further cut its overall agricultural tariffs to a simple average statutory rate of 15.2 percent from a preaccession rate of 21 percent.⁷ This marks a continuation of earlier trends: the simple average agricultural import tariff fell from 42.2 percent in 1992 to 23.6 percent in 1998. The real applied rates are much lower than the bound rates: 7.6 percent preaccession, headed toward 3.6 percent postaccession.⁸ In joining the WTO, China also assumed state-of-the-art disciplines on its TRQ system, including detailed rules on administration—which the United States is now promoting for universal adoption in the Doha talks—as well as the allocation of a share of import quotas to private traders. (While an improvement to the traditional way TRQs have been managed, China’s TRQs have not worked flawlessly yet, and some are complaining about failure to reallocate unfilled quota rights.)

The results of China’s reforms include agricultural productivity growth that is faster than that of other developing countries. If Chinese policymakers believe in the virtues of unilateral liberalization and want to use the WTO to justify further internal reforms, their rationale for doing so can be whichever market access modalities end up being embraced at Doha. If Beijing takes a more mercantile view and seeks greater parity with other countries, then either formula is still superior to the status quo, in which China is ahead of the pack on market access. Other economies can challenge Chinese exports through procedural means such as the use of antidumping margin calculations for nonmarket economies.

6. Note that in the WTO, Hong Kong and Korea can claim to be “developing economies.”

7. These figures may differ depending on how preaccession agricultural-sector tariffs are weighted. The Chinese Ministry of Agriculture provided the 15.2 percent figure in a communication with the authors dated August 29, 2003.

8. See Ianchovichina and Martin (forthcoming) for real applied rates.

China's positions during Doha agriculture market access discussions began with insistence that newly acceded members (i.e., China) be given credit for newly made concessions.⁹ On the surface the request seems reasonable, although other developing countries have objected to it. China has since backed away from the request as a blanket proposition in non-agricultural areas, and will probably compromise in agriculture talks as well. The Harbinson draft proposed to assuage this feeling of entitlement with two extra phase-in years on commitments by the newly acceded nations (an offer specifically directed toward China).

Regarding the Harbinson draft, China supported the US position on negotiating modalities, i.e., the "Swiss Formula," which is better for lowering tariff peaks. China proposed that developing-country reductions be much smaller (they were not specific on rates) than those of developed countries, and with longer phase-in periods. China also proposed limited special product exemptions from the standard formula for developing countries, but suggested rules and disciplines to govern this. Such concern is rooted in food security for staple crops, although recently conservative food security proponents have been losing ground in China. China also suggested elimination of non-ad valorem tariffs (i.e., "specific" tariffs of an absolute value), so that they make up no more than 3 percent of all tariffs, again with some flexibility on this for developing economies.

On TRQs in the Harbinson draft, China proposed 5 percent market access (at least) for cereals and 8 to 10 percent for noncereals. Beneath these levels no market access expansion would be required for developing countries, especially those newly acceded to the WTO. China said these values should be based on the "commercialized consumption market," not the gross value of agricultural output (i.e., excluding production consumed by farmers themselves¹⁰). China may be willing to give up TRQ protection on a subset of commodities currently subject to TRQs, including rice (which will not likely be binding anyhow) and maize (which is a feed grain and, although politically sensitive, could represent a commodity regarding which China could make a major concession). On access levels, China was within compromise distance of the Harbinson draft proposal, and on administrative matters most deals would be more generous than China's existing commitments. For key crops, China is in the process of changing rules to permit foreign firms to invest more freely

9. Characterizations of China's positions on the Harbinson draft are based on an informal Chinese "nonpaper" circulated among agriculture committee members (in English). The contents of the paper were communicated to the authors by Chinese officials. A nonpaper is not a final or formal set of positions; it can be altered. In this case the positions are general and detailed offers are not made, as described herein. China's position on the Derbez text is taken from the G-22 "markup" of the text, to which the Chinese delegation ascribed and contributed.

10. This is important because in the case of Chinese grain, for example, as much as 70 to 80 percent of production is consumed locally and thus never enters the market.

in the seed sector and in staple agricultural technology. Over time, this should improve China's production and further reduce the impulse to limit market access through TRQs.

The issue of special agricultural safeguards is also treated under market access. China advocated not renewing the special agricultural safeguards currently in use, but rather creating a special mechanism for use by developing countries, the trigger for which would be more carefully defined. This was very close to the Harbinson attempt at consensus. China is seeing rising levels of nontariff obstruction to its agricultural exports and is vulnerable under the current system, which is less disciplined than regular WTO safeguards.

The G-22 markup of the Derbez text, which China endorsed, also signaled the country's willingness, along with other developing countries, to press forward on key agricultural trade issues. Though the G-22 was perceived as recalcitrant on some general Doha issues, the markup on agricultural trade in fact favored a more liberal approach than that promoted by the United States and the European Union. In particular, the markup endorsed a line-by-line reduction in tariff rates over the "overall average" cuts in the Derbez text. It struck out the notion that a very limited number of special products could be excluded from disciplines by developed economies for nontrade reasons. The G-22 position was not, however, pristine in its liberality. It retained average cuts for developing countries, which would preserve major barriers to Chinese exports in important markets such as Taiwan and Korea, and it stepped away from the Swiss Formula, which promoted further opening in trade. Nonetheless, the G-22 position signaled an awareness by these countries of where their economic interests lie in reform of the trade system for agriculture.

Export Subsidies

Under the Uruguay Round Agriculture Agreement, 25 WTO members, including major players such as the United States, the European Union, Australia, and Canada, retain the right to employ export subsidies. The EU spent almost \$6 billion on such subsidies in 1998—the highest level in the world—and has almost all of the allowances for export subsidies. Developing countries are permitted to subsidize marketing, cost reductions, and transport for export. Member positions in Doha talks range from favoring elimination of these distortionary practices with large up-front cuts, to more modest reductions and new disciplines. Developing countries want to maintain their special dispensations while reducing the large export subsidy rights retained by the major developed economies.

The Harbinson draft proposed eliminating export subsidies on products of interest to developing countries, although the timing of their removal would be flexible. The Derbez text is for the most part in agree-

ment, although it states that a date for eventual elimination of all subsidies can be “discussed.”

China’s Position

China wants rapid elimination of all export subsidies, since upon WTO accession it agreed to eliminate its own, without exceptions that might have enabled state trading entities to circumvent disciplines. By eliminating its export subsidies, China went beyond what other developing economies had done in the Uruguay Round, and beyond what could be expected from the Doha Round talks.

An examination of China’s reform process shows that the phaseout of export subsidies in fact began long ago for purposes of domestic efficiency. While there is evidence today that China has continued to improperly subsidize some corn exports, the rate of subsidization has fallen, and most believe that the country is for the most part on track to eliminate export subsidies. In fact, in the first part of 2004, China announced a decision to cease all export subsidies, in compliance with its WTO commitments.

China’s Doha position on agricultural export subsidies reflects its clear interests. In its Harbinson draft comments, China proposed a 50 percent quantitative reduction from the scheduled levels in the first year and each year until there is a complete phaseout in three years (six years for developing countries). China also proposed including the value of export credits in calculating the value of export subsidies. While elimination of these subsidies may be further than Doha will go, any reduction benefits China, and so China should be supportive of the most liberal deal possible. China is best served by less special treatment for developing countries on the export subsidy pillar, because it has already forgone recourse to such treatment. This separates China from developing-country alliances on this issue.

The main amendment of the G-22 to the Derbez text is a call for negotiation—not just discussion—of a firm phaseout deadline for all forms of export subsidies. This is squarely in line with China’s interests, since it has committed to eliminating export subsidies altogether.

Domestic Supports

Domestic support is the most complicated area within the WTO agriculture agreement. The WTO created a system of “boxes” for subsidies: red, amber, and green for subsidies generally, and amber, blue, and green for agriculture, with what is called a special and differential (S&D) box for developing-country exemptions. There is thus no red box for agriculture. Amber-box supports exceeding committed reduction levels are prohibited. The controversial blue box is primarily used in various ways by wealthier European countries and Japan to distort production. Blue-box policy also pays farmers not to farm, and has no phaseout under the Uruguay Round

agreement. A quantity known as the aggregate measure of support (AMS) is the sum of amber-box supports. Blue, green, and S&D box finance is excluded from this measure on the theory that it is minimally trade distorting or at least contributes to a less trade-distorting outcome. The AMS was reduced by 20 percent over 1995–2000 for developed countries and by 13 percent over 1995–2004 for developing countries.

The Doha mandate calls for “substantial reduction in trade-distorting domestic support.” The negotiating issues thus include the categorization of subsidies (and hence calculation of the AMS), the amount and formula for reducing the AMS once it is calculated, and S&D treatment to be granted to developing countries. Needless to say, all of this makes for a rather sensitive topic, since the total amount of annual domestic agricultural support (trade distorting and otherwise) in key major economies is a gargantuan \$330 billion worldwide—including more than \$110 billion in the European Union, \$95 billion in the United States, \$64 billion in Japan, and \$20 billion in Korea.¹¹ Rationalization would induce considerable structural adjustment, and hence global welfare, but also political tension during the transition. The income distribution effect of such adjustment is debatable, an uncertainty that makes achieving such a reform all the more difficult.

The Harbinson draft proposed significant reductions in overall domestic supports and the process by which they are measured. For example, the blue box would either be capped and then halved or else folded into the amber box and then subject to amber-box reductions. But agreement on this politically charged issue of trade-distorting finance is still far off, and was perhaps the main reason for failure to reach consensus at the Cancún ministerial.

Regarding the amber box, the Derbez text restored earlier discussion of a product-specific limit on AMS. On the blue-box subsidies, Derbez caught up with EU common agricultural policy (CAP) reforms from the summer of 2003 by endorsing a redefinition of the blue box in a (hopefully) more limited way, and capping such expenditures at 5 percent of agricultural GDP. As regards the green box, the Derbez text vaguely proposed tightening up the criteria to prevent trade-distorting activity.

China’s Position

China does not have a well-developed, formal system of domestic agricultural subsidies, particularly in comparison with many other devel-

11. See the World Bank paper “The AMS and Domestic Support in the WTO Trade Negotiations on Agriculture.” [http://lnweb18.worldbank.org/ESSD/ardext.nsf/12ByDocName/AMSandDomesticSupportintheWTOTradeNegotiationsonAgricultureIssuesandSuggestionsforNewRulesThe/\\$FILE/AMSandDomesticSupportintheWTOTradeNegotiations.pdf](http://lnweb18.worldbank.org/ESSD/ardext.nsf/12ByDocName/AMSandDomesticSupportintheWTOTradeNegotiationsonAgricultureIssuesandSuggestionsforNewRulesThe/$FILE/AMSandDomesticSupportintheWTOTradeNegotiations.pdf) .

oped and developing economies. Convincing the country not to develop such a system may be one of the most critical challenges in agricultural policy economics today. During China's reform period, the country moved away from government domination of financial flows in the agricultural sector and toward the rise of markets. In the run-up to WTO accession, it was difficult for China to even calculate the value of domestic agricultural supports; estimates ran from 2 percent to 3.5 percent of the gross value of agricultural output (GVAO), depending on the year. Some estimates were even lower. The terms of China's WTO accession limit domestic support to 8.5 percent of GVAO, whereas the Uruguay Round agreement permits developing members 10 percent (5 percent for developed countries). While China conceded a lower ceiling than other developing countries, it has more room to expand supports than it is even remotely likely to use.¹² For this reason, China's interest lies in greater discipline on domestic supports (especially in developed economies) that crowd out otherwise competitively priced Chinese products and distort world prices.

In responding to the Harbinson draft, Chinese negotiators suggested folding blue-box supports into the amber-box category, and subjecting the amber box to large reductions both product by product and overall. They proposed that developed countries make 50 percent amber-box reductions each year until there is total elimination in three years, while subjecting developing members to a reduction in total AMS. As noted above, since China has few blue- or amber-box investments, it has little to lose from being aggressive on this. China also sought stronger discipline, standards, and reductions for green-box subsidies, while noting that many are manipulated to keep them out of other categories. It also proposed capping the aggregate level of domestic supports of developed members of the WTO. In other words, China is a proponent of robust reform and reduction of domestic support. The country also suggested lowering the 5 percent *de minimis* level exemptions to the calculation of total subsidies permitted for developed members.

With China's participation, the G-22 critique of the Derbez text made modestly more liberalizing proposals. Where the Derbez text had lost the insistence on product-specific AMS reductions, the G-22 put this back in as a matter for negotiation, especially for products that make up

12. However, China is contemplating an increase in subsidies, or at least a shift in allocation from middleman grain boards to more direct farmer payments. For 2004, it appears that perhaps \$1.2 billion of \$8.5 billion in allocations to grain boards for purchases (hence indirect subsidies) will be shifted to direct payments to farmers. So while the level of fiscal outlays for this sector is not changing, the change from market supports to producer supports is significant. It also is more consistent with WTO practices (and countable against China's support limit of 8.5 percent of output) and more supportive of rural incomes (since, presumably, it reduces "administrative leakage").

a significant share of world exports. Regarding the blue box, Derbez does not propose a final phaseout, while the G-22 calls for a “view to its phasing out.” The G-22 does not reject the US-EU redefinition of the blue box, but suggests that the cap on its use should be 2.5 percent of agricultural GDP instead of 5 percent. Regarding green-box supports, the G-22 called for not just review but strengthening of disciplines on use.

Other Agenda Items

Special and Differential Treatment

China is of many minds about special and differential treatment in international trade negotiations. On the one hand, its leaders have revealed themselves to be true believers in the domestic value of opening to international competition. They agreed to WTO accession terms on agriculture such as the elimination of export subsidies that, far from being special and differential, are more reformist than anyone else’s terms. Leading Chinese trade negotiators have confided that the WTO played a *gaiatsu* (from the Japanese) role for them, which refers to using pressure from without to justify right-minded changes within. Hence, current leaders in China might not want to be “excused” from making further commitments.

On the other hand, China began its Doha participation by arguing that newly acceded members be given full credit for recent concessions and not be expected to make more of them. As with almost all members, China has different negotiators from different bureaucracies with different attitudes about the benefits of reform. China has since backed away from insisting on blanket special treatment as a new member. Still, it reasonably expects some credit for undertaking the most significant WTO accession commitments ever agreed to by a developing member. As a possible compromise, the revised Harbinson draft (paragraph 54) proposed an extra two years for phasing in new commitments for new members. The Derbez text also included such leeway, and the G-22 markup kept it despite the fact that some G-22 members are as anxious about China’s economic heft as they are about that of nations from the Organization for Economic Cooperation and Development.

China’s position is mixed on the general notion of S&D treatment for all developing members. Some of this treatment—such as further laxity on export subsidies—will not be available to China in any case. And many of the exceptions on disciplines for poorer countries could come back to bite China as its comparative advantage in higher value-added horticulture increases (especially in Asia).

