China's Accession to the WTO: What Is at Stake for Agricultural Markets?

Frank Fuller, John Beghin, Stéphane De Cara, Jacinto Fabiosa, Cheng Fang, and Holger Matthey

Working Paper 01-WP 276
June 2001

Center for Agricultural and Rural Development
Iowa State University
Ames, IA 50011-1070
www.card.iastate.edu

Frank Fuller is technical director of the Food and Agricultural Policy Research Institute (FAPRI), at the Center for Agricultural and Rural Development (CARD) and an adjunct assistant professor, Department of Economics, Iowa State University. John C. Beghin is a professor, Department of Economics; director of FAPRI; and head of the Trade and Agricultural Policy Division, CARD, Iowa State University. Stéphane De Cara is an international grain analyst at FAPRI. Jacinto Fabiosa is an international livestock analyst at FAPRI. Cheng Fang and Holger Matthey are international markets analysts at FAPRI, CARD, Iowa State University.

For questions or comments about the contents of this paper, please contact Frank Fuller, Iowa State University, 571 Heady Hall, Ames, IA 50011-1070; Ph: 515-294-0470; Fax: 515-294-6336; E-mail: ffuller@card.iastate.edu.

Abstract

We analyze the impact of China's accession to the World Trade Organization on major crop and livestock markets using the FAPRI modeling framework. We incorporate expected changes in consumer income, textile production, and trade policies as exogenous shocks to the baseline model. Following accession, revenues decline in China's livestock, grain, and oilseed industries, while cotton production prospers despite increased cotton imports. Chinese consumers benefit from lower food prices, with vegetable oil, dairy, and meat consumption increasing significantly. Argentina, Brazil, Canada, the European Union, and the United States are the greatest beneficiaries from expanded agricultural trade with China.

Key Words: accession, agricultural trade, China, policy analysis, simulation models, trade liberalization, World Trade Organization.

CHINA'S ACCESSION TO THE WTO: WHAT IS AT STAKE FOR AGRICULTURAL MARKETS?

Introduction

We analyze the impact of China's accession to the World Trade Organization (WTO) on agricultural and food markets based on the recent agreements China has signed with the United States, Canada, and the European Union (EU). We investigate the implications of accession on Chinese and world agricultural markets. Our analysis includes all major crops and the livestock and dairy sectors. We quantify the impact of the policy changes implied by accession in deviation from the 2001 FAPRI baseline (FAPRI 2001).

China's accession to the WTO has been investigated and debated for a long time (Anderson 1996, 1997). In the last two years China's accession has finally appeared to be imminent, and several recent papers have been written analyzing the specifics of accession for agriculture and food markets (Huang and Chen 1999a, 1999b; USDA-ERS; and Schmidhuber). Salient features differentiate our analysis of China's accession to the WTO from previous studies. First, our analysis is based on the more current data and additional policy information. We analyze actual policy changes agreed to by China in bilateral agreements with the United States, European Union, and Canada. Inclusion of the provisions of the EU and Canadian agreements in our analysis uncovers new and important implications for the oilseed sector. Second, we incorporate an expectation of growth in Chinese incomes and expansion of China's textile industry induced by accession to the WTO, two factors which have been omitted in other multimarket studies. Third, our product coverage, in excess of twenty agricultural and food commodities, is the largest of any study to our knowledge, unprecedented in the literature investigating China's integration in world agricultural markets. Our approach generates a multimarket

equilibrium that allows world markets and world prices to respond to Chinese policy changes and feed these effects back into Chinese markets.

Consistent with the intuitive consequences of relative land scarcity in China, our results suggest that China does not have a comparative advantage in feed crops and, hence, in livestock production. We find that the oilseed crushing, grain, and livestock sectors are negatively affected by accession. In the FAPRI baseline, China switches from a net exporter of corn to a net importer in 2005/06. Following accession, China's net exports of corn decline, forcing its switch to a net importer one year earlier, but the growth in corn imports is not sufficient to reach the tariff rate quota (TRQ) level. Likewise, wheat imports increase moderately and rice exports decrease following accession; however, all grains remain below their TRQ-binding levels. A combination of increases in food use and slight declines in production is responsible for the growth in grain imports. The reduction in domestic feed prices initially stimulates Chinese meat and dairy production. With full implementation of livestock tariff reductions, livestock product imports increase and bring competitive discipline to the domestic industry. Feed use in China declines in the latter half of the scenario despite the lower feed price because hog and poultry output decreases significantly.

Chinese consumers, especially in urban areas, benefit from accession because most food prices decrease. Per capita consumption of pork and poultry increases by 0.45 kilogram in 2010. Urban consumption of dairy products also increases noticeably. Vegetable oil consumption expands with accession, generating a corresponding increase in imports of soybean oil and rapeseed oil. The growth in soybean oil imports implied by our results is not nearly as large as the growth predicted by previous studies of accession, primarily because the latter did not include the liberalization of the other vegetable oil sectors (rapeseed, sunflower, peanut, and palm oils).

Fueled by an expansion of textile production, both imports and domestic production of cotton in China increase with accession. Cotton is a labor-intensive crop and China is relatively competitive in cotton production (Fang and Beghin). World markets are affected by China's accession to the WTO, but world prices of most commodities increase only moderately. The biggest effects occur in the cotton market, with prices

rising 11 percent in the last year of the simulation period. The increase in world agricultural trade induced by China's accession to the WTO benefits major oilseed exporters (Argentina, Brazil, and the United States) and major pork and poultry exporters (Canada, the European Union, the United States, and Brazil).

In the next section we review important results from the literature on China's trade integration in agricultural and food markets. We follow this discussion with a presentation of the policy changes implied by bilateral agreements China has signed with the United States, Canada, and the European Union. These agreements form the basis of our accession scenario. Next, we describe the major assumptions underlying our modeling approach and discuss the major findings coming out of the scenario simulations. To conclude, we reflect on the implications of WTO accession for China and for major trade partners in world markets.

Literature on China's Accession to the WTO

Recent investigations that are most relevant to our analysis are Huang and Chen, USDA-ERS, and Schmidhuber. Huang and Chen analyze two reform scenarios in deviation from a baseline. They contemplate full trade liberalization by 2005 and then the same liberalization scenario along with productivity gains enhanced by infrastructure investment. The policy reforms are phased in over five years, and the analysis covers 14 commodities. According to Huang and Chen, China is projected to become a major grain importer. Net grain imports in 2005 rise by 60 million metric tons (mmt) following liberalization, of which about 40 mmt are corn imports! These figures represent real import surges.

Using the same assumptions as their second scenario, the authors extend their projection horizon to 2020 and find that wheat imports decrease relative to corn and that China eventually becomes nearly self-sufficient in wheat. China also becomes a major exporter of pork and poultry, which induces corn to become China's largest grain import. Huang and Chen's livestock results are driven by their expectation that domestic meat prices in China would rise to world levels while feed prices would drop, therefore stimulating livestock product supply. Rice, horticulture, and livestock producers gain

from liberalization, while other agricultural sectors lose. In 2005, China's self-sufficiency in wheat, rice, corn, and soybeans falls from 95.9 percent under the baseline to 88.4 percent under free trade, essentially driven by wheat and corn imports. By 2010, self-sufficiency improves slightly to about 90 percent.

USDA-ERS provides an interesting assessment of China's accession to the WTO based on its 2000 baseline projections. Their study does not provide detailed information about impacts on livestock and cotton, nor does it consider trade liberalization in rapeseed and rapeseed product markets. The USDA study is bullish on Chinese import growth, estimating that all crop TRQs except corn would bind. Our findings do not support this result. USDA-ERS also projects a substantial increase in soybean oil imports above the TRQ, nearly doubling China's soybean oil import value from $455 million to $803 million in 2009.