In its reactions to Harbinson’s draft, China generally paid at least lip service to developing-country demands for S&D treatment. But in the

same breath, China stated the need for rules and disciplines on these practices. For instance, in proposing that existing special agricultural safeguards be replaced and available only for developing countries, China states that the new mechanism will not only provide developing country members with effective measures to address the negative impacts from drastic increases in imports, but also not undermine the development of normal trade, especially between developing members. So on the one hand China recommends creation of new special and differential opportunities for developing nations to support their agricultural sectors because they lack the financial wherewithal to use domestic supports defined as legal in the Uruguay Round results. On the other hand, China is not a comprehensive proponent of such measures.

This is all broadly consistent with the Harbinson draft and the Derbez text discussed at Cancún. The major G-22 amendment to the Derbez draft that China endorsed was the use of the average tariff cut methodology for developing countries, which the group had rejected for developed economies, and a proviso that the simple average tariff cuts required of developing countries not be greater than a certain percentage (to be determined) of the simple average for developed countries. China has, of course, unilaterally behaved in a manner that reflects awareness that deeper tariff cuts are progrowth, not antigrowth, when undertaken in tandem with other progrowth policies. So it is unlikely that China proposed to the G-22 inclusion of this last provision, though understandable that China would not oppose it. China can always either press ahead faster than commitments or exchange concessions in future trade talks.

Nontrade Concerns

China concurs that nontrade concerns should be taken into account in WTO agriculture talks, at least those pertaining to food security, rural development, and poverty alleviation in developing countries (these are referred to in the “nonpaper” described in footnote 9). But in the very same sentence that states its concurrence, China recommends guarding against nontrade concerns being used as a ruse for trade protection. China is not likely to be out of kilter with any reasonable Doha outcome that takes such issues into account within the context of each pillar goal. On the other hand, it is likely to stand against any effort to dilute the value of trade liberalization with undisciplined rules on nontrade concerns that do not protect against such abuse. The Harbinson draft did not address this issue separately, but rather as an aspect of each pillar. In their comments, China and the rest of the G-22 caucus struck from the Derbez text the insertion of a limited number of products to be exempted from tariff caps for nontrade reasons under the market access discussion.

Negotiations Outside the Agriculture Committee

Many in Beijing fear that the greatest obstacles to China's realizing gains in agricultural comparative advantage will come from practices not covered by the WTO Agriculture Committee—namely, sanitary and phytosanitary (SPS) rules and technical barriers to trade (TBTs). Overly easy-to-use rules of these sorts threaten markets with primitive quality control and processing more than they do markets with more advanced agriculture value chains (often meaning more capital expenditure power in the sector, which China does not have). China, then, has a lot to lose despite its increasing comparative advantage in many products, because its weak financial system and lower standard of living limit its ability to upgrade its products, making them frequently vulnerable to SPS and TBT challenges.

China's interest is in disciplines on the spurious use of these measures, just as it is interested in constraining trade protection in the guise of nontrade concerns. However, its position is not laid out alongside other agriculture positions because the WTO committee that deals with trade in goods handles these issues, rather than the Agriculture Committee. As a result, the Chinese officials responsible for these issues are based at the Ministry of Commerce (MOFCOM; the former Ministry of Foreign Trade and Economic Cooperation), not the Ministry of Agriculture, which is responsible for agriculture talks. Senior Chinese officials have admonished negotiators from the two ministries to coordinate their activities, since this has not always been done in the past.¹³ The positions taken by Ministry of Commerce officials on SPS and TBT will subsequently have to be implemented at home by the Ministry of Agriculture. The Commerce Ministry is known to take more liberal stances on embracing international disciplines through WTO than does the Agriculture Ministry.

A final issue that falls to the TRIPs (Trade-Related Aspects of Intellectual Property Rights) Council and the TBT Subcommittee is geographical indicators. Members are negotiating over exclusive rights to indigenous place names with marketing value. China has barely considered the value of names such as Sichuan peppers, Beijing duck, or ketchup.¹⁴ As with its underinvestment in quality control and processing, China lacks an appreciation for the intangible value of traditional names and brands. As Chinese firms mature and expand distribution and marketing abroad,

13. Du Ying, Director of the Department of Law at the Ministry of Agriculture, made reference to this problem in a presentation entitled "New Directions in Rural Policies" to the Task Force on Rural Policy in the 21st Century, which was part of the First China Council on International Cooperation on Environment and Development (CCICED) held in Beijing on March 18, 2004.

14. The name of the classic American sauce probably comes from Cantonese, transmitted through Malay.

however, it will certainly be in their interest to push their negotiators to the table to get better treatment of these intangibles.

China and the G-22 Caucus

China's positions placed it in the middle or leaning toward the liberal side of the compromise offered by the Agriculture Committee chair in his "revised first draft on modalities" paper. The G-22 critique of the Derbez text used at Cancún—with which China allied itself—was more oriented to welfare-enhancing reforms than to the position of the Quad countries. It is likely that China will continue to align itself with those on the liberalization side of the house, although with precisely which camp it is too soon to say. American, European, and Cairns Group officials are all courting China's support. In fact, China has no reason to favor exempting the "South" from concessions, as China would not enjoy many of those exemptions. Indeed, China's two decades of reform have provided the experience to say to other developing members that protection from market pressures will not serve their long-term interests.

China's alignment with the G-22 is not necessarily a long-term partnership, however. G-22 positions such as "average cuts" to tariffs for developing economies that work to keep imported agriculture out of Taiwan and Korea are clearly not in China's interest. In general, the Chinese delegation to Cancún was shocked by the rhetoric of G-22 partners on many nonagricultural issues. In the days after Cancún, the author of China's annual WTO compliance report strongly criticized the self-defeating behavior of other G-22 members during the talks. More recently, China has distanced itself further from the G-22. An editorial on March 25, 2004 in the official *China Daily* entitled "Agriculture Issues Back in WTO Spotlight" quoted agriculture officials as saying that China's position in talks is close to that of the Cairns Group, as opposed to the G-22, which China refers to now as the G-20—that is, the caucus number before China and others allied themselves with it.

Conclusions

After nearly 25 years of profound agricultural market reform, China's interests have evolved into those of an advocate of agricultural trade liberalization instead of protectionism. The status quo demands more openness from China than from comparable developing countries, so further liberalization will proportionally favor China. The nation's competitiveness in agricultural trade stands to improve faster than that of most other nations, considering China's extraordinary structural adjustment and its heavy investment in research and development. China will gain from this

comparative advantage if the market foreclosure caused by domestic supports and trade protection is reduced. Although China has not yet fully implemented all of its WTO commitments—which makes it no different from many other nations—it has nonetheless made a solid start in implementing those extensive obligations and can credibly advocate liberalization by WTO members. In many instances, of course, China has the advantage of having already implemented the required reforms before it even joined the WTO.

The negotiating positions circulated by China prior to the Cancún ministerial were fairly general, although they do espouse specific tracks in many areas. China's agriculture officials admitted that their posture still lacks detail, and that they are waiting for more experienced WTO members with bigger concessions to set the pace before they decide on detailed offers. This, of course, is a position taken by most WTO members.

It is clear, however, that in the three pillar areas—market access, export subsidies, and domestic supports—China's interests lie in a liberal agreement coming out of the Doha talks. However, China's interests alone, even if they favor liberalization, will not sway negotiations. Leverage lies in the ability to concede matters valuable to others. With its foundation of improved agricultural performance, China is in a position to make noteworthy additional commitments if it gets enough in return. For example, with little advantage in sugar production and a domestic industry increasingly successful at producing higher-value goods with sugar as an input, China could create jobs and improve the welfare of its people by declaring an open market for this commodity. Also, Beijing could pledge to further reduce its AMS cap, as it is unlikely to get near it anyway. Other TRQs could be increased as well and in-quota tariffs eliminated, and the result would be more job creation in higher-value processing.

With farmgate costs per kilogram only one-tenth or one-quarter those of California for crops such as fresh tomatoes, peppers, and oranges, and with sown areas for such crops booming, China has set its sights on pushing for more open international trade in agriculture. In a recent free trade agreement with Thailand, China agreed first to free trade in fruits and vegetables—quite the shift from the conventional wisdom that Asian countries tend toward open trade that either excludes or backloads agriculture.¹⁵ Chinese officials, newcomers to the WTO process, are likely to soon surprise other members with more of this hearty appetite for agricultural trade liberalization.

Rationally, it would seem that if rich countries wanted to realize their comparative advantages selling China Airbuses, Toshibas, and BMWs over the coming decade, then they would want to respect China's com-

15. The *China Daily* reported the details of the agreement on August 12, 2003. www.chinadaily.com.cn/en/doc/2003-08/12/content_254076.htm.

parative advantage and interest in agricultural trade liberalization. But trade policy, like sausage, is not pleasant to see made and is a political as much as a rational interest matter. Still relatively new to the WTO, China is perhaps somewhat reticent about pushing its interests too ardently in trade negotiation rounds. In Cancún, China walked softly for a number of reasons, not the least of which being that the talks marked China's ministerial coming out party, and Chinese officials likely did not want to be too aggressive at a debut event. But assumptions that China needs to go slow on agriculture though it goes fast on manufacturing are mistaken. Political leadership, if not politics per se, lies in identifying long-term trends early on and accommodating policy and public consensus to respond while there is still time to prudently do so.

China's Interests and Their Foundation in Reform

China is immersed in economic transformation, and its interests in international agricultural trade are evolving rapidly. By managing its way through the costs of adjustment toward an economic structure that reflects its comparative advantage in industry—foremost, that which is labor-intensive—China has claimed the sobriquet of the “world’s factory” in little more than two decades of reform.

The conditions of China’s accession to the World Trade Organization underscore the role of domestic market mechanisms and international competition in industry and manufacturing. However, many observers believe that China’s confidence in industrial-sector liberalization is offset by insecurity in the agricultural sector and corresponding protectionism—or at least foot-dragging—on further agricultural opening.

Evidence suggests that this is not generally the case, despite residual distortions and barriers and some ongoing disputes. Agricultural-sector adjustment is well under way in China and will likely continue, as did the industrial-sector adjustment in the past, despite the costs and challenges. Agricultural adjustment is being driven not simply by command and control allocation of capital and labor, but by investment and by breakthroughs in research and development and in marketing. Therefore, China’s agricultural transformation has both depth and breadth. China’s accession to the WTO, seen earlier by some to portend a catastrophe for Chinese farmers, in fact will enhance their welfare in the aggregate. China’s leadership is fully behind this transformation. Document No. 1 issued in 2004 by the Central Committee of the Communist Party of China (CCCCP), effectively the highest power in the nation, supports farmers’ rights to take decisions that are in their own

interest, such as cultivating those crops that they believe will provide them the highest possible standard of living.

Many trade negotiators from wealthy countries who have been involved in talks since the 2003 Cancún ministerial—which assessed progress under the WTO’s Doha Round of multilateral trade talks—may consider analysis of the reforms and trends that affect China’s 250 million farming households as irrelevant to their concerns. But this view is misguided. China’s growing comparative advantage in important, high value-added, and tradable agricultural products, its increasing willingness to import large volumes of land-intensive commodities, and its progressive WTO commitments in agriculture give reason to believe that China will be pulling other nations along rather than holding them back in the years ahead. China is expected to account for nearly 20 percent of marginal world growth in agricultural production and up to 25 percent of consumption in the near future, largely as a function of overall economic growth driven by the nation’s industrial development and urbanization. Each of the major agricultural interest “camps” in the WTO—the United States, the European Union, and the Cairns Group—is quietly but urgently courting China to side with its point of view. The position China eventually takes on world agricultural trade will be one of the most significant new weights in the slow-moving calculus of WTO talks on agriculture.

This chapter sets out the context of China’s evolving agricultural interests as they pertain to the international economy. The analysis first reviews the extent of past policy reform and its impact on China’s agriculture sector. From this baseline, the present state of reforms and adjustments is assessed in light of China’s obligations as a result of joining the WTO. Finally, the chapter looks to where China’s agricultural policy based on its interests will likely take it in the WTO Doha Round talks.

Chinese Reforms Before Joining the WTO

From the start of the reform process in 1979 to the eve of WTO accession in late 2001, China introduced profound changes to its agricultural sector. It is important to recall that there were broader economic reforms over this period as well. Deng Xiaoping’s reform era began with agricultural initiatives, but absolute gains in farming were overshadowed by even larger relative gains in industry and services. From 1980 to 2000, agriculture fell from 30 to 16 percent of China’s GDP, 70 to 50 percent of employment, and 50 to 10 percent of exports.

China’s reforms have touched almost every aspect of the economy and society. In the early years, reformers encouraged local leaders in rural areas to start township- and village-run enterprises to fill the gap between the supply of and demand for consumer goods. The rural reforms were

quickly followed by policies that encouraged the first reforms of the nation's state-owned enterprises. Top leaders partially liberalized the banking and fiscal systems as well as monetary policy. Planning gave way to markets, gradually at first and then with increasing depth and intensity. Output markets for consumer goods developed initially, then those for producer goods and machinery, and finally for inputs and other goods and services such as housing, banking services, and insurance. Gradually during the 1980s and 1990s—and often without benefit of a clear model—China's leaders systematically liberalized to some degree nearly every dimension of the economy.

Selective and gradual but steady external opening also played a key role in reform, with foreign trade expanding more rapidly than GDP. Annual foreign trade growth rates reached nearly 15 percent in the 1980s and the early 1990s. Even during the Asian financial crisis, foreign trade grew at nearly 10 percent annually, and in 2000 and 2001 the average rate reached 19 percent.¹ In 2003 and 2004, imports and exports were growing at 30 to 40 percent annually.

A number of policy initiatives drove this external boom (Lardy 2002). Leaders allowed the entry of thousands of foreign trade companies and reduced the dominance of state trading. Exchange rate policies, currency markets, and convertibility regulations were reformed. With tariff reductions, China shifted from being one of the most protected economies (with nominal protection rates reaching nearly 100 percent) to one of the most open (with rates of just 15.3 percent in 2001).² Tax rebates, duty-free importation in bonded export processing zones, and regulations to encourage exports all played important roles in Chinese policy. Most tellingly, China's trade-to-GDP ratio increased from less than 13 percent in 1980 to 45 percent in 2001 (NBS 2002).

Agricultural Growth, Structural Change, and Reform Policies

While the overall effect of reform favored growth of the industrial sector, Chinese agriculture did well over the reform period in absolute terms. In trade, the total value of China's primary-goods trade (mainly agriculture) increased from \$16.1 billion in 1980 to \$72.1 billion in 2001, an annual growth rate of 7.4 percent (NBS 2002). The nation's agricultural GDP during this period rose 4.6 percent annually, from RMB513 billion (in 2001 prices) in 1980 to RMB1.5 trillion in 2001 (or \$177 billion).

1. Although the growth rate of China's agricultural exports declined during this period, so did those of all other Asian countries. Most observers attribute the decline to depressed world commodity markets and the general slowdown of the world economy (ADB 2002).

2. See Lardy (2002, 65). Ianchovichina and Martin (forthcoming) cite nominal protection rates as high as 21 percent, and the Ministry of Agriculture has reported a 17 percent rate for agricultural products.