In contrast, Schmidhuber provides a pessimistic assessment of China's accession to the WTO. He believes that China's food industry is inefficient beyond the farmgate. Trade liberalization would be a blow to that industry and its export-oriented segments, such as vegetables. Inefficient processing compromises exportable crops because high processing margins and low quality make these products uncompetitive. Schmidhuber concludes that the U.S.-negotiated in-quota import levels will not be binding. For meats, he predicts an 0.8 mmt or 2 percent increase in pork output (above the baseline of 50 mmt in 2005). The modest impact is motivated by the small role of commercial feed in backyard hog production. Poultry imports rise by 150 to 200 thousand metric tons (tmt), roughly a 20 percent increase. Milk and dairy imports also increase, with the growth in dairy consumption just short of 800 tmt in urban areas in 2005. Consumption declines in rural areas due to lower rural incomes following trade liberalization.

We concur with Schmidhuber that China's potential for meat exports is seriously constrained by prevailing phytosanitary conditions. Among others, foot-and-mouth disease (FMD), Classical swine fever, Newcastle disease, and Avian influenza outbreaks have been recently reported in China. In 1998/1999, the EU banned poultry imports from China. Pesticide residue in meat is also a concern, particularly for poultry.

A number of other studies have appeared recently, but they are very limited in scope. Jiang, Piggott, and Wohlgenant analyze trade liberalization in the soybean sector alone, but abstract from the rapeseed and sunflower sectors and linkages to the livestock sector. Zhao, Whal, and Wang use a three-country (United States, China, Rest of World), multicommodity model of world grain markets (corn, rice, and wheat). This study, like Jiang et al., falls short because it uses older data and limits trade liberalization to selected grains. Koo provides an investigation of the impact of the U.S.-China accession agreement on wheat markets, but by focusing his study on wheat he misses important linkages to livestock and competing grain industries.

Several studies assess the impact of China's accession using computable general equilibrium (CGE) models (Ianchovichina, Martin, and Fukase; and Li and Zhai). These studies indicate that China's trade and production of textiles and clothing expands rapidly following accession, with textile production increasing about 25 percent. China has been left out of the quota growth that is occurring under the current WTO Agreement on Textiles and Clothing but would catch up with WTO accession. Estimated gains in real income (equivalent variation) from accession are between 1.24 to 1.95 percent of real gross domestic product (GDP). Li and Zhai also estimate gains in GDP of 1.53 percent. Changes in rural and urban income, expressed in deviation from the baseline in 2005, are –2.05 and 4.56 percent, respectively. We use these figures as references to incorporate the change in urban and rural consumer incomes and textile production that would accompany accession.

Policy Changes Implied by WTO Accession

There are general policy changes implied by the WTO membership. Domestic taxes, inspection, testing, and other policies must be transparent and must not discriminate against imports. Sanitary and phytosanitary (SPS) restrictions must be science based. In addition to the general changes, China has made specific concessions to the United States, Canada, and the EU in three bilateral agreements. Based on these three agreements, our analysis includes the trade policy changes for major commodities

presented in Tables 1-3. Most changes in TRQs, out-of-quota tariffs, and tariffs of non-TRQ commodities are phased in over five years.

Grain imports face a 1 percent tariff for within-quota imports and a 65 percent tariff on out-of-quota imports, down from 76 percent. Following accession, the share of private traders involved in grain trade will increase to 40 percent for corn, 10 percent for wheat, 50 percent for short- and medium-grain rice, and 10 percent for long-grain rice. TRQs will increase from 4.5 mmt to 7.2 mmt for corn; from 7.3 mmt to 9.64 mmt for wheat; and from 2.66 mmt to 5.32 mmt for rice, equally shared between long and short rice. The value-added tax (VAT) on these grains is 13 percent.

TABLE 1. Tariff rates for crops and oilseed products

Commodities with Tariffs	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Barley					(Percent)				
Baseline 2001	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
WTO Scenario	14.60	13.20	11.80	10.40	9.00	9.00	9.00	9.00	9.00
Soybeans									
Baseline 2001	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
WTO Scenario	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Soybean Meal									
Baseline 2001	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
WTO Scenario	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Rapeseed									
Baseline 2001	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
WTO Scenario	36.00	32.00	28.00	24.00	20.00	20.00	20.00	20.00	20.00
Rapeseed Meal									
Baseline 2001	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
WTO Scenario	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Sunflower									
Baseline 2001	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
WTO Scenario	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Sunflower Meal									
Baseline 2001	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
WTO Scenario	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Sunflower Oil									
Baseline 2001	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
WTO Scenario	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00

TABLE 2. Tariff rates for livestock and dairy commodities

Commodities with Tariffs	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
					(Percent)				
Beef									
Baseline 2001	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
WTO Scenario	38.40	31.80	25.20	18.60	12.00	12.00	12.00	12.00	12.00
Pork									
Baseline 2001	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
WTO Scenario	18.40	16.80	15.20	13.60	12.00	12.00	12.00	12.00	12.00
Poultry									
Baseline 2001	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
WTO Scenario	18.00	16.00	14.00	12.00	10.00	10.00	10.00	10.00	10.00
Lamb-Mutton									
Baseline 2001	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00
WTO Scenario	22.40	21.80	21.20	20.60	20.00	20.00	20.00	20.00	20.00
Eggs									
Baseline 2001	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
WTO Scenario	24.00	23.00	22.00	21.00	20.00	20.00	20.00	20.00	20.00
Milk									
Baseline 2001	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
WTO Scenario	22.00	19.00	16.00	13.00	10.00	10.00	10.00	10.00	10.00
Butter									
Baseline 2001	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
WTO Scenario	42.00	34.00	26.00	18.00	10.00	10.00	10.00	10.00	10.00
Cheese									
Baseline 2001	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
WTO Scenario	42.40	34.80	27.20	19.60	12.00	12.00	12.00	12.00	12.00
NFD									
Baseline 2001	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
WTO Scenario	22.00	19.00	16.00	13.00	10.00	10.00	10.00	10.00	10.00
WMP									
Baseline 2001	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
WTO Scenario	22.00	19.00	16.00	13.00	10.00	10.00	10.00	10.00	10.00

TABLE 3. Tariff rates and quota levels for TRQ commodities

Commodities with Tariff-Rate Quotas	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Wheat					(Percent)				
Baseline 2001	14.13	14.13	14.13	14.13	14.13	14.13	14.13	14.13	14.13
Scenario In-Quota Tariff	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Scenario Out-Quota Tariff	77.00	74.00	71.00	68.00	65.00	65.00	65.00	65.00	65.00
Scenario Quota Level (mmt)	7.30	7.88	8.47	9.05	9.64	9.64	9.64	9.64	9.64
Corn									
Baseline 2001	14.13	14.13	14.13	14.13	14.13	14.13	14.13	14.13	14.13
Scenario In-Quota Tariff	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Scenario Out-Quota Tariff	77.00	74.00	71.00	68.00	65.00	65.00	65.00	65.00	65.00
Scenario Quota Level (mmt)	4.50	5.18	5.85	6.53	7.20	7.20	7.20	7.20	7.20
Rice									
Baseline 2001	14.13	14.13	14.13	14.13	14.13	14.13	14.13	14.13	14.13
Scenario In-Quota Tariff	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Scenario Out-Quota Tariff	77.00	74.00	71.00	68.00	65.00	65.00	65.00	65.00	65.00
Scenario Quota Level (mmt)	2.66	3.33	3.99	4.66	5.32	5.32	5.32	5.32	5.32
Cotton									
Baseline 2001	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Scenario In-Quota Tariff	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Scenario Out-Quota Tariff	76.00	67.00	58.00	49.00	40.00	40.00	40.00	40.00	40.00
Scenario Quota Level (mmt)	0.74	0.78	0.82	0.86	0.89	0.89	0.89	0.89	0.89
Soybean Oil									
Baseline 2001	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Scenario In-Quota Tariff	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Scenario Out-Quota Tariff	74.00	74.00	74.00	74.00	74.00	9.00	9.00	9.00	9.00
Scenario Quota Level (mmt)	1.70	2.10	2.50	2.90	3.30	no TRQ	no TRQ	no TRQ	no TRQ
Rapeseed Oil									
Baseline 2001	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Scenario In-Quota Tariff	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Scenario Out-Quota Tariff	74.00	74.00	74.00	74.00	74.00	9.00	9.00	9.00	9.00
Scenario Quota Level (mmt)	0.60	0.73	0.87	1.00	1.13	no TRQ	no TRQ	no TRQ	no TRQ