Productivity also rose rapidly during the reform period. McMillan, Whalley, and Zhu (1989) calculate that productivity grew by nearly 7 percent annually from 1978 to 1984. Despite concerns about the slowdown in total factor productivity (TFP) growth in the late 1980s (Wen 1993), China's productivity for major staple crops increased by more than 2 percent annually over the entire reform era, a growth rate considered healthy by international standards (Jin et al. 2002; Fan and Pardey 1997). The rise in productivity contributed to the 5 percent average annual increase in real per capita rural incomes during the 1980s and 1990s. The sharp rise in agricultural output, productivity, and income largely account for the oft-repeated World Bank finding that China has lifted more than 250 million people above the poverty line over the past two decades.

The areas of domestic agricultural reform most relevant to these achievements were institutional reforms and incentive policies, pricing and marketing policies, investment policies (especially for R&D), and trade policy reforms. The section that follows summarizes key developments in each of these areas before examining their effect on the economy.

Institutional Reform to Restore Incentives

Deng Xiaoping began agricultural policy reform with institutional reforms to restore incentives to farmers. These same types of reforms would soon play a key role in transforming the nation's overall economy. Foremost was the Household Responsibility System (HRS) initiated in 1979 and the process of decollectivization that dismantled communes and contracted land to households based on the size of the household's labor force. Under the HRS reforms, individual farmers could make crop choices and retain additional income from their increased effort, while land ownership remained collective. By the time HRS reforms had been completed in 1984, nearly every household in rural China had a piece of land.³

Agricultural output and yields grew as a direct result of decollectivization and there were improvements in food security and poverty alleviation. The policy-induced rights given to farmers to retain income and control decisions on crop choices contributed significantly to growth in agricultural production and productivity in the early 1980s (Lin 1992, Huang and Rozelle 1996). However, policy on land rights has been complicated and variable (Brandt et al. 2002). Although local leaders were supposed to have given farmers land for 15 years in the early 1980s and for 30 years starting in the late 1990s, collective land ownership instead often resulted in reallocation of village land. As a result, China passed the

3. Cultivated farm size, however, was only 0.6 hectares on average. Due to regional variations in land endowments, household farm size ranged from more than one hectare in the northeast and nearly one hectare in the north to about half a hectare in the southwest and 0.2 to 0.3 hectares in the south. Such a highly fragmented scale has led to inefficiencies.

2003 Rural Land Contract Law to clarify rights for the transfer and exchange of land and to permit the inheritance of land rights during the contracted period.

The concern of policymakers today is to facilitate access to sufficient additional land and income so that farming can remain economically viable. In other words, the government is seeking to define the mix of government fiat and market forces that will rationalize agricultural market structures and provide farmers access to sufficient resources. Increasingly, land is rented among farmers even though formal legal structures for doing so are underdeveloped (Deininger, Jin, and Rozelle 2004).⁴

Beyond decollectivization and farm restructuring, central planners in the late 1970s began to allow localities to make more of their own production decisions (Lardy 1983, Sicular 1988a). Production plans downplayed the importance of targets for sown areas, and local producers were given more latitude in making their own production and marketing plans. Instead of specifying the type of crops in terms of sown area and even the technology to be used, planners began to give regional authorities more control. In addition, mandatory delivery quotas were reduced, although almost all sales, both mandatory and voluntary, were still made to the state.

Even though they began later than the Household Responsibility System, decollectivization, decentralization of planning policies, and changes in rural employment opportunities also affected agriculture. By the mid-1980s, reformers had mostly liberalized off-farm and on-farm labor market rules (Perkins 1994). The flow of rural labor off the farm and into the nonfarm rural labor pool began almost immediately, rising from less than 30 million in the early 1980s to more than 200 million by 2000 (deBrauw, Huang, and Rozelle 2002). By 1984, policymakers had launched fiscal reforms in towns and villages that encouraged entrepreneurs to invest in family-run and larger-scale enterprises in the rural sector (Oi 1999). Millions of household enterprises emerged during the 1980s as a result (Rozelle et al. 2000). Township and village enterprises appeared and quickly boomed in number, transforming rural China. The rural industrial sector became the engine of employment growth during the 1980s. In the 1990s, many of these township and village enterprises converted into private enterprises (Li and Rozelle 2003). Though their recent overall performance has slipped both in number and employment, these enterprises have already had a dramatic impact on the rural economy. The emergence of a real nonfarm economy in rural China raised the opportunity cost of staying on the farm, and encouraged remaining farmers to focus on higher returns.

4. Deininger, Jin, and Rozelle (2004) show that rental transactions are leading to larger farm size, which should help China's farmers compete better in world markets.

Pricing and Marketing Policies for Commodities and Inputs

The key change to agricultural commerce in the early 1980s in China centered on increasing the purchase prices of crops (Sicular 1988b). While it increased production and profits, the decision to raise prices was *not* a move to liberalize markets per se. Ministry of Commerce planners administratively made the price changes, which were then executed by a national network of grain procurement stations acting under the direction of the State Grain Bureau. China's leadership in the early 1980s had little intention of letting the market play anything but a minor and supplemental guidance role.⁵

Beyond the administrative price rises, there were limited policy efforts in the early 1980s to free up prices and reduce marketing restrictions. Farmers were given more discretion to produce and market crops in 10 planning categories, such as vegetables, fruits, and coarse grains, and by 1984 the state tightly controlled only 12 commodities. However, those controlled commodities included rice, wheat, maize, soybeans, cotton, sugar, and several other cash crops that accounted for more than 95 percent of sown area (Sicular 1988b). In policy and practice, planners still directly influenced the output and marketing of almost all sown area. Although free markets were approved in 1979, restrictions on the distance over which trade took place remained through 1984.⁶ Markets did not start to appear in urban settings until 1982 and 1983.

Although the marketing reforms were implemented gradually, once they took off, market activity exploded. In urban areas there were only 2,000 markets in 1980, rising to 6,000 by 1984 (deBrauw, Huang, and Rozelle 2002).⁷ But after 1985, the number of newly opened markets accelerated substantially and the pace of marketing reforms quickened. Changes in the procurement system, further liberalization of commodity trade, moves to commercialize the state grain trading system, and calls for the expansion of markets in both rural and urban areas also contributed to the surge in market-oriented activity (Sicular 1995). Whereas in 1980 there

5. In contrast to the former Soviet bloc nations of Eastern Europe and the former Soviet Union, China did not dismantle the planned economy in the initial stages of reform in favor of liberalized markets (Rozelle and Swinner, forthcoming). Sicular (1988a; 1988b; 1995), Perkins (1994), and Lin (1992) all discuss the early intentions of the Chinese reformers. Lardy (1983) found a greater role of market forces, if not a formal intention to marketize, but the fact remains that there was little reform of markets at this stage relative to later.

6. Sicular (1988b) and Skinner (1985) point out that the dominant marketing venue at the time was occasional local rural markets, so these distance restrictions had limited importance.

7. In Beijing in the early 1980s, there were only about 50 markets transacting around RMB1 million (about \$500,000 in 1980 dollars) of commerce per market per year. Each market would have had to serve, on average, about 200,000 Beijing residents, each transacting only RMB5 (about \$2) of business for the entire year.

were only 241,000 private and semiprivate trading enterprises registered with the State Markets Bureau, by 1990 there were more than 5.2 million (deBrauw, Huang, and Rozelle 2000). During the same period, the per capita volume of commercial transactions in Beijing food markets rose almost 200 times over. By 1990, private traders handled more than 30 percent of China's traded grain, and more than half of the rest of the country's marketed grain was bought and sold by commercialized state grain trading companies, many of which had begun to behave as private traders (Rozelle et al. 2000).⁸

The story is similar for input markets (Stone 1988; Ye and Rozelle 1994). During the prereform era, the state distributed all key inputs such as chemical fertilizer through a government-controlled network of agricultural input supply stations. At a time when many inputs in most regions were scarce, local officials were issued coupons that gave communes the right to purchase at least part of the inputs they needed.

In the initial years of reform that involved decollectivization, leaders did virtually nothing to limit the role of the state in input allocation. Indeed, the state restricted private sales of nitrogen fertilizer and controlled all interprovincial chemical fertilizer distribution. This situation continued even after the start of liberalization in both output and input markets in 1985, with only start-and-stop efforts at reform (Sicular 1995). For example, fertilizer market liberalization in 1986–87 led to perceived instability in the rural economy in 1988 and a sharp retrenchment (Ye and Rozelle 1994). Officials only decontrolled fertilizer marketing and private trade again in the early 1990s,⁹ and it was not until the mid-1990s that private traders sold more than 50 percent of fertilizer. By 2000, however, a survey of 1,200 households in six provinces found the private sector exclusively handling almost all fertilizer sales.

The evolution of grain markets is a similar story. Despite failed attempts to commercialize the grain system in the early 1990s and severe (and unsuccessful) retrenchment in 2000 and 2002, the State Grain Bureau was beginning to commercialize its remaining grain trading divisions by 2001. As a consequence, grain trade today is dominated by tens of thousands of private traders. According to a survey by Xie (2002), there were more than 2,000 private rice wholesalers trading in Beijing in 2001, more than 3,000 in Shanghai, and more than 5,000 in Guangzhou. Nearly all rice moves through their hands, completely bypassing the state. China's markets have become more integrated, transaction costs have fallen, and there

8. About 55 percent of grain production, however, is directly consumed by farmers rather than sold to markets.

9. Lin, Cai, and Li (1996) argue that leaders were mainly afraid of potential disruption if the institutions through which leaders controlled such items as fodder, grain, and fertilizer were eliminated before institutions were in place to support more efficient market exchange.

are far fewer unexploited arbitrage opportunities (Park et al. 2002; Huang, Rozelle, and Chang 2003).

Investment in Technology

The achievements and size of China's current agricultural research system are ample evidence of its track record on agricultural technology and its commitment to research. Historically, China has had the largest and one of the most successful agricultural research systems in the developing world (Stone 1988). More than 100,000 scientists are engaged in developing new crop varieties and other agricultural research, by far the largest system in the world in terms of research staff. China's scientists have made a number of historic breakthroughs, including the development of semidwarf rice varieties in the 1950s, hybrid rice in the 1970s, and thousands of varieties of high-yield, pest-resistant, and high-quality grain and cash crop cultivars in the 1980s and 1990s. These innovations drove the nation's growth in yields and total factor productivity during the past two decades (Huang and Rozelle 1996; Fan and Pardey 1997).

Historically, much of China's research focused on grain and other staple crops (Fan and Pardey 1992). Through the 1980s and even into the early 1990s, most of the nation's research funds went to rice, wheat, and maize. Agricultural research administrators supported national goals by focusing funds and scientific resources on such staples. Even after the radical self-reliance policies of the Socialist Period (1950–78) were phased out, food self-sufficiency remained high on the list of priorities. Horticulture and livestock—higher value-added products more suited to a labor-intensive economy like China—played only a small role in China's agricultural development strategy.

Economic growth, the rise of markets, and the opening up of the economy have since resulted in a sharp shift in government policy, with producers making more of their own decisions. The research system evolved by the mid-1980s toward better supporting horticulturists and consumers. These reforms attempted to increase research productivity by shifting funds to competitive grants for research explicitly tied to economic development (as opposed to food security). Applied research institutes were encouraged to support themselves by commercializing their technology.

By the mid-1990s, top research administrators were allocating more funds to nontraditional crops. Commercialization policies allowed researchers to work on a broader array of crops that the market demanded, including horticulture. Some groups, such as the Horticulture Research Institute in the Chinese Academy of Agricultural Sciences, became extremely successful. Private and quasi-private seed and research firms emerged in the late 1990s.

Despite the largest and most successful agricultural research system in the developing world, however, China's research in modern plant

biotechnology did not begin until the mid-1980s (Pray, Huang, and Rozelle 1997). Scientists now apply advanced biotechnology tools to plant science, regularly working on the synthesis, isolation, and cloning of new genes and the transformation of plants with these genes. With the initiation of a research program on rice functional genomics in 1997, Chinese researchers began using *Ac/Ds* transposons and T-DNA insertion methods to create rice mutagenesis pools (Huang, Pray et al. 2002). Biotechnologists also have initiated functional genomics research for *Arabidopsis*, a model plant specimen used as a research platform for plant genomics. A survey of China's main plant biotechnology labs reported in Huang, Pray et al. (2002) identified over 50 different plant species and more than 120 functional genes that scientists are using for the genetic engineering of plants. Such advances clearly show China's capability to be a global leader in the production of genetically modified plants. In the summer of 2003, Chinese officials overruled antiforeign domestic interests and started encouraging foreign enterprises to invest in plant biotechnology projects.

Despite these advances, it is important to note that China's biotech spending has been relatively small in comparison with that of the developed world. China's total of between \$2 billion and \$3 billion is less than 5 percent of total expenditures in industrialized countries (Byerlee and Fischer 2000). Such an assessment changes, however, when comparing China to the *public* research spending of other countries, and when considering its future plans. Globally, the public sector accounts for about 45 percent of research expenditures on plant biotechnology. China currently accounts for more than 10 percent of this amount, but in 2001 China's officials announced plans to increase research budgets for plant biotechnology by 400 percent over the next five years. If this plan is carried out, China could account for nearly one-third of the world's public spending on plant biotechnology. As of early 2003, China's Ministry of Science and Technology announced that it had exceeded its funding plans.

Agricultural Trade Policy Reforms

Prior to China's agricultural reforms, the giant state-owned Chinese National Cereals, Oils and Foodstuffs Import & Export Corporation (COFCO, originally named CEROILS) monopolized the foreign trade of most agricultural products. China implemented measures to reform foreign trade shortly after overall economic reforms began. The highly centralized and monopolized foreign trade system was partially decentralized by establishing more new trade ports and by granting more producers the right to import and export directly. More than 2,200 foreign trade corporations were established between 1979 and 1987. In 1985, mandatory planning of the foreign trade system was replaced by a more flexible "guidance plan" that included market adjustments to address trade trends. Quotas and licenses were introduced to replace the need for direct government

approvals or plans for agricultural imports and exports. Other new policies included export tax rebates and the first phase of the foreign trade contract responsibility system (1987), which provided profit incentives to trade more efficiently. By the early 1990s, the government had extended that system nationwide.

Starting in 1979, the right to retain a share of foreign exchange earnings had been gradually expanded so that traders could apply the earnings to imports on their own accounts. Profit-sharing arrangements were also offered to managers of the agricultural firms involved in trade. Under the planned foreign trade regime, foreign trade corporations had not been responsible for profits or losses incurred from trade. The government took all profits and covered all losses, and provided all working capital for foreign trade corporations as well. Because of the distorted domestic pricing system, implicit export subsidies were a common phenomenon due to mispricing. China fixed its export subsidy for 1988–90 to a level equal to about 4 percent of the total export value in 1987 in order to curb the trend. In 1991, the government decided to phase out export subsidies to all foreign trade corporations and make them completely responsible for profits and losses.

To increase the competitiveness of China's exports, China applied export tax rebates to 17 commodities on an experimental basis starting in 1983. This policy was then extended to cover almost all exports. After export, foreign trade corporations were refunded all product taxes, value-added taxes (after this tax was instituted), and business or special consumption taxes.