Policy changes affecting oilseeds and products vary by commodity, with TRQs for soybean and rapeseed oils, but no TRQs on other oils. Tariffs on soybeans and soybean meal will be maintained at 3 percent and 5 percent, respectively. Tariffs on soybean oil will be reduced from 13 percent to 9 percent for within-quota imports. During implementation, the over-quota duty will fall from 74 percent the first year to 9 percent in the fifth year. The TRQ on soybean oil will increase from 1.7 mmt to 3.3 million metric tons after five years and then will be abolished the following year. The VAT on soybean meal will remain at its current level of 13 percent. The tariff on rapeseeds decreases from

40 percent to 20 percent. The within-quota rapeseed oil tariff will be reduced from 20 percent to 9 percent, and the TRQ will start at 600 tmt upon accession and will rise to 1.13 mmt in five years before being eliminated in the sixth year. Quotas on sunflower and peanut oils will be eliminated immediately upon accession and replaced with a 9 percent tariff.

For livestock and poultry, there is a tariff-only regime with no TRQs. China will remove the import restriction "for hotels, restaurants and institutional buyers only," and allow imports for retail markets. China will also allow participation of foreign firms in importation, wholesaling, and retailing, with implementation phased in over three years. Tariffs will decrease from 45 percent to 12 percent for beef; from 20 percent to 12 percent for pork; from 20 percent to 10 percent for poultry; from 23 percent to 20 percent for lamb and mutton; and from 25 percent to 20 percent for eggs. With the 17 percent VAT applied to livestock product imports, the pre-accession duties are nearly prohibitive.

In the late 1990s, China experimented with a trial program to import meat for retail markets, certifying 11 U.S., Canadian, and Australian plants for export to China. No significant trade resulted due to high duties. Tariffs on dairy products decrease substantially: from 50 percent to 12 percent for all cheese, from 25 percent to 10 percent for milk powder, and from 50 percent to 10 percent for butter.

Finally, the cotton TRQ starts at 743 tmt and increases to 894 tmt in five years. The tariff on within-quota cotton imports decreases from 3 percent to 1 percent, effective upon accession. The out-of-quota tariff on cotton declines from 76 percent to 40 percent in five installments. Textile exports from China will benefit from the growth of textiles and apparel trade implied by the tariffication of quotas in developed countries and the eventual elimination of the Multiple Fiber Arrangement in 2005.

Major Modeling Assumptions

The FAPRI modeling system is a multimarket, world agricultural model. The model is extensive in terms of both its geographic and commodity coverage. Functionally, the modeling system is organized into modules according to major commodity groupings—grains, other crops, oilseeds, livestock, and dairy—with country submodels. The system

captures important linkages between dairy, livestock, grain, and oilseed markets. Feed prices impact dairy and livestock supply decisions, and animal inventories have an impact on milk and meat production. Both dairy and livestock animal numbers are used to determine demands for feed which ultimately influence feed prices. Oilseed markets are linked to livestock through oilseed meal demand. Vegetable oils compete in final consumption for consumers' income. Final consumption for most products is disaggregated into rural and urban demands in the China submodel because consumption patterns in urban and rural China differ significantly. The FAPRI model solves for world prices by equating excess supply and demand in the world market.

The FAPRI model is driven by two major groups of exogenous shifters. First, the model incorporates forecasts of macroeconomic variables, such as GDP, inflation rates, exchange rates, and population. It is clear that accession will affect the distribution of income between urban and rural sectors in China. We adopt the consensus view that urban income will increase with accession while rural income will decrease. Consequently, we assume that urban income increases steadily to 4 percent above the baseline by 2006 while rural income falls 2 percent below the baseline during the same period. After 2006, the differences in income are maintained for the remainder of the scenario. Second, important domestic agricultural and trade policy instruments are integrated into the model specification. Apart from the policy changes contained in the accession scenario, agricultural and commercial policies in all countries remain unchanged from the baseline.

Productivity gains in Chinese agriculture have been remarkable (Huang and Chen; Huang and Rozelle; Fan and Pardey). The FAPRI baseline assumes the following productivity gains in Chinese agriculture for the coming decade. Grain yields increase annually by 1.15 percent for corn, 0.83 percent for rice, and 0.96 percent for wheat. Oilseeds yields increase annually by 1.14, 1.27, and 1.24 percent for soybean, rapeseed, and sunflower respectively. China's livestock sector has undergone significant structural change over the last two decades. Production of pork, poultry, and eggs has steadily shifted from small backyard units to more market-oriented, specialized household and

commercial farms. With this change in structure, feed efficiency and the grain content of animal rations have increased.

The FAPRI baseline assumes that structural change and efficiency improvements in China's livestock sector continue in the coming decade. The share of pork and poultry production occurring on traditional backyard farms declines by roughly 20 percent over the projection period to 63.8 and 45.1 percent, respectively, in 2010. Feed efficiency of commercial poultry operations is assumed to increase 1.5 percent annually. Likewise, feed efficiency in specialized pork-producing households is assumed to rise 1 percent annually. In the latter years of the baseline, the productivity of breeding sows increases by 0.37 percent annually and slaughter weight rises 0.162 percent. These rates of productivity growth are roughly one-quarter of the corresponding rates in the U.S. swine industry. Milk yields in China's dairy industry are assumed to increase by 1.43 percent annually on average. We assume that these improvements in productivity and feed efficiency are accomplished through the use of improved genetic material, better management practices, and more intensive use of grain and high-protein feeds. Although China's entry into the WTO may accelerate the transformation and productivity growth of the Chinese livestock sector, the magnitude of the productivity gains from trade liberalization is difficult to anticipate, so we do not deviate from the baseline assumptions.

Based on the results of the CGE studies cited previously, we assume that textile production permanently increases by 25 percent above the baseline level with WTO accession. We use this information to calibrate the cotton demand with an exogenous shift in textile production of 4.56 percent per annum for five years. After the fifth year, textile production is assumed to remain 25 percent above the baseline level until 2010.

Finally, we track the evolution of self-sufficiency in grains with accession. We define self-sufficiency with respect to rice, wheat, and corn consumption (Schmidhuber; Johnson; Huang and Chen). Self-sufficiency will remain an essential component of China's food policy as indicated by its National Long Term Economic Plan to 2010 (Huang and Chen).

Results

Most domestic crop prices decline substantially following accession. By 2010, China's domestic price decreases roughly 5 percent for corn, 8 percent for wheat, and 7.5 percent for rapeseed. Rice prices in rural areas decline 1.3 percent in 2002 but nearly return to the baseline level by the end of the scenario. Rice prices in urban areas reflect the reduction in the rice import tariff, which declines by 13 percent. Crop supply is price inelastic, thus limiting the effects of the policy changes on grain and oilseed production.

Generally, lower prices for grains prompt an expansion of food and feed use. With rural incomes declining, wheat food use falls slightly in rural areas, outweighing the increases in urban wheat consumption. Rice consumption in rural areas declines slightly as rural incomes decline and as rice prices rise relative to wheat. In urban areas rice consumption rises initially as rice prices fall relative to wheat, but rising incomes prompt declines in rice consumption, which more than compensate for the price effects by 2006/07. Total rice consumption in China declines by 0.5 percent in 2010. Total grain feed use declines toward the end of the scenario as pork and poultry producers respond to lower meat prices by reducing production. The decrease in corn feed use becomes more substantial at the end of the projecting period, and corn imports fall below the baseline level starting 2009/10. With accession, corn imports approach but do not exceed the TRQ level. Exporters in the United States gain the most from increases in corn imports. Even when Chinese corn imports fall below the baseline level in the last two years of the simulation, U.S. corn growers benefit from a 1.38 mmt increase in corn exports in the form of meat. Wheat and rice feed use is slightly higher under accession than in the baseline because feed rations change in response to a decrease in wheat and rice prices relative to the corn price. Wheat imports increase but remain well below the TRQ level, with the United States, European Union, and Canada supplying the bulk of increased wheat imports.

Increased demand for meat and vegetable oil following accession drives up soybean prices on world markets. Lower soybean oil prices in China and higher soybean prices reduce China's soybean crush demand, lowering soybean imports and raising soybean meal imports. Soybean oil imports increase substantially, but not nearly as much as

predicted by previous studies of accession, because the latter did not include the liberalization of the other vegetable oil sectors. Rapeseed imports decline initially due to a drop in crush demand, but imports rise in the latter half of the scenario when the reduction in the rapeseed tariff is complete. Crush demand nearly exceeds the baseline level by 2005/06. The sunflower seed sector is largely untouched in the accession agreements. The sunflower oil tariff is reduced by 1 percent, which weakens the crush margin and decreases crush demand slightly. Imports of sunflower seed meal and oil grow marginally. Sunflower seed production rises in response to the decline in rapeseed and other crop prices, causing China's sunflower seed exports to rise modestly.

Production of meat increases in the first half of the scenario because feed grain prices drop immediately upon accession, while the reduction in duties on meat imports are phased in. In the second half of the scenario, the reduction in livestock product duties is sufficient to cause domestic production to drop and consumption to increase, inducing China to import more pork and poultry. This period also coincides with the full permission of foreign entities to engage in trading activities in the domestic market. The greatest beneficiaries from expanded pork imports are the United States, European Union, and Canada. Brazil, Thailand, and the United States supply the increased demand for poultry imports in China.

Domestic prices of all dairy products decrease substantially: -7.5 percent for fluid milk, -10 percent for whole milk powder and nonfat dry milk, and in excess of 20 percent for cheese and butter. Consumption increases for all products, particularly milk, whole milk powder, and cheese. Imports of whole milk powder (WMP) surge to 160 percent above the baseline in 2006. Growth of WMP imports continues more gradually after tariff cuts are fully implemented, reaching 52 tmt above the baseline level by 2010. Cheese imports follow similar surging patterns as urban incomes rise, settling 52 percent above the baseline in 2010.

Driven by the expansion of the Chinese textile industry, both imports and, to a lesser extent, domestic production of cotton increases with accession. Cotton imports reach and exceed the TRQ by 2005. Imports are 86 percent above the TRQ level by 2010, with the United States, Uzbekistan, and African countries supplying the bulk of the increase in

cotton exports. Substantial reductions in Brazilian, EU, and Russian cotton imports also occur, as these countries substitute imported textiles for domestic production. Chinese cotton production also rises by 2 percent above the baseline.

World prices of most commodities rise moderately. Corn, wheat, and soybean prices rise less than 3.5 percent. The increase in soybean oil prices peaks in 2006/07 at 6.2 percent above the baseline, while soybean meal prices decline initially but rise modestly at the end of the scenario period in response to growing protein feed demand. The reduction in tariffs in the rapeseed complex cause both seed and oil prices to fall in China, generating larger impacts on international prices in the rapeseed complex than for other oilseeds. International prices for rapeseed climb 8.3 percent above the baseline in 2010, and rapeseed oil prices rise 10.8 percent in the same year. The biggest affects occur in cotton markets, where international prices increase 11.2 percent by 2010. Additional tables displaying detailed results for the scenario are provided in the Appendix.

Conclusions

We analyzed the impact of accession of China to the WTO on Chinese and world agricultural markets. We found that Chinese food consumers would gain enormously from the WTO accession. Domestic food prices decrease across the board. Most notably, per capita poultry consumption increases by 3.1 percent by 2010. Vegetable oil and the nascent dairy consumption also increase substantially, benefiting from the competitive discipline imposed on the domestic crushing and dairy industry. Changes in aggregate grain utilization are limited because it is more rational for China to import meat rather than feed (Anderson et al.; Hayes and Clemens). The increase in China's meat imports is equivalent to a 2.26 mmt increase in grain imports.

Our livestock sector results are fundamentally different from Huang and Chen's, which predicted a strong expansion of the livestock sector driven by Chinese meat exports. Therefore the demand for feed would expand, driving Chinese feed imports to record levels. Our prediction of large Chinese meat imports is in agreement with that of Wang et al. Rising meat imports are consistent with the fact that it is currently 3.9 times more costly to ship grain in its raw form than an equivalent quantity of grain shipped as

animal protein. More importantly, we concur with Schmidhuber that China's potential for meat exports is seriously constrained by prevailing phytosanitary conditions. Among others, FMD, Classical swine fever, Newcastle disease, and Avian influenza outbreaks have been recently reported in China. In 1998/99, the European Union banned poultry imports from China, and pesticide residue in meat is also a concern.

In aggregate, Chinese producers lose, as is evident from the lower production levels and lower domestic prices for most crops. The exceptions are cotton and soybeans.[1] Cotton production increases substantially, driven by the textile-output surge brought by accession to the WTO. Our results resonate the findings of Huang and Chen on rural farm income in China; namely, it is bound to decrease with the WTO accession. A major qualifier to this conclusion is that our analysis does not include horticultural products, which would probably benefit from accession, provided minimum SPS standards are met. China has a comparative advantage in these products (Fang and Beghin; Huang and Chen; Tuan and Cheng; and Tuan, Cheng, and Peng).

Our results do not reveal a sharp decrease in food self-sufficiency in China and do not indicate a major increase in world food scarcity. Hence, our findings contradict the pessimistic conjectures of Brown and do not support the bullish predictions of USDA-ERS on China's grain imports. We share the non-alarmist view of Anderson (1998) on self-sufficiency in grains, and it appears that China should be able to preserve its food security policy objective and simultaneously comply with WTO rules on agricultural and trade policy. The impacts of accession on world market prices are positive but moderate, except for the sharp increase in the cotton price.

Endnote

1. Rapeseed area also increases from 2002/03 to 2005/06, and sunflower seed area increases slightly above the baseline throughout the scenario.