China's government began aggressively reducing tariffs long before the country's entry into the WTO. Although historically the sector had not always enjoyed such protection, tariff levels for many products in the 1980s were above 100 percent, primarily in response to the opening of the external economy, the concomitant exchange rate adjustments, and the sharp planned price rises in the 1980s. Since then, however, there has been a slow and steady reduction in protection for agriculture.¹⁰ By 1991, China's average import tariff rate had fallen, although at 47.2 percent it remained one of the highest average protection rates in the world (World Bank 1997). Between 1990 and 1996, the average import tariff rate was reduced to 39.6 percent, and in April 1996 China reduced its rates for more than 4,900 items, which reduced the simple average tariff rate from 35.9 percent to 23 percent. In October 1997, import tariff rates were reduced for another 4,800 items, bringing down the country's simple

10. While this trend is unique to China, it does not rule out the nation's again turning to such protectionism some time in the future. China's WTO commitment limits its scope for legally protecting agriculture, but as the country develops it could shift from agricultural taxation to subsidization, a form of protectionism that some other Asian and developing nations have adopted.

average tariff rate to 17 percent. The rate for agricultural products followed this general trend and reached 23.6 percent in 1997.

As the 1990s progressed, China also took actions to eliminate or convert into tariffs myriad import quotas and licensing regulations used to control foreign trade. Early in the reform period, only officially designated state traders had been able to import soybeans and soybean oil, but by the mid-1990s a large number of companies could import under license. Licensing requirements were dropped in 2000 and any foreign trade company could import soybeans, although this did not exempt the shipments from possible quarantine inspections that have continued to periodically hold up shipments even since China joined the WTO. In general, products subject to quotas, licensing, and other import control measures accounted in 1998 for less than 5 percent of the total import tariff lines and 8.45 percent of the value of imports (Lardy 2002, 39). This is largely the same today, with tariff rate quotas (TRQs) largely replacing the informal quotas from the pre-WTO days (see box 3.1).

Results of Reform Policies

While past reform efforts show the extent to which China's interests are evolving, the *results* of these reforms are even more illuminating. This section looks at the determinants of agricultural output and productivity growth, structural adjustment (both between sectors and within agriculture), market integration, and trade.

Output and Productivity Growth

Growth in China's agricultural economy has been remarkable over the entire two decades of reform: 4.6 percent growth in annual output (real gross value of agricultural output over 1980–2001) and more than 2 percent growth in productivity (table 3.1). China's agricultural reforms and new technology policies contributed significantly to both of these increases. Though gains were greatest in the earliest years of reform, average annual agricultural output growth was nearly 5 percent and productivity more than 1.5 percent from 1985 to 2000—growth rates that would be considered high in most developing countries.

Empirical studies have quantified the simultaneous contribution of a number of factors to agricultural output growth during the reform period. The earliest studies (McMillan, Whalley, and Zhu 1989; Fan 1991; Lin 1992) found that most of the initial rise in productivity was a result of institutional innovations—particularly the Household Responsibility System (HRS)—that gave individual farmers rights to manage their crops and incomes.

Huang and Rozelle (1996) also attribute a significant part of growth in the early reform period to HRS, but show that technological change was

Box 3.1 Shifting priorities on food security

With such a large population and limited resource base, China has always placed a high priority on food security. These efforts have brought remarkable progress. On a per capita basis, China's population currently consumes an average of more than 3,000 calories per day, 14 percent more than the average developing country and 8 percent more than the world average. China also produces more grain than it consumes. Fueled by strong productivity growth, China's supply has risen at a rate that exceeds the increase in domestic demand. In fact, since 1983 China has been a modest net food exporter, a significant achievement given the concern with sufficiency (Huang and Chen 1999). Looking to the future, even if the nation were to completely liberalize all trade (which is beyond its current trade commitments), China's own economists forecast that by 2020 major food grains, rice, and wheat would still be produced almost completely in China and, in the case of rice, exported, according to Huang and Chen (1999). Trading freely, China would still be a net importer in 2020 of certain feed grains (e.g., maize), oil seed crops (e.g., soybeans), and cash crops (e.g., sugar), but it is predicted that production and export by then of specialty crops such as horticulture, livestock, and aquatic products will grow faster and, on average, China will maintain a net agricultural export balance.

Successes in the food economy appear to be encouraging China to shift its policy priorities. Given the improvement in agricultural productivity and the government's emphasis on raising rural incomes, China's leaders show signs of moving toward a fundamental policy shift on national grain self-sufficiency. China is in the midst of a debate that the proponents of a new food security policy appear to be winning. Document No. 1 issued in 2004 by the Central Committee of the Communist Party of China (CCCCP) encouraged farmers to continue activities—such as planting those crops that they believe will give them the highest returns—that are facilitating China's structural change.

This debate has gone back and forth for a long time. However, those in favor of moving away from the "grain-first" mentality that has dominated agricultural policy for many decades believe that China no longer needs to pursue policies that promote the cultivation of grain to the exclusion of higher-value alternative crops. This faction is pushing policies—some of them recently enacted—that promote

(box 3.1 continues next page)

just as important. Since completion of the HRS in 1984, the primary engine of agricultural growth has been technological change (Huang and Rozelle 1996; Fan 1997; Fan and Pardey 1997). Price policy, other investments, and education also have been shown to influence the growth of both grain and cash crops.

Although there was concern about a slowdown in the growth of TFP and rural income growth in the late 1980s (Wen 1993), the growth rates of both stayed relatively high in the early 1990s, especially in comparison with

Box 3.1 *(continued)*

crop diversification. This marks a continuation of reformist policies based on the principle that decisions to shift crops should be made by households themselves in response to signals from the market.

Border policies such as artificially restricting grain imports are also perceived as less critical for national food security. Protectionist trade measures not only create international tensions but also cause inefficiencies and slow government efforts to promote structural adjustment. "Grain-first" trade policies also reduce exports of labor-intensive and higher-valued products, since other countries will keep their borders more closed if they perceive that China is not allowing imports of more land-intensive commodities. And, of course, if at some future time China needs more grain, the land is still there and grain can be grown at any time.

The new policy approach also focuses on redefining food security in China. Instead of viewing national food security in the traditional sense, leaders are shifting their attention to measures that promote household food security for China's poor. Tens of millions of people still live below the poverty line, and most of these poor families suffer from poor nutrition and lack proper health care and education. Proponents of the new approach view the interests of China's farming households as best served by policies that improve livelihoods not through isolation from domestic and international competition but rather through improved competitiveness, better investment, and more liberal measures that facilitate structural change.

While China is moving in the direction of economic rationalization on food security, the debate is ongoing, and entrenched grain market interests are holding out for the old mindset. In fact, movements in grain prices in late 2003 and early 2004 prompted renewed calls from some Chinese bureaucrats and academics to revitalize food security as traditionally practiced. For example, a spokesman from the National Grains and Oils Information Center recently called for China to start using fiscal funding up to the 8.5 percent of the aggregate measure of support allowed by China's WTO agreement in order to subsidize the price of grain to increase production. These calls are grounded in traditional thinking on food self-sufficiency, but this time around they have been met by other voices calling for China not to take such action and to instead invest in programs to increase agricultural productivity.

other developing nations (Jin et al. 2002). The determinants of TFP and rural incomes are similar to those that determined the growth of agricultural output. Investment in agricultural R&D contributed significantly to the productivity of rice, wheat, and maize (Jin et al. 2002), with more than 60 percent of China's TFP rise and almost all of the growth in rice yields coming from new technologies (Hu et al. 2000; Huang and Rozelle 1996). Investments in irrigation raised cropping incomes of the poor by up to 50 percent in northern China's maize and wheat areas (Huang, Rozelle et al. 2002).

Table 3.1 China's annual growth rates, 1970–2000 (percent)

	Prereform period, 1970–78	Reform period		
		1979–84	1985–95	1996–2000
Overall GDP	4.9	8.8	9.7	8.2
Agriculture	2.7	7.1	4.0	3.4
Industry	6.8	8.2	12.8	9.6
Services	n.a.	11.6	9.7	8.2
Foreign trade	20.5	14.3	15.2	9.8
Import	21.7	12.7	13.4	9.5
Export	19.4	15.9	17.2	10.0
Output of rural enterprises	n.a.	12.3	24.1	14.0
Population	1.8	1.4	1.4	0.9
Per capita GDP	3.1	7.1	8.3	7.1

n.a. = not available

Note: GDP figure for 1970–78 is the growth rate of national income in real terms. Growth rates are computed using the regression method.

Source: NBS, *China Statistical Yearbook*, various years.

Structural Adjustment

Beyond growth, China's reform policies also shifted the structure of the economy in general and that of the agricultural economy in particular. The share of agriculture in GDP declined significantly from 30 percent in 1980 to 16 percent in 2000. While agriculture made critical contributions to employment, capital accumulation, urban welfare, foreign exchange earnings, and poverty alleviation, industry grew even faster. Agriculture employed 81 percent of the labor force in 1970, but 50 percent in 2000. Sharp structural adjustment in the nature of output, trade, and employment as a result of policy reform helped China shift from a rural to an urban society.

The mix of crops also changed as a result of reform, generally toward commodities in which China's producers hold a comparative advantage. Between 1978 and 1984, grain production, which is somewhat more land-intensive than other crops, increased by 4.7 percent annually. While that is impressive, the record of more labor-intensive crops is even better: the output of fruit rose by 7.2 percent, livestock by 9.1 percent, and aquatic products by 8 percent.

The structure of agriculture continued to change following the early reforms. As the efficiency boost from the shift to the HRS waned in the mid-1980s, the growth rate of the food and agricultural sectors began to decelerate. The declining trend in the rate of growth was most pronounced for grain crops. However, production levels for rice, other grains, and cash crops, while dropping below the growth rate during the prereform and early reform periods, has continued to expand since 1985.

Overall economic growth boosted demand in China for meats, fruits, and other nonstaple foods, which stimulated sharp structural shifts within the agricultural sector (Huang and Bouis 1996). Changes in sown area continued throughout the 1990s. Sown area for grain continued to decline by nearly 5 percent between 1990 and 2001 (NBS 2002). This is because, as markets emerged and matured during the 1990s, farmers reduced their area sown in traditional grain and fiber crops and began to cultivate fruits and vegetables. Fruit area nearly doubled, expanding by 4 million hectares, while vegetable producers added more than 8 million hectares. This expansion of fruits and vegetables virtually added a “new California” every two to three years in China between 1990 and 2002.

The transformation of the agricultural sector occurred even faster outside cropping. For example, the share of livestock output value in total agricultural output more than doubled from 14 percent to 30 percent between 1970 and 2000. Aquatic products rose at an even more rapid rate. The steady rise in the shares of livestock and aquaculture contributed to one of the most significant signs of structural change in the agricultural sector: During the 1980s and 1990s the share of cropping in total agricultural output fell from 82 to 56 percent.

Several studies have found that farmers in different regions of China are shifting into crops in which they have a comparative advantage. Rozelle et al. (1997) found that during the late 1980s and early 1990s, farmers with yield advantages in certain crops expanded their acreage in those crops. Park, Cai, and Rozelle (1994) and Park et al. (1997) reported even more compelling findings. As the relative productivity of crops shifted among regions, farmers in the 1990s shifted into those crops in which they were gaining an increasing advantage. The rise in marketed surplus (Nyberg and Rozelle 1999) and the increase in households moving out of subsistence agriculture during the period suggests that households are specializing in crops that they can produce more productively (deBrauw et al. 2002)

Rise of Domestic Markets

China’s markets are increasingly integrated as a result of reform, as shown in research summarized in table 3.2 (Huang, Rozelle, and Chang 2003). In the middle of the reform era (1989–95), prices moved together in only 20 to 25 percent of markets, while during the late 1990s China’s markets matured considerably (especially for maize and soybeans) and are today remarkably integrated. In the case of maize, prices in one market moved at the same time as in another in 89 percent of cases over 1996–2000, an increase from only 28 percent of the time over 1989–95. The number of market pairs for soybeans and japonica and indica rice show similar increases. A more recent study of maize prices in China’s major producer and consumer markets found that prices moved together among all markets in 100 percent of the periods (Rozelle 2003).

Table 3.2 Percent of market pairs in rural China, 1989–95 and 1996–2000

Commodity	1989–95	1996–2000
Maize	28	89
Soybeans	28	68
Rice, Yellow River Valley (mostly japonica rice)	25	60
Rice, Yangtze Valley and south China (mostly indica rice)	25	47

Note: Measures the percent of market pairs that test positive for integration based on the Dickey-Fuller Test. Results for the two periods are from the same data set. Rice results for 1989–95 are for the entire country.

Sources: Results for 1989–95 for maize and rice are from Park et al. (2002) and for soybeans from Huang, Rozelle, and Chang (forthcoming). Results for 1996–2000 are from the authors.

In sum, the analysis shows the extent of integration of China's agricultural markets. In many cases, the markets in which prices moved together were separated by more than 1,000 kilometers, and the Huang-Rozelle-Chang study found that prices were usually integrated between markets in the Shaanxi and Guangdong provinces and between those in the Sichuan and southern Jiangsu provinces.

Studies have documented additional evidence of the emergence of well-functioning markets. During the 1990s, transaction costs of moving agricultural commodities from production to consumption areas fell sharply (Park et al. 2002). Price relations between coastal and inland markets exhibited behavior much like that generated by markets in more developed countries (Huang, Rozelle, and Chang 2003). Input markets, therefore, are catching up with commodity markets in terms of integration and price relations.

Changes in Trade

Changes in agricultural output and structure, shifts in domestic and trade policies, and investments have increased the growth of agricultural trade even more than the growth of agricultural output (table 3.3). Agricultural trade (both imports and exports) more than tripled from 1980 to 2001. Exports rose faster than imports, and since the early 1980s China has been a net food exporter (Huang and Chen 1999).

The expansion continued through the 1990s, albeit at a slower rate. After dropping in the mid-1990s, imports rose rapidly between 1998 and 2001. Much of this increase can be traced to rises in soybean and edible oil imports—soybean imports rose from less than 5 million metric tons (MMT) in 1997 to more than 10 MMT in 2001. At the same time, exports

Table 3.3 Structure of China's food and feed trade, 1980–2001
(millions of dollars)

	1980	1985	1990	1995	2000	2001
Exports						
Live animals and meat	745	752	1,221	1,822	1,628	1,976
Dairy products	71	57	55	61	188	192
Fish	380	283	1,370	2,875	3,705	4,231
Grains, oils, and oilseeds	481	1,306	1,237	1,608	2,667	1,835
Horticulture	1,074	1,260	2,293	3,922	4,367	4,931
Sugar	221	79	317	321	173	156
Total	2,972	3,737	6,493	10,609	12,728	13,340
Imports						
Live animals and meat	6	24	68	115	696	659
Dairy products	5	31	81	60	218	219
Fish	13	44	102	609	1,212	1,319
Grains, oils, and oilseeds	2,472	1,065	2,535	6,760	4,163	5,343
Horticulture	104	92	113	259	677	866
Sugar	316	274	390	935	177	376
Total	2,916	1,530	3,289	8,736	7,143	8,782
Net exports						
Live animals and meat	739	728	1,153	1,707	932	1,317
Dairy products	66	26	-26	1	-30	-27
Fish	367	239	1,268	2,266	2,493	2,912
Grains, oils, and oilseeds	-1,991	241	-1,298	-5,152	-1,496	-3,490
Horticulture	970	1,168	2,180	3,663	3,690	4,065
Sugar	-95	-195	-73	-614	-4	-220
Total	56	2,207	3,204	1,873	5,585	4,558

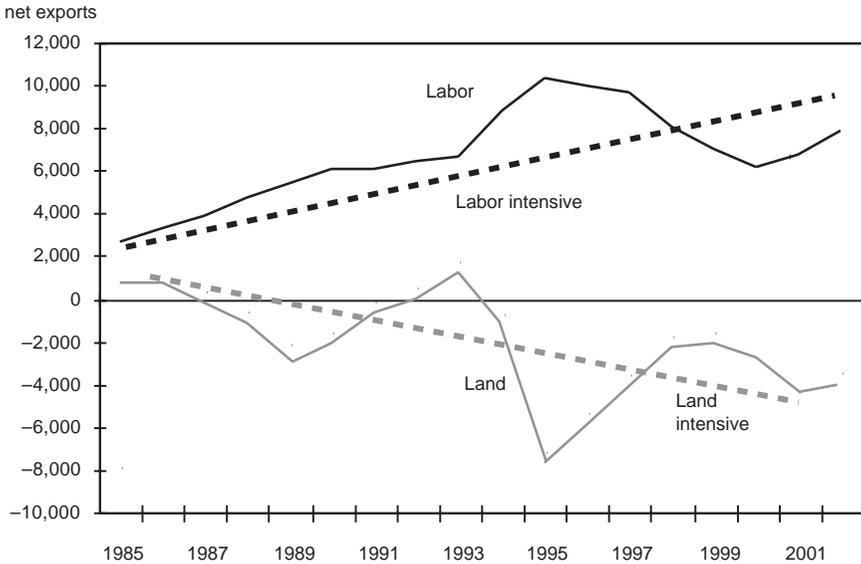
Source: Mathews (2001), based on UN Commodity Trade (COMTRADE) statistical database.

rose steadily, and China was still a net exporter of food in 2001. The rapid growth of food exports slowed after 1995, however, with some key categories declining due to increasing protection against Chinese exports. Maize is a major exception: its export rose significantly in the late 1990s and it ranked as the top crop in terms of agricultural export value in 2001, a ranking that continues today in part due to export subsidies that are inconsistent with China's WTO commitments.

The increased openness to the external economy brought by China's agricultural trade policy reforms has affected trade patterns (Huang and Chen 1999; Huang, Rozelle, and Chang 2003). The share of primary products (including agriculture) in total exports fell from over 50 percent in 1980 to just 10 percent in 2000. Over the same period, the share of food exports in total exports fell from 17 to 5 percent, and that of food imports fell from 15 to 2 percent, indicating that food was not a large share of primary product trade (oil was much larger, especially early on).

Product-specific trade trends also show sharp shifts and suggest that exports and imports are moving consistent with comparative advantages (figure 3.1). In general, net exports of land-intensive bulk commodities

Figure 3.1 Agricultural trade balance by factor intensity, 1985–2002 (millions of US dollars)



Source: NBS, *China Statistical Yearbook*, various years.

such as grains, oilseeds, and sugar crops have fallen.¹¹ During most of the 1990s, grain exports were less than 10 percent of what they had been in the mid-1980s. Instead, by the late 1990s exports of higher-valued and more labor-intensive commodities such as horticulture, animal, and aquaculture products had risen dramatically to make up 70 to 80 percent of food exports (Huang and Chen 1999). The same trends, albeit stop and start, continued between 1998 and 2001.

Changes in trade were seen least in commodities considered to be of strategic importance, including rice, wheat, and maize (Nyberg and Rozelle 1999). Although nominal import tariffs for these products were low, quotas, licensing, and high out-of-quota tariffs were used to restrict their import. For the entire reform period, the nation's single-desk state trading company for grain was COFCO, which managed trade of all within-quota grain during the 1980s and most of the 1990s and managed imports of edible oils until the late 1990s.¹²

11. Or imports have risen, i.e., the trade balance has moved in a negative direction. In 2003, however, Chinese sugar imports fell, reaching a lower percentage of the quota despite stable or slightly lower world prices.

Another policy that did not fully disappear with reform was export subsidization. China used export subsidies in the years prior to joining WTO to increase exports of maize and cotton. Field interviews in 2001 found that maize exporters, especially those in northeast China, received subsidies averaging 34 percent of the export price. One trader said that for each ton of maize that his company exported in 2001, it received back RMB378 (\$46) after it produced an export bill of sale with the export sales price. There is evidence that export subsidies for maize in this region continued at least during the first two years following China's WTO accession. In early 2004, however, China's leaders announced they were phasing out subsidies.

Although trade reforms have had limits and exceptions, and domestic policies and investments almost certainly have had a greater effect than trade policy, increased foreign trade has significantly affected domestic agricultural production and rural welfare (Huang, Rozelle, and Chang 2003). The impact of trade and nontrade domestic policies, however, differs. Domestic reforms and investments have boosted growth in almost all sectors, but their impact on rural welfare primarily has been to increase the availability of food. Because of rising output, there also has been a large, negative price effect that has benefited both rural and urban consumers (particularly the urban poor). Trade has had both positive and negative impacts. According to Huang, Rozelle, and Chang (2003), trade policy reforms have had a powerful impact in terms of structural change, moving the country toward areas of comparative advantage, improving efficiency, and making Chinese agriculture more competitive. Because trade effects are more commodity-specific, they have had sharp regional and crop-specific impacts. Unfortunately, China's poor are more vested in crops on the losing side of this adjustment, and poor farmers in general are less able to switch crops for economic and technological reasons. Therefore, domestic policy to offset these consequences of trade will be even more important in the future than they have been under domestic reforms in the past.

Cautionary Conclusions on Reform

This chapter has presented a decidedly positive picture of China's agricultural reform. That was indeed the intention, as there is substantial evi-

12. The value of imports (food and nonfood) by China's state trading enterprises (STEs)—and COFCO is among the largest such enterprises in the world—likely exceeds that of all other STEs in all current WTO member countries. Over the past decade, COFCO imported as much as 16 percent of the world's traded wheat and has exported as much as 20 percent of the world's maize (Nyberg and Rozelle 1999). Despite measures in China's WTO agreement designed to limit COFCO's influence, it has continued to act as a key agent in the international grain trade for national and provincial grain trading companies, and has maintained preferential access to import quotas.

dence that progress in China's rural economy during the 1980s and 1990s was remarkable and laudable. The experience of other nations in Asia also suggests that when this type of growth begins, it can quickly gather considerable momentum. Rapid growth gives policymakers time and resources to solve many of the problems and barriers that inevitably arise in the face of domestic and external interests.

However, there are still major challenges facing China's rural economy. The antiquated fiscal system is an artifact of socialism; the rural financial system is weak and does not meet financial intermediation needs; and governance is weak. In short, China is still in need of many structural reforms for which there are no blueprints at the ready. As these reforms take shape, there almost certainly will be intermittent dissatisfaction among segments of the rural population and even attempts to challenge the system.

O'Brien and Li (2004) examine how such discontent can lead to protest against local or even higher-level officials—mostly in the form of letters and meetings, but periodically spilling over into protest and even violence. This need not be taken as a sign of rural deterioration. It can also be seen as evidence that people are better able to express themselves. Violence in rural China is still extremely rare. A survey by Song (2004) suggests that most rural dwellers are generally content with current developments, perceive that their livelihoods have improved over the past 10 years, and believe that life in the coming decade will continue to improve.

The Impact of China's WTO Commitments

Under the terms of its accession to the World Trade Organization in 2001, China agreed to more far-reaching agricultural liberalization and reforms than other developing countries. Still, China's WTO commitments mark more of an extension of its past reforms than the setting of a new course.

This chapter reviews what China agreed to in WTO agriculture talks and its record to date in implementing those commitments. It looks in particular at the distributional effects of China's WTO obligations on the agricultural sector, since the potential for instability in the rural economy could constrain further welfare-enhancing reforms, even if the rural population is generally satisfied with the results of the reform process.

China's WTO commitments can be grouped into three areas: market access, domestic supports, and export subsidies. On market access, China agreed to lower tariffs on almost all agricultural products, increase foreign access for some commodities through tariff rate quotas (TRQs), and remove quantitative restrictions on others. Simple average statutory agricultural import tariffs have been scheduled for reduction from 21 percent in 2001 to 17 percent once WTO commitments are fully phased in.¹ This continues earlier trends, evidence that joining the WTO was for China not

1. Depending on how preaccession agricultural-sector tariffs are weighted, the movement is either from 21 to 17 percent, or from 17 to 14 percent. The latter figure is cited in Lardy (2002, 65) based on an earlier WTO press release. The point here is the continued reduction of 3 to 4 percent in statutory terms in either case. As to the absolute level of tariffs, the more important point is that the applied trade-weighted tariff or tariff equivalent for total Chinese agriculture was 7.6 percent preaccession and headed toward 3.6 percent postaccession. See Ianchovichina and Martin (forthcoming, tables 2 and 3).

Table 4.1 Tariff rates on major agricultural imports under China's tariff-only protection regime (percent)

	Actual tariff rates in 2001	Effective as of	
		January 1, 2002	January 1, 2004
Barley	114 (3) ^a	3	3
Soybeans	3 ^b	3	3
Citrus	40	20	12
Other fruits	30–40	13–20	10–13
Vegetables	30–50	13–29	10–15
Beef	45	23.2	12
Pork	20	18.4	12
Poultry meat	20	18.4	10
Dairy products	50	20–37	10–12
Wine	65	45	14
Tobacco	34	28	10

- a. Barley was subject to license and import quotas. The tariff rate was 3 percent for imports within the quota, and no above-quota barley with a 114 percent tariff was imported in 2001.
- b. Tariff rate was as high as 114 percent before 2000 and lowered to 3 percent in early 2000.

Source: China's WTO *Protocol of Accession*, November 2001.

a major departure but rather another step along the road to opening up. The simple average agricultural import tariff fell from 42.2 percent in 1992 to 23.6 percent in 1998. Agricultural products including horticulture, live-stock, fisheries, wine, tobacco, soybeans, and barley will become part of a tariff-only regime (table 4.1) to which the only exceptions are "national strategic products." Aside from these special cases, China's WTO accession terms stipulate that all nontariff barriers and licensing and quota processes will be eliminated, such that only the tariffs will remain. This is in keeping with the core principle of "tariffication" of the General Agreement on Tariffs and Trade (GATT). Since China's tariff cuts are bound and cannot be lifted in the face of rising imports, lower trade barriers should lead to new imports, especially for land-intensive commodities such as maize and many fruits and vegetables for which China is not a low-cost producer.²

China's WTO agreement allows officials to manage trade of rice, wheat, maize, edible oils, sugar, cotton, and wool under special rules with

2. Importantly, though published tariff rates fall on almost all commodities, significant new imports will not always follow. The reason is simple: China has comparative advantage in many commodities. For example, lower tariffs on horticulture and meat products may impact the domestic market only marginally, because foreign supply is suited mostly to high-quality niches (such as high-end hotels) and is less competitive with domestic-quality production. Although tariffs fall for almost all products, since China produces many commodities below world prices, tariff reductions will not dramatically affect producers or traders.

Table 4.2 China's market access commitments on farm products subject to tariff rate quotas

Farm product	Import volume (MMT) (state trading share)			Annual quota growth (percent)	In-quota tariff (percent)	Out-of-quota tariff (percent) as of January 1:		
	Actual 2000	Quota 2002	Quota 2004			2002	2003	2004
Rice	0.24 (100) ^a	3.76 (50)	5.32 (50)	19	1	74	71	65
Wheat	0.87 (100)	8.45 (90)	9.64 (90)	8	1	71	68	65
Maize	0.0 (100)	5.70 (67)	7.20 (60)	13	1	71	68	65
Cotton	0.05 (100)	0.82 (33)	0.89 (33)	5	1	54	47	40
Wool ^b	0.30	0.34	0.37	5	1	38	38	38
Edible oils ^c	1.79 (100)	5.69 (40)	6.81 (10)	15	9	75	72	68
Sugar ^d	0.64	1.68	1.95	8	20	90	72	50

MMT = millions of metric tons

a. Figures in parentheses are the share in percent of nonstate trading within import quota.

b. Designated trading in 2002–04 and phased out thereafter.

c. Tariff rate quota regime will be phased out in 2006. The import quota in 2005 will be 7.27 MMT with a 9 percent in-quota tariff and a 65 percent out-of-quota tariff.

d. Phased-out quota for state trade; 2004 in-quota tariff falls to 15 percent.

Sources: China's WTO *Protocol of Accession*, November 2001; NBS, *China Statistical Yearbook*, 2001.

TRQs. Table 4.2 shows that while the in-quota tariff under these TRQs is 20 percent for sugar and 9 percent for edible oils, the tariff is only 1 percent for rice, wheat, maize, and wool. While the amount of the commodity permitted entry at these tariff rates is limited, the volume was set to increase over 2002–04 at annual rates ranging from 4 to 19 percent. Tariffs on out-of-quota sales also dropped substantially in the first year of accession and were expected to fall further between 2002 and 2005.³

It should be noted, however, that China is not obligated to import the quantities stipulated in its TRQ schedule if there is no demand. TRQs provide minimum market access opportunities, not commitments. China promises to permit competition in import markets for these national strategic products so that there can be imports up to TRQ levels should there be demand (i.e., should the c.i.f. [cost, insurance, and freight] world price

3. Many of these rates are high enough—65 percent for grains and sugar in 2004 and edible oils in 2005—that in the coming years they will be prohibitive (table 4.2). However, in a comparative sense, the rates are not high. In fact, above-quota tariff rates of 65 percent are low internationally. Most Asian countries that have a TRQ system have high-tariff bindings that are two to five times higher.

be below China's price). The TRQ administration system developed in China's accession agreement broke some new ground that the WTO will use again in the future. In the past, administration of TRQs was covered in little detail under Article XIII of the GATT agreement and a few other provisions. China's accession terms (and those for Taiwan as well) included far more detailed rules on the administration of TRQs. The United States has now proposed adopting such detailed rules in the WTO as part of its position in WTO Doha Round Agriculture Committee talks. The rules are designed to make imports more competitive by allocating a share of the TRQ import rights to the private sector, reducing the role of state trading, and providing a more transparent process for this allocation. The system still has not been implemented as it should be by China, but there has been progress.

In return for allowing other nations greater access to its markets, China is supposed to gain fairly regulated access to foreign markets for its agricultural products. As a WTO member, China now faces the tariff schedules and lower nontariff barriers that govern trade among WTO economies on a statutory basis. Prior to China's WTO accession, important markets like the United States could unilaterally withdraw its most favored nation (MFN) tariff status, and other members were not compelled to use more disciplined WTO-consistent procedures in assessing dumping duties and other protective measures against Chinese exports. (Tariffs today on many agricultural goods from China are lower than in the pre-WTO era, as developing members phase in previously agreed-on tariff reductions on a lengthy timetable, but this is true for all members and is not a result of China's accession.) China's WTO membership also gives it access to the dispute resolution mechanisms that help adjudicate conflicts between members, and protects it against any arbitrary imposition of tariffs or nontariff barriers.