Appendix

Additional Results of the Scenario for Commodities, Livestock, and Dairy in China and Other Countries

TABLE A.1. Impacts on Chinese wheat and rice

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Wheat									
Area Harvested					(Million Hectares)				
Baseline 2001	27.87	27.68	27.51	27.31	27.08	26.91	26.77	26.65	26.56
Change	0.00	-0.38	-0.48	-0.53	-0.54	-0.53	-0.52	-0.51	-0.50
% Change	0.00%	-1.39%	-1.74%	-1.95%	-2.01%	-1.98%	-1.96%	-1.92%	-1.89%
Production					(Million Metric Tons)				
Baseline 2001	111.68	112.05	112.45	112.72	112.88	113.25	113.71	114.29	114.94
Change	0.00	-1.56	-1.95	-2.20	-2.26	-2.25	-2.23	-2.19	-2.18
% Change	0.00%	-1.39%	-1.74%	-1.95%	-2.01%	-1.98%	-1.96%	-1.92%	-1.89%
Consumption									
Baseline 2001	127.52	127.90	128.72	129.58	130.38	131.13	131.95	132.85	133.70
Change	0.09	-0.12	-0.06	-0.08	-0.08	-0.11	-0.13	-0.16	-0.18
% Change	0.07%	-0.09%	-0.05%	-0.06%	-0.06%	-0.09%	-0.10%	-0.12%	-0.13%
Net Trade									
Baseline 2001	-2.99	-3.63	-3.99	-4.45	-4.95	-5.19	-5.42	-5.61	-5.65
Change	-0.09	-1.42	-1.91	-2.13	-2.20	-2.15	-2.12	-2.05	-2.02
% Change	3.06%	39.16%	47.89%	47.90%	44.45%	41.37%	39.09%	36.63%	35.79%
Ending Stocks									
Baseline 2001	12.21	12.27	12.41	12.55	12.69	12.81	12.95	13.10	13.24
Change	0.02	-0.02	-0.01	-0.01	-0.01	-0.02	-0.02	-0.03	-0.03
% Change	0.12%	-0.16%	-0.08%	-0.11%	-0.10%	-0.15%	-0.17%	-0.20%	-0.22%
Rice									
Area Harvested					(Million Hectares)				
Baseline 2001	30.00	29.98	29.89	29.73	29.58	29.40	29.26	29.01	28.77
Change	0.00	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.07
% Change	0.00%	0.23%	0.19%	0.20%	0.20%	0.19%	0.24%	0.23%	0.26%
Production					(Million Metric Tons)				
Baseline 2001	138.98	140.54	141.47	141.99	142.49	142.94	143.22	142.99	142.52
Change	-0.10	0.23	0.17	0.19	0.19	0.22	0.28	0.31	0.35
% Change	-0.07%	0.16%	0.12%	0.13%	0.14%	0.16%	0.20%	0.22%	0.25%
Consumption									
Baseline 2001	136.77	136.90	137.11	137.31	137.68	138.04	138.74	139.46	140.20
Change	-0.19	-0.12	-0.26	-0.34	-0.42	-0.46	-0.46	-0.48	-0.48
% Change	-0.14%	-0.09%	-0.19%	-0.25%	-0.30%	-0.34%	-0.33%	-0.35%	-0.34%
Net Trade									
Baseline 2001	2.80	3.76	3.73	3.36	3.24	3.20	3.03	2.87	2.89
Change	0.08	0.34	0.42	0.53	0.61	0.69	0.75	0.80	0.83
% Change	2.89%	9.07%	11.26%	15.70%	18.75%	21.60%	24.69%	27.72%	28.89%
Ending Stocks									
Baseline 2001	20.42	20.31	20.94	22.26	23.82	25.52	26.98	27.65	27.07
Change	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
% Change	0.05%	0.08%	0.10%	0.10%	0.10%	0.07%	0.06%	0.04%	0.03%

TABLE A.2. Impacts on Chinese corn and barley

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Corn									
Area Harvested					(Million Hectares)				
Baseline 2001	24.64	24.61	24.56	24.51	24.47	24.43	24.39	24.36	24.32
Change	0.00	0.03	0.05	0.06	0.07	0.08	0.09	0.09	0.09
% Change	0.00%	0.12%	0.18%	0.25%	0.29%	0.33%	0.35%	0.37%	0.38%
Production					(Million Metric Tons)				
Baseline 2001	124.82	126.20	127.50	128.79	130.07	131.32	132.54	133.74	134.97
Change	0.00	0.16	0.24	0.32	0.38	0.43	0.47	0.50	0.52
% Change	0.00%	0.12%	0.18%	0.25%	0.29%	0.33%	0.35%	0.37%	0.38%
Feed Use									
Baseline 2001	94.65	96.34	98.56	100.80	102.98	105.17	107.30	109.26	111.15
Change	0.86	0.93	0.93	0.86	0.65	0.34	-0.01	-0.44	-0.83
% Change	0.90%	0.97%	0.94%	0.86%	0.63%	0.32%	-0.01%	-0.40%	-0.75%
Food and Other									
Baseline 2001	27.67	28.10	28.69	29.20	29.61	29.87	30.22	30.46	30.56
Change	0.49	0.52	0.51	0.52	0.51	0.53	0.53	0.53	0.56
% Change	1.78%	1.86%	1.78%	1.78%	1.73%	1.78%	1.76%	1.75%	1.83%
Net Trade									
Baseline 2001	2.56	1.93	0.20	-0.89	-2.43	-3.75	-5.11	-6.14	-6.92
Change	-1.43	-1.35	-1.23	-1.08	-0.79	-0.44	-0.05	0.40	0.79
% Change	-56%	-70%	-630%	122%	32%	12%	1%	-6%	-11%
Ending Stock									
Baseline 2001	33.21	33.04	33.09	32.78	32.69	32.73	32.86	33.03	33.20
Change	0.08	0.13	0.16	0.17	0.18	0.19	0.19	0.19	0.19
% Change	0%	0%	0%	1%	1%	1%	1%	1%	1%
Barley									
Area Harvested					(Million Hectares)				
Baseline 2001	1.02	1.01	1.00	0.99	1.00	1.00	1.01	1.02	1.04
Change	0.00	0.02	0.04	0.06	0.06	0.07	0.07	0.08	0.08
% Change	0.00%	2.30%	4.16%	5.57%	6.44%	6.75%	7.12%	7.51%	7.95%
Production					(Million Metric Tons)				
Baseline 2001	3.15	3.16	3.18	3.22	3.27	3.33	3.41	3.51	3.63
Change	0.00	0.07	0.13	0.18	0.21	0.23	0.24	0.26	0.29
% Change	0.00%	2.30%	4.16%	5.57%	6.44%	6.75%	7.12%	7.51%	7.95%
Feed Use									
Baseline 2001	0.67	0.65	0.64	0.63	0.63	0.62	0.60	0.59	0.58
Change	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
% Change	-0.02%	0.75%	1.25%	1.82%	2.31%	2.07%	1.81%	1.46%	1.31%
Food and Other									
Baseline 2001	5.08	5.10	5.13	5.20	5.36	5.58	5.78	5.96	6.17
Change	0.01	0.03	0.05	0.08	0.12	0.13	0.14	0.16	0.18
% Change	0.29%	0.64%	1.06%	1.57%	2.15%	2.32%	2.50%	2.68%	2.87%
Net Trade									
Baseline 2001	-2.60	-2.60	-2.60	-2.63	-2.73	-2.88	-2.98	-3.06	-3.14
Change	-0.01	0.03	0.07	0.09	0.08	0.08	0.09	0.09	0.10
% Change	1%	-1%	-3%	-3%	-3%	-3%	-3%	-3%	-3%
Ending Stock									
Baseline 2001	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35
Change	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Change	0%	0%	0%	0%	0%	0%	0%	0%	0%