Access to China's markets will expand four to five years after its accession date. For example, by 2006 China is to phase out TRQs for edible oils. The TRQ for maize will remain after 2005 but the in-quota volume will increase. State trading monopolies for wool will be phased out after 2004, and are supposed to gradually disappear in the next round of the WTO agreement. Although the Chinese National Cereals, Oils, and Foodstuffs Import & Export Company (COFCO) and other state trading enterprises will continue to play an important role in rice, wheat, and maize imports and exports, elimination of trading monopolies will heighten competition from private grain-trading firms. That said, since the import quota allocated to private traders in grain is only 10 percent of the total, the state's role in this commodity is not set to diminish under present agreements.

The WTO agreement extends beyond market access to the area of subsidies. China agreed to immediately eliminate agricultural export subsidies, a move that was expected to have a large effect on its maize economy. It also agreed not to introduce new export subsidies in the future.

Although clearly a developing country, China agreed to limit product-specific domestic subsidy supports to only 8.5 percent of the total value of production of a basic agricultural product (compared with 10 percent for other developing countries). This 8.5 percent cap applies to the aggregate level of domestic subsidies as well. Farmer investment subsidies and input subsidies for poor and resource-scarce farmers—supports that are generally available to developing countries—are not permitted for China, which must include any such support as part of its aggregate measure of support (AMS). The support must be less than 8.5 percent of agricultural output values. China is far from this cap and therefore able to liberally expand domestic supports (provided they do not spill into export subsidization), so agreeing to a cap lower than developing-country norms was a useful concession.

Procedurally, other WTO members are permitted special antidumping provisions applicable to China for 15 years, making it easier to bring, prove, and enforce dumping cases against China. For instance, China can be treated as a “nonmarket economy” in these cases, which gives petitioners greater latitude to find offending cost structures and higher dumping margins.

Many of China’s WTO commitments outside of agriculture also have an effect on its agricultural sector. For example, under its industrial commitments that cover agricultural chemicals, China has agreed to replace quantitative import restrictions on three types of fertilizers—diammonium phosphate (DAP), nitrogen, phosphoric acid and potash (NPK), and urea—with less trade-distorting TRQs. Tariffs were cut upon accession and further cuts will be phased in by 2005 on almost all industrial products related to agriculture, such as tractors and pesticides. Furthermore, China is required to significantly reduce its nontariff measures and eliminate all quotas, tendering, and import licensing on nonfarm merchandise by no later than 2005. This is certain to have dynamic effects on income and structural adjustment that will benefit agriculture. Together with its other commitments outside the agricultural sector—such as changes in rules on foreign direct investment, the establishment of wholly owned import and export firms, and the liberalization of rules in the distribution and logistics sector—China’s agricultural commitments make its WTO terms uniquely progressive among developing countries and place it in front of the pack in terms of agricultural trade regime liberalization.

China’s WTO Track Record

China earned generally good grades for its first year and a half of WTO membership, though there was room for improvement. This section examines China’s WTO record as an importer and exporter. Because world agricultural commodity prices are more volatile than many other

tradables, China's performance in this regard over such a short time frame must be judged carefully. Short-term price shifts can mask changes in trade that would be seen under normal supply and demand conditions (e.g., unaffected by weather). Shortly after China's accession, as it turns out, international prices for many agricultural commodities rose for reasons quite apart from China's trade policy. Hence it is difficult to assess whether the lack of increase in some commodity imports is due to market conditions or to remaining trade barriers. It is correspondingly hard to know (yet) how China would have behaved had international prices been such that there was a large gap between China's domestic price (high) and the world market price (low). Table 4.3 summarizes the market context for selected commodities.

Soybeans and edible oils have continued to be major winners for foreign shippers in China's agricultural trade during the post-WTO accession period, despite the recent use of nontariff barriers (table 4.3, column 2). According to China's WTO commitments, soybean tariffs would fall to 3 percent and any trading firm could have the right to import. Soybean oil is subject to a TRQ until 2005. While soybean imports increased significantly in 2003—to nearly 20 million metric tons (MMT)—some importers claim that inappropriate means are being used to restrict such imports, principally the use of sanitary and phytosanitary rules and spurious licensing requirements. It is also possible that China's assessment of a value-added tax (VAT) on imports is keeping out even greater volumes of soybeans. Since China does not assess a VAT on its own farm-level procurement of soybeans (or on any other agricultural staple commodity), taxes on imports at a different rate than on the domestic product may well violate the obligation to provide "national treatment" to imports aside from admissible tariffs and other permitted barriers (such as safeguards and standard measures).

China's differential application of the VAT regime is potentially a serious WTO problem. Rozelle (2003a) and Gale and Hansen (2003) document these practices through careful interview and survey work in China, and based on comparison with international prices. Surprisingly, however, the practices have received little scrutiny from trade officials in other nations, presumably because they have been preoccupied with other trade issues and because the task of challenging tax policies with trade implications is daunting.

Maize trade patterns 18 months after China joined the WTO probably deviated most from those expected prior to the agreement (table 4.3, column 3). Prior to WTO accession, China's domestic maize prices were more than 30 percent above the world price. Many observers therefore expected maize imports to fill a TRQ of around 5 MMT. At the very least, with export subsidies eliminated, China's maize exports were expected to end. In fact, with rising international prices and differential application of the VAT at the border, maize imports have been unprofitable. Prices for inter-

Table 4.3 China's 18-month post-WTO accession agricultural trade record in selected commodities

	Soybeans	Maize	Wheat	Sugar	Dairy	Horticulture and livestock
WTO commitment	Soybeans: tariff cuts (to 3 percent); Edible oils: TRQ (6.81 MMT in 2004)	TRQ (7.2 MMT in 2004)	TRQ (9.64 MMT in 2004)	TRQ (1.95 MMT in 2004)	Tariff only (10–12 percent by 2004)	Tariff only (10–15 percent by 2004)
18-month record	Rapidly rising imports	Continued and expanded exports	Low level of imports, but mainly due to terms of trade	Imports fall, probably due to domestic output increase; TRQ does not fill, but government not allocating import quotas to firms that still want them; world price may be too high, since China can still protect up to 33 percent	Rising levels of imports	Some imports of high-quality commodities; exports continue but increase only in early 2003 and at a lower rate than before WTO accession
Indications of policy	Potential to use SPS measures due to genetic modification issues; also, VAT reduces volume	Continued use of export subsidies	Accusations that TRQ implementation reduced imports, but not likely	TRQs working, but reports of problems in quota allocation	Imports by traders as needed	New SPS regulations used by Japan and Korea keep exports down

TRQ = tariff rate quotas

MMT = millions of metric tons

SPS = sanitary and phytosanitary rules

VAT = value-added tax

Source: Authors' research.

nal maize shipments headed for Guangzhou (from Dalian) remained above those headed for Korea, indicating that China has continued to subsidize maize exports during the postaccession period. Thus, through export subsidies and higher international prices, China not only did not import maize but also expanded exports in 2002 to a record high of more than 10 MMT. Rising prices in China at the end of 2003, however, have induced leaders to announce a complete elimination of maize subsidies.

Like maize, other crops managed by TRQs have a questionable record. Wheat imports were down during the first 18 months after China joined the WTO. During the first several months this was because the TRQ administration system had not been implemented,⁴ but subsequently it was most likely due to high international prices (except during the first several months after accession). Cotton imports were low during the first year, but China's raw cotton imports doubled in 2002 and grew even faster in 2003, with the US share of that market increasing. Observers in cotton-growing nations (including the United States) blame the TRQ administration system for limiting imports, although the US Grains Council argues to the contrary (Rozelle 2003a). Even though some of the ways that China has implemented the TRQs appear to contravene its accession agreement, the US Grains Council claims that TRQ management generally did not keep out agricultural commodities when the price differentials between the world and China's domestic market justified importing. While TRQs for wool have not been filled, Chinese imports of this commodity have still risen steadily.

Sugar is another case where the TRQ system may not be working as intended, undermining both domestic and foreign sugar interests in China. Chinese sugar imports were down more than 40 percent from January through July 2003. Sources in China say higher prices orchestrated by government policies⁵ to reverse several years of price weakness induced China's farmers to produce more for 2003, causing output to increase to a record level of 10.2 MMT by September as compared to output of 9 MMT in 2002 up to the same month. As a result, only 410,000 tons of sugar was

4. Examination of the gap between China's domestic price and the international price in early 2002 suggests that imports most likely would have been profitable, but importers could not take advantage of the trading opportunities because the TRQ administration system was not implemented until late spring. China claims it could not implement the TRQ system in early January as stipulated in the agreement because it did not join the WTO until December 2001. A report by the US Government Accounting Office (GAO) concurs with this explanation and does not cite negligent behavior.

5. This is according to Beijing Orient Agribusiness Consulting, a firm tied to the Ministry of Agriculture, as reported in the *Shanghai Daily* on June 5, 2003. Since the in-quota tariff in China is 20 percent, and in the case of sugar a 13 percent VAT is probably WTO-consistent, the world market price has to fall to more than 33 percent below China's price before private traders would have an incentive to bring in sugar. At times during 2003, the price gap was not that wide.

imported against a quota of 1.95 MMT for 2003 (as of July). It is difficult to say how much this is a result of world prices that are high relative to China's prices. China's domestic sugar prices tend to settle just below the world price minus the border tax differential, regardless of domestic costs of production—that is, there is no real competition. But while the TRQ system does not require certain import volumes, it is supposed to fairly and transparently administer the distribution of quota rights, including distribution to the private sector. China's sugar quota rights, 30 percent of which are to go to the private sector, are not being used up. Moreover, some private firms requesting an allocation of the unused quota have been denied access to it. That is a WTO problem, regardless of the relationship between world prices and China's domestic prices.

It is also a problem for the welfare of China's public. Fair access to TRQ import rights would permit the market mechanism to show whether it is economical to import into China, instead of leaving the answer to regulators who are often biased toward state-owned firms in the market. Sugar is a crop with little strategic or food security significance for China, making it a candidate to distract from all of China's laudable efforts to adjust to WTO rules just because its quotas are not distributed fairly. Some sugar producers in China might benefit from this situation, but they are contributing few new jobs or tax revenues. New jobs are created by China's booming food processing industry, which is a consumer of sugar. A more competitive sugar market characterized by fair administration of quotas or, better yet, by elimination of quotas and establishment of a more open market in this commodity—which is not well suited to China's comparative advantage anyway—would likely create more exports, jobs, and tax revenues. Even the world's most competitive sugar producers, Thailand and Brazil, must provide subsidies to producers because the global sugar industry is so distorted. Inducing growth in sugar production in China at the cost of precious tax dollars and lost efficiency for both commercial and individual consumers is not only a losing economic game for China⁶ but also detrimental to the country's already troubled environment, since inefficient sugar farming can be environmentally hazardous.

For commodities not subject to TRQ administration, cuts in tariffs and improved market access to international markets have generally been positive for China in the aggregate. Sharp reductions in tariffs on milk powder and butterfats, for example, have spurred imports. Interestingly, while higher imports of dairy products have helped firms that use these commodities as inputs, total domestic demand for dairy products is increasing so steeply that local producers feel little pain. The record is

6. See Beghin and Aksoy (2003, 3) for an assessment of what liberalization would mean for global trade in a number of commodities, including sugar.

more mixed, however, for imports of fruits, nuts, vegetables, and livestock products. For example, walnut imports reached an all-time high in 2002, and the process for bringing in boxed fruit from the United States and other countries also made it easier to import such commodities. However, rising complaints about China's increasing use of sanitary and phytosanitary rules echo frustrations in trying to expand the exports of certain types of meat products. Some claim that while the total quantity of horticulture and livestock imports is about the same, the main difference between preaccession and postaccession trade in these products is that sanitary and phytosanitary rules have replaced quantitative restrictions. In fact, China Customs Statistics reports an increase in the aggregate value of imports of all fruits, vegetables, meats, and processed goods during the first 18 months that China was a member of the WTO.

China's record since joining the WTO on imports of agricultural inputs such as farm chemicals has been more positive, according to quantitative analysis and interviews with firms that import, distribute, and manufacture these products. While TRQs for phosphate- and potassium-based fertilizers have not been filled, imports of some commodities have risen. Farmers also have benefited from higher imports and the downward pressure of prices that has accompanied rising availability (Qiao et al. 2003). Changes in the trade environment for agricultural pesticides are even more dramatic. Interviews during the 1990s with farmers, domestic manufacturers, and officials from multinational firms either in joint ventures or running wholly owned subsidiaries found a shortage of foreign-made pesticides and raw chemical ingredients for producing higher-quality pesticides. Distribution constraints limited the reach of these products and dampened demand. Today, foreign firms report fewer barriers to importing pesticides. Trading rights and distribution-sector regulations still impede foreign imports and sales, but these issues are covered by new WTO obligations scheduled to start in December 2004 and early 2005.⁷

Turning to the fortunes of China's exporters, some barriers have gone up since the nation's accession to the WTO. After rising 10 percent annually from the mid-1990s onward, horticultural exports actually stagnated in 2002. China's WTO negotiators had raised farmers' hopes of increased access to East Asian horticulture markets. Instead, China's exporters have found they face new rules and regulations (not caused by the WTO, but despite it). Sanitary and phytosanitary rules are proliferating in China's export markets, notably in Japan, Korea, and the European Union. Livestock exports also face increasingly strict regulations. However, during the first six months of 2003, exporters apparently began learning how to deal with the new rules governing trade. Exports of livestock products, fish, and horticultural commodities rebounded, rising between 5 and 10

7. See Rosen (1999) for a discussion of the important relationship between distribution sector rights and Chinese imports.

percent from the level of imports in the first six months of 2002, according to China Customs Statistics.

WTO Effects on Farmers

Policies that maximize welfare in the aggregate but exacerbate pockets of poverty and inequality beyond manageable levels are untenable. If the consequences of its reform include unsustainable inequalities that cannot be mitigated, then China will not fulfill existing policy commitments or subscribe to new ones. Past policy improved livelihoods for all income groups in absolute terms, thus enabling China to take on further commitments by joining the WTO. The same necessity exists going forward. Ensuring equitable distribution of the positive welfare effects from WTO commitments will determine whether China can undertake deeper agriculture-sector reform.

The impact on households of WTO-related changes in China can be analyzed and forecast using an approach that takes into account that farmers shift resources from activities hurt by trade reforms to those favored by it.⁸ Appendix A provides a more thorough description of the model employed here.