TABLE A.3. Impacts on coarse grain trade of other countries

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Corn									
United States				(Million Metric Tons)					
Baseline 2001	54.83	55.67	58.02	60.36	62.80	64.92	67.58	69.78	72.22
Change	1.14	1.22	1.27	1.25	1.31	1.32	1.14	0.86	0.49
% Change	2.1%	2.2%	2.2%	2.1%	2.1%	2.0%	1.7%	1.2%	0.7%
Argentina									
Baseline 2001	8.48	8.72	8.89	9.02	9.16	9.33	9.52	9.74	9.99
Change	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01
% Change	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%
Japan									
Baseline 2001	-15.95	-15.86	-15.78	-15.81	-15.76	-15.65	-15.61	-15.64	-15.65
Change	0.01	0.01	0.01	0.00	-0.01	-0.02	-0.03	-0.05	-0.05
% Change	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	0.3%	0.3%
Total Net Trade									
Baseline 2001	72.58	72.77	71.97	73.26	76.94	79.41	82.34	85.05	87.95
Change	-1.60	-1.41	-0.12	0.18	1.24	1.16	0.91	0.61	0.08
% Change	-2.2%	-1.9%	-0.2%	0.2%	1.6%	1.5%	1.1%	0.7%	0.1%
Barley									
European Union									
Baseline 2001	10.89	11.04	11.47	11.83	12.31	12.73	12.94	13.05	13.34
Change	0.00	-0.01	-0.01	0.00	0.01	0.02	0.02	0.03	0.03
% Change	0.0%	-0.1%	-0.1%	0.0%	0.1%	0.2%	0.2%	0.2%	0.2%
Australia									
Baseline 2001	3.47	3.55	3.61	3.66	3.71	3.77	3.83	3.85	3.85
Change	0.00	0.00	-0.01	-0.01	0.00	0.00	0.01	0.01	0.02
% Change	0.0%	0.0%	-0.2%	-0.2%	-0.1%	0.1%	0.2%	0.3%	0.5%
Canada									
Baseline 2001	1.65	1.48	1.40	1.48	1.46	1.39	1.47	1.65	1.83
Change	0.01	0.01	0.01	-0.01	-0.06	-0.13	-0.18	-0.22	-0.27
% Change	0.3%	1.0%	0.8%	-0.9%	-4.3%	-9.2%	-12.1%	-13.4%	-14.9%
Saudi Arabia									
Baseline 2001	-5.06	-5.10	-5.16	-5.23	-5.30	-5.40	-5.50	-5.63	-5.78
Change	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other Middle East									
Baseline 2001	-2.23	-2.23	-2.25	-2.27	-2.28	-2.30	-2.32	-2.34	-2.35
Change	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.03
% Change	0.1%	-0.2%	-0.2%	-0.3%	-0.5%	-0.7%	-0.8%	-0.9%	-1.1%
Total Net Trade									
Baseline 2001	17.93	18.25	18.39	18.66	18.96	19.32	19.74	20.26	20.65
Change	0.03	-0.06	-0.11	-0.13	-0.14	-0.13	-0.13	-0.14	-0.18
% Change	0.2%	-0.3%	-0.6%	-0.7%	-0.7%	-0.7%	-0.7%	-0.7%	-0.9%

TABLE A.4. Impacts on wheat and rice trade of other countries

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Wheat									
United States				(Million Metric Tons)					
Baseline 2001	25.55	26.07	26.60	27.09	27.57	28.13	28.50	28.94	29.42
Change	-0.01	0.55	0.56	0.57	0.56	0.60	0.62	0.57	0.58
% Change	0.0%	2.1%	2.1%	2.1%	2.0%	2.1%	2.2%	2.0%	2.0%
Canada									
Baseline 2001	18.84	19.02	19.06	19.16	19.24	19.35	19.50	19.73	20.03
Change	0.00	0.13	0.10	0.14	0.16	0.18	0.18	0.20	0.20
% Change	0.0%	0.7%	0.5%	0.8%	0.8%	0.9%	0.9%	1.0%	1.0%
European Union									
Baseline 2001	14.40	15.73	16.60	17.59	18.69	19.75	21.36	22.91	23.82
Change	0.01	0.03	0.11	0.19	0.18	0.13	0.09	0.06	0.02
% Change	0.1%	0.2%	0.6%	1.1%	0.9%	0.6%	0.4%	0.2%	0.1%
Australia									
Baseline 2001	16.23	16.36	16.46	16.63	16.87	17.14	17.46	17.81	18.32
Change	0.00	0.00	0.01	0.02	0.03	0.04	0.04	0.03	0.02
% Change	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.2%	0.2%	0.1%
Argentina									
Baseline 2001	12.35	12.62	12.89	13.12	13.32	13.52	13.73	13.91	14.09
Change	0.00	0.00	0.05	0.07	0.08	0.09	0.11	0.11	0.12
% Change	0.0%	0.0%	0.4%	0.5%	0.6%	0.7%	0.8%	0.8%	0.9%
Total Net Trade									
Baseline 2001	91.93	94.07	95.76	97.63	99.65	101.81	104.41	107.09	109.45
Change	0.05	1.15	1.43	1.58	1.49	1.14	1.13	1.04	1.00
% Change	0.1%	1.2%	1.5%	1.6%	1.5%	1.1%	1.1%	1.0%	0.9%
Rice									
Vietnam									
Baseline 2001	4.20	4.32	4.47	4.63	4.79	4.96	5.15	5.33	5.51
Change	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
% Change	0.0%	-0.1%	-0.1%	-0.2%	-0.2%	-0.2%	-0.2%	-0.2%	-0.1%
India									
Baseline 2001	2.56	2.92	2.88	3.04	3.09	3.10	3.20	3.41	3.47
Change	-0.05	-0.24	-0.27	-0.34	-0.40	-0.47	-0.53	-0.58	-0.64
% Change	-2.0%	-8.3%	-9.5%	-11.4%	-12.9%	-15.2%	-16.7%	-17.2%	-18.4%
United States									
Baseline 2001	2.39	2.41	2.34	2.31	2.25	2.20	2.12	2.06	1.99
Change	-0.01	-0.01	-0.01	-0.02	-0.03	-0.03	-0.04	-0.05	-0.06
% Change	-0.3%	-0.2%	-0.6%	-0.9%	-1.2%	-1.3%	-1.7%	-2.3%	-2.9%
Indonesia									
Baseline 2001	-2.02	-2.22	-2.16	-2.15	-2.22	-2.30	-2.41	-2.47	-2.51
Change	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.00
% Change	0.4%	0.6%	0.7%	0.7%	0.6%	0.4%	0.3%	0.2%	0.1%
Philippines									
Baseline 2001	-1.38	-1.58	-1.70	-1.74	-1.76	-1.77	-1.77	-1.78	-1.79
Change	-0.01	-0.03	-0.03	-0.04	-0.04	-0.05	-0.04	-0.04	-0.04
% Change	0.5%	1.6%	1.9%	2.2%	2.5%	2.6%	2.5%	2.3%	2.1%
Brazil									
Baseline 2001	-1.01	-1.12	-1.15	-1.09	-1.08	-1.10	-1.11	-1.17	-1.23
Change	0.00	-0.01	-0.02	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02
% Change	0.0%	1.1%	1.8%	2.5%	2.7%	2.9%	2.4%	2.0%	1.3%
Total Net Trade									
Baseline 2001	22.24	23.86	24.08	24.22	24.49	24.82	25.17	25.58	26.00
Change	0.02	0.08	0.11	0.14	0.15	0.15	0.14	0.12	0.10
% Change	0.1%	0.3%	0.5%	0.6%	0.6%	0.6%	0.6%	0.5%	0.4%