Both production and consumption are affected as China implements its WTO commitments. Using the analysis model, agricultural output values for the median income group five years after China implements its WTO commitment are projected to rise about 10 yuan per capita, equal to 0.6 percent of per capita income. During the same period, expenditures fall just 0.1 percent—a rate lower than the production increase. The net effect on the average farming household is small and stays that way at least through 2010. Gains from trade policy reforms in competitive sectors (especially for exportables such as livestock, fish, vegetables, and rice) and declines in uncompetitive sectors (e.g., maize and sugar crops) also offset one another in the aggregate. The median farm household gains only 40 yuan (a 2.5 percent income rise) by year 10 (2012). The model suggests that WTO reforms induce Chinese agricultural production to rise even as average prices fall. Prices for competitive crops increase, uncompetitive crop prices decline as lower world-priced products flow in, and Chinese farmers shift activities accordingly. At the end of the WTO tran-

8. The approach builds on previous use of the China Agricultural Policy Simulation Model (CAPSiM), a partial equilibrium framework employed in a number of other studies (e.g., Huang and Chen 1999). However, the analysis for this chapter makes one major change to the typical approach used for macro-policy analysis. The data are disaggregated into 33 groups based on 11 income categories in three regions of China. The aim of this new approach is to illustrate several key features of how poor households respond to trade policy shifts and why they may benefit less than richer households. For details on the CAPSiM methodology, see appendix A and Huang, Li, and Rozelle (2003).

sition period, actual agricultural output has risen thanks to structural adjustment. As long as farm households are able to respond to shifting price signals—which means they need both good information and, perhaps most importantly, access to finance to make necessary investments—structural adjustment can proceed and will help minimize detrimental income effects from China’s WTO commitments.

Not all farm households benefit equally from China’s WTO accession, however. Results suggest that in 2005 and 2010, eastern and central farmers in both median and poorer income categories increase their output from 20 to 100 percent more than western farmers. In terms of absolute (rather than relative) gains, higher-income groups do better in all regions of China. Two factors explain this superior gain. First, wealthier farmers already sow more of the crops affected by the reforms that contribute to China’s rising terms of trade. Hence they are poised to benefit disproportionately from further opening in the same direction. Second, wealthier groups tend to have land that supports higher yields for the same crops involved in terms-of-trade gains. The share of competitive crops (those with a domestic price below the international price) sown by the richest coastal farmers (74 percent) is more than twice the percentage sown by the poorest western farmers (36 percent). When these sown area shares are coupled with yields (e.g., coastal rice yields are more than 20 percent higher than those in western areas), the sources of the advantages are clear.

Although there are concerns about the impact of an increasingly open economy on China’s poor farmers, there are still more reasons to be optimistic. The rural poor do not benefit as much as the rich, but their output still rises. Expenditures on their production fall only slightly after 10 years of reform (less than 1 percent). Incorporating dynamic effects of the WTO beyond the agricultural sector also brightens the outlook. Workers gain access to employment in the rural industrial sector stoked by WTO, and impoverished former farmers make up a large part of the migrant workforce drawn by urban industrial and services-sector opportunities. Rural residents, as consumers, benefit from lower prices. The so-called Engel coefficient, which reflects how much disposable income people must spend on food, has improved markedly for rural dwellers in recent years, and with lower average prices partly brought about by WTO accession this trend will continue. Finally, all producers, including those in poor areas, benefit from lower fertilizer prices. Even without these offsetting gains of higher wages and cheaper consumer goods and inputs, annual losses due to WTO-induced competition only average about 50 yuan per household.

Allowable Domestic Supports

While losing 50 yuan would hurt poor maize farmers in central China as well as farm households in the northeast, that could be offset by a policy

that compensates the farmers by that same amount annually for the first several years after China's accession to the WTO. This could be achieved, for example, through direct payments or through policies that eliminate tuition and school fees. In either case, the support would more than offset the WTO's negative consequences, and China could probably afford it, despite its large number of farmers.⁹

Hence, as China begins to make decisions about how to manage its agricultural sector as a WTO member, the country in fact has many options. Although China accepted an 8.5 percent cap on the use of domestic support, it does not need nearly that much to offset the negative effects of its WTO commitments, since those effects are fairly small and concentrated on small groups of farmers. Instead, China has an opportunity to spend its allowable domestic support on such initiatives as research and development and water management, which will increase the competitiveness of the economy for years to come. From this perspective, China can fulfill its obligations and still have room to make more concessions if it feels it can gain in other parts of both its agricultural agreement and its overall WTO agreement outside of agriculture.

In fact, officials in Anhui and Jilin provinces have begun to experiment with direct subsidies to farm households. These provinces were chosen because of their high levels of production of maize and cotton, two crops most affected by the nation's WTO accession. The pilot program provides 10 yuan per mu (or 150 yuan per hectare) to farmers in areas that had been marketing large volumes of grain and cotton in past years. The subsidies are direct and untied, and the payments are made directly to households and not contingent on cultivating or marketing grain or fiber crops. If expanded, such a program would be more than sufficient to offset most if not all of the adverse effects of China's WTO accession agreement.

9. The current per-cow subsidy of \$900 in the European Union would be enough to provide an offsetting domestic support of 50 yuan in China for 149 households. See Rick Lazio's op-ed article entitled "Some Trade Barriers Won't Fall," *New York Times*, August 9, 2003, A11.

Where Will China's Future Interests Take It?

China's extensive reforms in agriculture both before and since its accession to the World Trade Organization have moved the country in the direction of its comparative advantage. This means the reforms are likely to be not only economically sound but also politically sustainable. China can remain WTO-legal while addressing poverty and distributional inequalities. Several essential questions remain regarding the future, however.

First, although economic analysis suggests that China's aggregate agricultural interests are enhanced by maintaining its current trade liberalization trajectory, do policymakers share this conviction? In other words, does China know what is good for it? Second, will successful negotiation of the current agenda of new WTO agriculture talks in the Doha Round serve China's interests as has the country's past liberalization?

Third, assuming Chinese policymakers understand their country's interests, do they have the political flexibility necessary to align policy with these interests by embracing further reforms, or by championing reciprocal market access among developing nations?

Finally, what are the near-term contentious issues both from China's perspective and from the perspective of those outside China looking in? Can these issues be managed to permit a broad consensus of interests toward greater liberalization?

Awareness of Interests

Twenty years of growth based on a foundation of early agricultural policy reform have proven that change can be beneficial. Still, the process of

calculating China's national interests is imperfect. The nation's current agricultural policy reflects a combination of consultation between growers and governors, ideological zeal, vested bureaucratic interests, and debate over the appropriate institutional role the state should play in food policy.

China is just starting to look at its agricultural interests through the lens of economic modeling. In 1990, there were only a handful of people in China with doctoral-level training in agricultural economics. Human capital in policy analysis was so rare that it was nearly impossible to publish papers based on modern economic theory and methods in Chinese journals. Since then, thousands of students have received advanced degrees from domestic institutions and scores have returned from master's and Ph.D. degree programs in North America, Europe, Australia, and Asia. Today, China's agricultural economists teach their own quality Ph.D. students, participate in international associations and conferences, and regularly publish in international, peer-reviewed academic journals.

Several think tanks have emerged and are creating modeling frameworks that can be used to perform ex-ante policy analysis of the scenarios debated by policymakers. The State Council's Development Research Center has a general equilibrium model that has been used to forecast policy outcomes. The Center for Chinese Agricultural Policy of the Chinese Academy of Sciences has a detailed model that can analyze linkages between agricultural output, yields, sown area, rural incomes and employment, and key policy instruments such as investment in research and development, water control, market development, and the environment. Economists from the Chinese Academy of Agricultural Sciences, the Chinese Academy of Social Sciences, the agricultural university system, and elsewhere are able to use increasingly sophisticated theory and analytical tools to study questions of trade liberalization and the interaction of external economic deregulation and domestic policy shifts.

As a result, senior leaders increasingly know better than ever before the direction that economic policy needs to take. As questions become more complex, more predictive tools emerge that are being used with increasing success. There is evidence in China of action based on such research. For example, in mid-2003 the research community sent a number of policy briefs based on sophisticated economic analysis directly to Premier Wen Jiabao's office. These briefs presented arguments on current issues of concern based on quantitative research and policy options. Scholars in China are being told that their briefs are being used as the basis for new policy directives. This is a new and exciting phenomenon in China's agricultural policymaking and portends further policy reform.

The WTO Agriculture Agenda and China's Interests

As has been stated throughout this study, China has an interest in seeing a successful WTO Doha Round negotiation on agricultural trade. China's reforms over the past 25 years have laid a solid foundation for further reform and marketization. The current state of reform and implementation of WTO accession commitments reflect a great degree of structural adjustment both within the agricultural sector and between agriculture and other sectors. The result has been superior productivity growth and income effects. These successes make the case for reform powerful and broadly shared, and make it politically and socially feasible to continue the reform process.

The current WTO agricultural agenda is centered on the pillars of market access, reducing export subsidies, and reducing trade-distorting domestic supports. In each of these areas, China's existing WTO obligations generally put it ahead of other developing members (and many industrial economies) in terms of reform. This means that further liberalization will disproportionately benefit China. On market access, China's bound and applied tariffs are lower than those of most other nations. China has supported modalities for tariff negotiation that would cut tariff peaks more deeply, though it fell back from that position somewhat in trying to work with the Group of 20 at Cancún. Tariff rate quotas (TRQ) are the key transitional nontariff barrier to market access, and here China agreed to new disciplines on administration of its TRQ system that other poorer nations have not taken on. The United States has proposed extending these disciplines to all WTO members, which is in China's interest as well.

On export subsidies, China's position is clearly in favor of further multilateral reduction. After all, it committed to eliminate its own export subsidies entirely as part of its agreement to join the WTO. While China does not appear to have eliminated all of those subsidies just yet, especially those for corn, the work that remains is essentially mopping up, and the commitments are in place and actionable.

On domestic supports, China is also in a position to support a liberal outcome to current WTO talks. Although in its WTO agreement China secured the right to use subsidies of up to 8.5 percent of the gross value of agricultural output accession (less than the 10 percent accorded other developing countries), this is far more than it currently uses. So China can expand domestic supports if it wishes while remaining WTO-consistent, and at the same time advocate a lower cap for developed and developing members.

There are, of course, many complex subissues to each of these pillars that require extensive negotiation. But an analysis of China's interests, including the informal positions put forward by Chinese agriculture

negotiators in Doha talks thus far, make it clear where China's interests lie. China has taken a self-interested position on special and differential treatment, asking that newly acceded members be granted exemption from new commitments. This is largely rhetorical. In WTO talks on non-agricultural issues, China has already stepped back from this blanket demand. WTO Agriculture Committee Chair Stuart Harbinson proposed a marginally longer period (two more years) for new members to phase in new commitments, a proposal retained in principle in the Derbez text used in Cancún negotiations.

Finally, some preliminary modeling using the China Agricultural Policy Simulation Model (CAPSiM; see appendix A) and a world agricultural trade model developed and run by the research team at Wageningen University have yielded projections as to how China would benefit from a strong Doha Round outcome on agriculture. The results suggest that there should be little surprise if China's leaders begin to push for agricultural trade liberalization. The model shows that China's overall welfare rises when the entire world cuts tariffs proportionally, and that Chinese exports, on average, expand more than imports. In general, China benefits more in welfare terms than almost any other nation in the world, primarily because it begins with average tariffs that already are the lowest, so it gives up less and gains more when there are proportional cuts.

Political Economy of China's Agricultural Policy

China is in transition, with policymakers and technocrats well aware of macroeconomic priorities, and with growing evidence of reform taking an empirically driven course. On the other hand, there remain senior officials in government who take a more traditional stance less informed by tools designed to maximize economic welfare.

In the run-up to WTO accession, the senior officials responsible for negotiating China's terms and conditions hailed from the Ministry of Foreign Trade. Their negotiating responsibilities included, in the final stages, agriculture. The far-reaching commitments they made—including commitments that few if any other developing members were bound by—were then handed back to the Ministry of Agriculture for implementation. Not surprisingly, this led to some friction between bureaucracies. Agriculture ministry staff, having been left out of negotiations on final agreements, felt the Ministry of Foreign Trade should be more responsible for the outcome.

The first 18 months of WTO implementation thus saw internecine struggles between bureaucracies to sort out these responsibilities. The newly ascended premier of China's State Council, Wen Jiabao, served previously as the vice councilor with responsibility for agriculture. As

premier, Wen has pushed for greater cooperation between the various entities collectively responsible for both the design and implementation of agricultural policy. Some reports had it that he became impatient with the bureaucratic infighting that was impeding policy reform and WTO implementation. Document No. 1 issued in 2004 by the Central Committee of the Communist Party of China (CCCCP) reflects this impatience. In the most direct language ever, the leadership stated that farmers are an important part of Chinese society and should be able to enjoy their full range of rights as citizens.

But authority is still fragmented. Quarantine and quality supervision are the purview of the China Inspection and Quarantine Bureau; the Ministry of Agriculture holds the mandate to manage the lion's share of policy and implementation issues; the Ministry of Commerce (the restructured Ministry of Foreign Trade and Economic Cooperation) deals with such important issues on the negotiating agenda as technical barriers to trade (TBT) and sanitary and phytosanitary (SPS) rules. Meanwhile, more strategic policy formation takes place in commissions and bureaus that are a level above the line ministries. Interviews with Chinese officials in June and July 2003, along with a review of official government editorials and notices, suggest that efforts are being made to improve the quality of government performance in the sector.

One important sign of change and bureaucratic divergence came in July 2003 with the release of guidelines encouraging foreign investment in high-technology sectors. General guidelines on foreign investment issued in March 2002 had followed standing practice in China: ministries submitted recommendations to the Planning and Economic Commission as to areas where foreign investment should be either encouraged or excluded, and the Ministry of Commerce then incorporated these recommendations and put out the guidelines. The high-tech guidelines issued in 2003, however, came from the Ministry of Commerce and the Ministry of Science and Technology. In contrast to the previous guidelines, these explicitly invited foreigners to invest in cutting-edge transgenic product development, a major departure from the conservative attitude of the Ministry of Agriculture to keep foreign interests at bay.

An important component of policymaking in a market economy is formal and informal consultation between government and industry, including industry associations. China as yet has little effective consultation with industry, still less of it formal (mandated), and practically none with the private sector. Foreign embassy officials in China report being asked by private Chinese firms to raise issues with the government, for lack of a better way to communicate them. This should be an important part of the political economy of agricultural trade policy development. In China it is not—at least not yet. Firms with commercial interests can be a valuable asset for analysis and information, and China's government will want to take greater advantage of this asset in the future. This is already

starting to happen in industrial sectors, and one can expect within a few years for it to work its way into the agricultural sector as well.

Managing Contentious Issues

Both China and its trading partners have laundry lists of contentions over agricultural trade and investment. Discussions with Chinese officials and scholars find them earnestly dismayed over new TBT and SPS barriers to Chinese agricultural exports that are popping up to replace tariffs, and quantitative restrictions on China's produce held to most favored nation (MFN) status levels by WTO disciplines. These trade barriers must be argued on their merits under current WTO rules, and it will be difficult for China to prevent overzealous use of these tools. Being one of the biggest victims of the misuse of barriers should impel China to improve disciplines on TBT and SPS rules through WTO Doha negotiations.¹ However, even a rather progressive WTO outcome on TBT and SPS issues would leave China's agricultural exporters exposed, because the weak link in their value chain is in processing, distribution, and handling, areas where TBT and SPS trade barriers tend to creep in. Domestic and foreign firms, international financial organizations such as the International Finance Corporation, and China's government itself are investing to upgrade this segment of the nation's agriculture, which could ameliorate this set of problems somewhat over time.