TABLE A.5. Impacts on the Chinese soybean complex

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Soybean									
Area Harvested				(Thousand Hectares)					
Baseline 2001	8,956	8,611	8,501	8,638	8,792	8,949	9,078	9,303	9,512
Change	-8.11	134.51	117.75	115.21	103.91	97.15	83.85	68.59	38.19
% Change	-0.09%	1.56%	1.39%	1.33%	1.18%	1.09%	0.92%	0.74%	0.40%
Production				(Thousand Metric Tons)					
Baseline 2001	15,226	14,811	14,792	15,203	15,650	16,107	16,521	17,117	17,691
Change	-13.79	231.36	204.89	202.77	184.96	174.87	152.60	126.21	71.03
% Change	-0.09%	1.56%	1.39%	1.33%	1.18%	1.09%	0.92%	0.74%	0.40%
Crush									
Baseline 2001	18,048	18,862	19,701	20,565	21,443	22,324	23,221	24,151	25,084
Change	-128.92	-130.61	-141.25	-154.17	-165.07	-178.55	-184.19	-179.33	-195.21
% Change	-0.71%	-0.69%	-0.72%	-0.75%	-0.77%	-0.80%	-0.79%	-0.74%	-0.78%
Net Trade									
Baseline 2001	-10,682	-11,995	-12,976	-13,586	-14,177	-14,732	-15,342	-15,823	-16,337
Change	121.30	364.43	352.50	368.35	366.28	375.15	360.70	325.73	296.40
% Change	-1.14%	-3.04%	-2.72%	-2.71%	-2.58%	-2.55%	-2.35%	-2.06%	-1.81%
Soybean Meal									
Production									
Baseline 2001	14,312	14,947	15,600	16,273	16,954	17,637	18,331	19,050	19,770
Change	-102.93	-104.18	-112.55	-122.72	-131.27	-141.84	-146.17	-142.18	-154.61
% Change	-0.72%	-0.70%	-0.72%	-0.75%	-0.77%	-0.80%	-0.80%	-0.75%	-0.78%
Consumption									
Baseline 2001	15,078	15,543	16,186	16,744	17,376	17,903	18,590	19,123	19,732
Change	45.13	53.27	58.96	28.79	-23.29	-89.98	-147.51	-208.20	-289.78
% Change	0.30%	0.34%	0.36%	0.17%	-0.13%	-0.50%	-0.79%	-1.09%	-1.47%
Net Trade									
Baseline 2001	-766	-596	-586	-471	-422	-266	-259	-73	37
Change	-148.06	-157.45	-171.51	-151.51	-107.97	-51.86	1.34	66.03	135.17
% Change	19.33%	26.40%	29.27%	32.16%	25.57%	19.50%	-0.52%	-90.84%	361.79%
Soybean Oil									
Production									
Baseline 2001	2,999	3,151	3,309	3,472	3,639	3,807	3,979	4,157	4,337
Change	-22.69	-23.05	-25.00	-27.36	-29.38	-31.87	-32.97	-32.19	-35.14
% Change	-0.76%	-0.73%	-0.76%	-0.79%	-0.81%	-0.84%	-0.83%	-0.77%	-0.81%
Consumption									
Baseline 2001	3,655	3,822	4,031	4,250	4,493	4,728	4,961	5,242	5,511
Change	187.29	194.27	208.67	226.09	244.99	241.65	255.76	281.95	294.18
% Change	5.12%	5.08%	5.18%	5.32%	5.45%	5.11%	5.16%	5.38%	5.34%
Net Trade									
Baseline 2001	-656	-671	-722	-778	-854	-921	-982	-1,085	-1,173
Change	-209.98	-217.32	-233.67	-253.46	-274.37	-273.52	-288.73	-314.14	-329.32
% Change	32.01%	32.41%	32.36%	32.59%	32.11%	29.70%	29.41%	28.96%	28.07%

TABLE A.6. Impacts on the Chinese rapeseed complex

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Rapeseed									
Area Harvested				(Thousand Hectares)					
Baseline 2001	7,297	7,187	7,117	7,133	7,096	7,085	7,050	7,053	7,015
Change	52.25	108.78	55.25	19.85	-25.47	-63.81	-60.63	-64.35	-71.97
% Change	0.72%	1.51%	0.78%	0.28%	-0.36%	-0.90%	-0.86%	-0.91%	-1.03%
Production				(Thousand Metric Tons)					
Baseline 2001	11,164	11,140	11,174	11,341	11,425	11,548	11,633	11,778	11,855
Change	79.94	168.61	86.74	31.56	-41.00	-104.00	-100.04	-107.46	-121.64
% Change	0.72%	1.51%	0.78%	0.28%	-0.36%	-0.90%	-0.86%	-0.91%	-1.03%
Crush									
Baseline 2001	12,243	12,385	12,475	12,604	12,713	12,852	12,971	13,108	13,229
Change	-118.82	-70.00	-23.43	27.32	78.10	123.66	120.90	121.26	116.89
% Change	-0.97%	-0.57%	-0.19%	0.22%	0.61%	0.96%	0.93%	0.93%	0.88%
Net Trade									
Baseline 2001	-2,274	-2,407	-2,443	-2,409	-2,424	-2,436	-2,459	-2,452	-2,485
Change	183.09	205.97	93.60	-1.72	-111.46	-208.52	-202.75	-209.41	-216.93
% Change	-8%	-8.56%	-3.83%	0.07%	4.60%	8.56%	8.24%	8.54%	8.73%
Rapeseed Meal									
Production									
Baseline 2001	7,591	7,678	7,735	7,814	7,882	7,968	8,042	8,127	8,202
Change	-73.67	-43.40	-14.53	16.94	48.42	76.67	74.96	75.18	72.47
% Change	-0.97%	-0.57%	-0.19%	0.22%	0.61%	0.96%	0.93%	0.93%	0.88%
Consumption									
Baseline 2001	7,048	7,110	7,184	7,222	7,277	7,324	7,405	7,456	7,511
Change	0.70	2.56	4.75	-3.85	-18.03	-31.25	-41.66	-54.78	-68.09
% Change	0.01%	0.04%	0.07%	-0.05%	-0.25%	-0.43%	-0.56%	-0.73%	-0.91%
Net Trade									
Baseline 2001	543	568	550	592	605	644	637	671	691
Change	-74.37	-45.96	-19.28	20.80	66.45	107.92	116.62	129.96	140.57
% Change	-13.70%	-8.09%	-3.50%	3.51%	10.98%	16.76%	18.31%	19.36%	20.35%
Rapeseed Oil									
Production									
Baseline 2001	4,106	4,153	4,183	4,225	4,262	4,307	4,347	4,392	4,432
Change	-39.21	-23.10	-7.73	9.02	25.77	40.81	39.90	40.02	38.57
% Change	-0.95%	-0.56%	-0.18%	0.21%	0.60%	0.95%	0.92%	0.91%	0.87%
Consumption									
Baseline 2001	4,367	4,480	4,579	4,702	4,804	4,918	5,020	5,125	5,222
Change	153.31	169.20	179.77	197.63	210.37	208.58	215.58	227.27	234.05
% Change	3.51%	3.78%	3.93%	4.20%	4.38%	4.24%	4.29%	4.43%	4.48%
Net Trade									
Baseline 2001	-261	-327	-396	-477	-543	-610	-673	-733	-791
Change	-192.52	-192.30	-187.50	-188.62	-184.59	-167.77	-175.68	-187.26	-195.47
% Change	73.90%	58.74%	47.41%	39.56%	34.01%	27.49%	26.10%	25.53%	24.72%