Another of China's complaints over trade regards the use of nonmarket economy methodologies to determine whether China's exports are being sold below market price, or being "dumped," as the expression goes.

China agreed as part of its accession to the WTO that it could be defined as a nonmarket economy for a period of time. However, China argues that in many cases a nonmarket economy method is now unreasonable and should be rejected for many industries where it now has competitive and unfettered markets.² Some countries cling to the right to use nonmarket economy calculations in order to inflate dumping margins for products where they are not appropriate. Others, including important potential partners on the WTO agenda, are willing to restrain abuse of nonmarket economy rules where there is a solid empirical basis to do so—regardless of whether China's WTO terms entitle them to it. Lardy (2002,

1. Keep in mind that negotiation of these issues falls to the more proliberalization Ministry of Commerce, which represents China on the WTO Trade Committee, rather than the more conservative Ministry of Agriculture, which represents the nation in WTO agriculture negotiations.

2. See chapter 4 regarding market integration and price rationalization in most of China's commodity markets, although not, notably, for foreign c.i.f. (cost, insurance, and freight) prices for maize.

173, 230) notes that the European Union and Australia, important agriculture traders, have decided to apply nonmarket economy terms on a case-by-case basis in investigations of China's dumping.

From the outside looking into China, there also is a thick dossier of trade friction over agriculture. China has generally reduced but not eliminated TBT and SPS barriers to imports, as proscribed by its WTO commitments. It has eliminated export subsidies for most but not all domestic products, which it also is required to do. It has generally improved administration of a new TRQ regime, but continues to apply it ineffectively in some commodity areas, with the effect of denying some benefits expected by foreign interests.

Despite these lingering issues, all in all, the volume of many agricultural product imports is up significantly since China joined the WTO, and the areas where heated disputes continue seem to make up a shorter and shorter "negative list" of problem areas. It remains to be seen whether specific nonagricultural rules on domestic distribution and foreign trading rights—scheduled for full implementation by the end of 2004—will be contentious. In terms of these general commitments, most observers have been guardedly positive about China's performance. There is no reason at this time to expect that these trade and distribution issues will severely impede cooperation in the medium term, though implementation will likely be spotty and problematic, and no doubt there will be tough talk and heated disputes along the way.

Another set of issues concerns foreign investment in China's agricultural sector, not least investment in biotechnology. Part of the reason China has been hesitant to permit foreign involvement in biotech in the past is that international standards for crops that incorporate such technology are some way off. Beijing does not want key markets (including Japan and Europe) foreclosed to China's exporters as a result of embracing foreign investment from firms that employ those technologies. Regardless of whatever virtues or sins can be attributed to bioengineered foods, the fact is that China has already made a decision in its own domestic research initiatives to pursue such technology. Even in the short term, it appears likely that underlying mutual interests will mitigate frictions between China and countries promoting bioengineering. One sign of progress on biotech issues came in the summer of 2003, when the government lifted many of the limitations on investment in agricultural biotechnology research and encouraged investments in this area.

Conclusions

Years of agricultural reforms in China, both before and since the country joined the World Trade Organization in 2001, have laid the policy foundation for today's agricultural sector. The overall economic "shock" to China's farmers from the reform process has been modest, and all indications are that ongoing reforms can be addressed within the legal framework of China's WTO commitments. As this study has shown, China could quite easily provide subsidies to offset the downside income effect—estimated to average about 50 yuan per farming household—from a more competitive agricultural sector. Such a subsidy would be comfortably within the domestic subsidy limit of 8.5 percent of output value, which is part of China's WTO obligation.

Meanwhile, China's ongoing structural adjustments have brought and could well continue to bring any number of other benefits, including new rural industrial jobs, urban employment for rural migrants, lower agricultural input costs, and cheaper food prices. In sum, the challenge of absorbing the costs of existing agricultural commitments and reforms in no way impedes China from pursuing further reform.

Like many nations, China has plenty of broad and narrow disputes to manage with its trading partners. Consider, however, that for years the United States had the largest number of trade disputes with Canada—a sign not of trouble but rather of the fact that the United States and Canada traded a lot. China has so many commitments to implement in the agricultural sector, and needs so much institution building in order to do so, that a tangle of disputes is to be expected in the years to come. However, early implementation has been handled fairly well. Imports have increased significantly in many commodity areas, and markets are evolving in such a

way that competition is on the rise. China's interests in reducing foreign trade barriers as an exporter and in investing in research and development as a domestic producer are aligned with proliberalization foreign interests in such a way as to permit healthy management of disputes over time.

On the whole, China is taking a flexible posture in WTO trade talks, both in terms of what it says and does not say about reforms needed to make a good deal, and such issues as the exemption sought for newly acceded WTO members. Chinese agricultural officials frankly note they take a cautious and general position on many issues because China needs to learn more about the process of participating in WTO talks. They prefer that leading members such as the G-4 or Quad countries put more on the table before they set out detailed positions of their own.

Importantly, however, one need not assume that China lacks the ability to take far bolder positions based on a careful calculation of Chinese interests in this sector. In talks for a China-Thailand free trade agreement, for example, China bucked the Asian trend and first negotiated mutual agricultural trade liberalization prior to trade in industrial goods. This demonstrated penchant for early agricultural trade reform, which indicates that China could eventually be a WTO leader rather than follower, is being driven by the new economic modeling expertise increasingly available in Beijing, the trend toward direct input to high-level State Council officials (including the premier's office) from protrade agricultural policy think tanks, and an awareness among the leaders themselves of the benefits of domestic and international agricultural trade liberalization.

The most significant constraints to China exercising its comparative advantage in foreign trade lie in trade barriers that negotiators from China's Ministry of Commerce deal with at the WTO Trade Committee. These are outside the purview of the Ministry of Agriculture, which prepared the list of China's WTO agricultural positions summarized in this study. China alone cannot connect the dots between technical barriers to trade (TBT) and sanitary and phytosanitary (SPS) rules in the Trade Committee and market access for its promising horticultural and other higher value-added agricultural products. Such a connection will require China to contribute more intensely to a coalition-building process within the WTO. But few countries are in such a position as China is to add new weight to the effort. It is not surprising then that all WTO camps with an interest in agriculture are lobbying for Chinese sympathies.

Increasingly, China knows where its interests lie. The value of those interests is large and growing. In many aspects of agricultural trade liberalization, China has already moved proactively ahead of the pack, so it has less and less to lose by joining the partisan process of building protrade blocks. This is indicative of China's broader trend toward integrating more deeply into world trade policymaking. Historically reluctant to take such a leading role, China is being pulled more strongly in this direction as its domestic adjustments churn ahead. Increasingly, the question

is not whether but when and with what nuances China will advocate more open world trade in agriculture.

Learning from Mistakes

Analysis of China's agricultural policy and interests suggests that the country has learned not only from its own mistakes in the sector but from the mistakes of others. Market-friendly policies have helped dramatically improve the productivity of Chinese agriculture.

To take a step back, it is worth emphasizing that initial attempts at industrialization in the economic transition of other developing countries have involved taxing the agricultural sector to stimulate the urban industrial economy with cheaper and more plentiful food and incentives to move off the farm. Farmers are less organized to respond, and analytical capacity is not in place to make this transfer transparent. As nations become wealthier, the need for rural stability and equity, along with a perhaps wistful sympathy for the agrarian sector, often lead to a shift toward agricultural subsidies. By this point, urbanites generally have far higher incomes thanks to modernization and can absorb the costs of such policies. At the global level, however, such distortions impose a heavy cost and are ultimately borne most heavily by the poor whom they are intended to help.

At a time when many developed nations are struggling—through the WTO and otherwise—to disassemble the patchwork system of special agricultural interest subsidies created over half a century, it is imperative that China not create a new, huge, and inefficiently vested interest of its own. Agricultural production or market supports are now understood to be more efficient and economically viable alternatives to subsidies. For example, investments in better water management, environmental preservation or reclamation, research and development, credit for rural entrepreneurship, education, and other tools make far more sense than replicating the direct payment programs with which many advanced nations have saddled themselves (and poor farmers elsewhere). Since China as of this writing was still experimenting with a small pilot program of supports, it ultimately will have an opportunity to break this “tax-to-subsidization” pattern instead of moving toward a large-scale regime of formalized direct payments.

China and the United States

China's integration into the world trading system poses both opportunities and risks for the United States. The case of soybeans over the past several years shows the impact that China can have on the US farm sector. Purchases of US soybeans by Chinese soybean oil producers have made

that US crop relatively lucrative at a time when much of the US agricultural sector is mired in recession. US producers of almonds, high-quality meats, chicken part processors, and high-quality oranges, apples, and grapes have all steadily increased exports as trade restrictions between China and the United States have fallen. US corn and wheat exporters expect to someday ship large volumes of grains to China.

However, China's agricultural emergence also holds risks for some US producers. China produces all but a few of the many commodities that are specialty goods of California and other horticultural states. According to Chinese data on production costs, China's farmers can produce most labor-intensive crops at a fraction of the cost of California growers. For example, Chinese farmers can produce honey, apple juice, orange juice, garlic, peaches, table grapes, lower-quality apples, and many other fruits and vegetables at direct costs that are more than 50 percent less than the costs of California growers. Indeed, were it not for dumping protection—which may or may not be justified—many US producers of these and other goods would already be faced with an assault on their healthy profits. (US consumers, of course, would be saving money.)

With such a cost advantage, there are risks that Chinese products could become competitive in the United States and in other markets to which US growers ship, especially once the logistical end of marketing horticulture, livestock, and aquaculture products improves. Currently, China has a trading surplus in agricultural products with the United States, despite the surge in imports of soybeans in recent years. In addition, throughout the late 1990s, Chinese exports of horticulture and livestock products to Japan and Korea began to take away market share in countries that at one time were more or less exclusive customers of the United States. In short, one can expect to see increasing competition in the coming years, at first in third markets in Asia and ultimately in the United States itself.

Of course, as China's markets open there will be more opportunity for the United States to sell the goods it produces best to Chinese consumers. For example, although China is the country of origin of walnuts and its area of walnut orchards far surpasses that of the United States, California growers have been able to market their product in China by selling high-quality, pastry-type walnuts that are in increasing demand by the nation's emerging bakery industry. Most of China's walnuts are still low quality and many are used for cooking oil. China's industry is adapting and changing to meet this competition, but if California walnut growers continue to aggressively market their product, there is no reason why they cannot continue to maintain and expand their share of the high-end, premium market.

In sum, the US agricultural sector will face the same choices that US industry has faced. It must adjust to changing global competitiveness and continue evolving to find its niche. With a tremendous headstart in capi-

tal, technology, services know-how, economies of scope and scale, and experience in the global market, agricultural interests in the United States and other developed countries have an easier road before them than their impoverished Chinese counterparts starting from meager beginnings. The key is that these developed-country producers not defer adjustment behind an illusion that Chinese competition will not come to pass, or expend all their effort soliciting trade protection. China's economic modernization ought to be seen as a win-win situation for the United States in general terms, a validation of American market-oriented ideas, and the prelude to a deeper partnership on the world stage. On the whole, this should be true for US farmers as well. With their superior ability to adjust to opportunities, they should be among the biggest winners of all from China's rise.

Appendix A

The CAPSiM Model

The analytical framework used in this study—the China Agricultural Policy Simulation Model (CAPSiM)—is a sectorwide partial equilibrium model with consistently restricted matrices of demand and supply systems. This appendix describes how the model links with the household submodels that trace the implications of agricultural trade and trade-related reforms on various categories of households in different areas. It also examines the effects of various policies and external shocks on production and consumption of agricultural commodities at farm levels for each region.

The qualitative analysis of the impact of agricultural trade and related reforms on domestic food security uses an integrated analytical framework that links the national market with individual groups of farmers in each region. This framework includes three major components: a national partial equilibrium model, price transmission, and a household response model for various groups of farmers by region.

CAPSiM simulates the impact of various policy changes and external shocks to the national market on agricultural production, stock changes, consumption, trade, and agricultural prices. The policies that can be analyzed in this model include those for productivity-enhanced investments in such areas as agricultural research and irrigation (both are transferred into stock variables), environmental protection (e.g., erosion and salinity control), population control (e.g., rural-urban migration, urbanization, and family planning), macroeconomic issues (e.g., foreign exchange rate), and agricultural protection (e.g., tariff and nontariff distortion). Prices can be determined endogenously or exogenously. The impact of natural disasters and other exogenous shocks, which are introduced into the model exogenously, can also be simulated.

Figure A.1 CAPSiM overview of a given crop

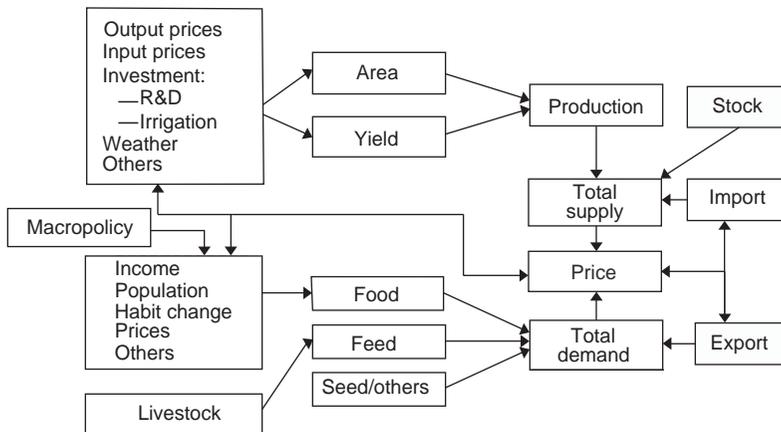


Figure A.1 provides an overview of a CAPSiM analysis of a given crop. Total supply for the crop is included in three submodels: import, stock change, and domestic production. Domestic production is modeled separately by area and yield equations, which are the function of output and input prices, supply shifters such as investment in research and development and irrigation, climate shocks, and erosion and salinity control. The total demand for each commodity includes export demand, demand for food and feed, seed use, industrial demand, and postharvest loss and loss in food marketing and processing. Food demand is determined by a completed demand system with imposition of adding up, homogeneity, and symmetric conditions on the demand elasticity matrix for both rural and urban. The impact of urbanization and food market development in rural areas is examined explicitly in the model. The feed demand sub-model for each crop automatically links with livestock and fisheries sub-models. The model structure for the livestock and fisheries sector for each commodity has a structure similar to the crop model. The equilibria for all commodities are solved simultaneously. The details of model specifications and the method to solve the equilibrium are presented below.

This study has measured the impact of WTO agricultural trade liberalization on household food production and consumption as a way of determining its broader impact on household food security. Ideally, the national impact derived from CAPSiM should be transmitted into the households in each region through a price transmission model and household supply and demand response models, as shown in figure A.2. However, studies of price transmission and household response (for each group of farmers in each region) are beyond the scope of this study. Although the current CAPSiM has developed modules for this type of

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