TABLE A.7. Impacts on the Chinese sunflower complex

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Sunflower									
Area Harvested				(Thousand Hectares)					
Baseline 2001	816	808	803	802	801	798	798	796	794
Change	-0.74	10.65	9.15	8.44	7.01	6.12	4.73	3.41	2.52
% Change	-0.09%	1.32%	1.14%	1.05%	0.87%	0.77%	0.59%	0.43%	0.32%
Production				(Thousand Metric Tons)					
Baseline 2001	1,281	1,284	1,293	1,308	1,321	1,332	1,348	1,360	1,374
Change	-1.16	16.93	14.72	13.75	11.56	10.22	7.99	5.84	4.37
% Change	-0.09%	1.32%	1.14%	1.05%	0.88%	0.77%	0.59%	0.43%	0.32%
Crush									
Baseline 2001	947	953	956	961	967	973	980	987	994
Change	-1.16	-1.45	-1.59	-1.78	-2.14	-2.18	-2.14	-2.11	-1.96
% Change	-0.12%	-0.15%	-0.17%	-0.19%	-0.22%	-0.22%	-0.22%	-0.21%	-0.20%
Net Trade									
Baseline 2001	-20	-14	1	22	40	54	71	85	100
Change	-0.29	17.83	15.65	14.80	12.83	11.49	9.20	6.97	5.36
% Change	1%	-126.01%	1573.75%	68.15%	31.80%	21.40%	12.90%	8.18%	5.35%
Sunflower Meal									
Production									
Baseline 2001	549	553	555	557	561	564	568	572	577
Change	-0.67	-0.84	-0.92	-1.03	-1.24	-1.26	-1.24	-1.22	-1.14
% Change	-0.12%	-0.15%	-0.17%	-0.19%	-0.22%	-0.22%	-0.22%	-0.21%	-0.20%
Net Trade									
Baseline 2001	-15	-16	-20	-24	-26	-28	-30	-32	-33
Change	-0.17	-1.70	-1.36	-0.57	-1.20	-1.34	-1.12	-0.75	-1.22
% Change	1.14%	10.65%	6.79%	2.37%	4.62%	4.78%	3.74%	2.33%	3.70%
Sunflower Oil									
Production									
Baseline 2001	208	210	210	211	213	214	216	217	219
Change	-0.25	-0.32	-0.35	-0.39	-0.47	-0.48	-0.47	-0.46	-0.43
% Change	-0.12%	-0.15%	-0.17%	-0.19%	-0.22%	-0.22%	-0.22%	-0.21%	-0.20%
Consumption									
Baseline 2001	208	211	214	217	219	222	225	228	230
Change	-0.71	-0.50	-0.11	0.33	0.86	0.30	0.56	0.77	1.12
% Change	-0.34%	-0.24%	-0.05%	0.15%	0.39%	0.13%	0.25%	0.34%	0.49%
Net Trade									
Baseline 2001	0	-2	-4	-5	-7	-8	-10	-10	-12
Change	0.46	0.18	-0.24	-0.72	-1.33	-0.77	-1.03	-1.24	-1.55
% Change	154.41%	-9.85%	6.38%	13.95%	20.13%	9.44%	10.35%	11.84%	13.37%

TABLE A.8. Impacts on soybean and rapeseed complex trade of other countries

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Soybean									
Brazil				(Thousand Metric Tons)					
Baseline 2001	11,441	12,192	13,209	14,507	15,746	16,957	18,215	19,527	20,620
Change	-30.14	-89.43	-89.81	-67.33	-39.61	-16.55	-6.09	-34.27	-34.59
% Change	-0.3%	-0.7%	-0.7%	-0.5%	-0.3%	-0.1%	0.0%	-0.2%	-0.2%
United States									
Baseline 2001	29,932	30,603	30,922	30,912	30,818	30,880	30,862	30,977	31,143
Change	-75.73	-248.46	-254.95	-321.01	-382.55	-454.51	-468.66	-368.53	-373.09
% Change	-0.3%	-0.8%	-0.8%	-1.0%	-1.2%	-1.5%	-1.5%	-1.2%	-1.2%
Soybean Meal									
Argentina									
Baseline 2001	14,641	14,830	15,024	15,216	15,402	15,588	15,776	15,961	16,141
Change	166.05	173.54	179.99	185.42	189.36	193.51	199.21	206.76	212.03
% Change	1.1%	1.2%	1.2%	1.2%	1.2%	1.2%	1.3%	1.3%	1.3%
Brazil									
Baseline 2001	10,223	10,338	10,429	10,496	10,575	10,658	10,737	10,823	10,904
Change	23.71	40.63	45.38	30.81	6.09	-14.99	-28.02	-10.05	-18.21
% Change	0.2%	0.4%	0.4%	0.3%	0.1%	-0.1%	-0.3%	-0.1%	-0.2%
Soybean Oil									
Argentina									
Baseline 2001	3,258	3,301	3,345	3,388	3,432	3,476	3,519	3,563	3,606
Change	37.57	38.88	40.25	41.66	42.96	44.45	46.26	48.02	49.18
% Change	1.2%	1.2%	1.2%	1.2%	1.3%	1.3%	1.3%	1.3%	1.4%
Brazil									
Baseline 2001	1,111	1,139	1,174	1,206	1,238	1,270	1,298	1,321	1,342
Change	30.06	34.20	38.22	42.29	44.92	46.75	49.17	51.33	51.53
% Change	2.7%	3.0%	3.3%	3.5%	3.6%	3.7%	3.8%	3.9%	3.8%
Rapeseed									
Canada									
Baseline 2001	3,202	3,323	3,364	3,423	3,491	3,573	3,632	3,734	3,837
Change	-81.45	-70.36	-36.34	-16.98	1.97	30.25	43.35	46.08	44.66
% Change	-2.5%	-2.1%	-1.1%	-0.5%	0.1%	0.8%	1.2%	1.2%	1.2%
Japan									
Baseline 2001	-2,156	-2,227	-2,224	-2,259	-2,275	-2,306	-2,319	-2,350	-2,373
Change	-17.96	-11.21	-3.18	3.98	13.38	26.36	30.35	31.35	34.64
% Change	0.8%	0.5%	0.1%	-0.2%	-0.6%	-1.1%	-1.3%	-1.3%	-1.5%
Rapeseed Meal									
Canada									
Baseline 2001	1,300	1,329	1,407	1,444	1,478	1,514	1,584	1,592	1,606
Change	57.19	52.09	46.70	41.80	34.90	22.44	18.62	16.71	14.80
% Change	4.4%	3.9%	3.3%	2.9%	2.4%	1.5%	1.2%	1.0%	0.9%
European Union									
Baseline 2001	-896	-974	-1,080	-1,122	-1,090	-1,099	-1,108	-1,134	-1,120
Change	43.16	15.22	4.56	-14.98	-31.86	-50.33	-63.34	-80.07	-96.14
% Change	-4.8%	-1.6%	-0.4%	1.3%	2.9%	4.6%	5.7%	7.1%	8.6%
Rapeseed Oil									
Canada									
Baseline 2001	811	824	857	893	921	940	970	986	1,003
Change	44.68	41.59	38.14	35.54	30.87	23.53	22.79	24.48	24.99
% Change	5.5%	5.0%	4.4%	4.0%	3.4%	2.5%	2.4%	2.5%	2.5%
India									
Baseline 2001	-265	-331	-411	-477	-557	-628	-713	-790	-803
Change	14.06	24.94	26.71	31.77	35.82	40.18	45.40	48.73	50.47
% Change	-5.3%	-7.5%	-6.5%	-6.7%	-6.4%	-6.4%	-6.4%	-6.2%	-6.3%

TABLE A.9. Impacts on sunflower seed complex trade of other countries

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Sunflower									
Former Soviet Union				(Thousand Metric Tons)					
Baseline 2001	1,824	1,934	1,972	2,016	2,054	2,091	2,125	2,178	2,222
Change	-5.21	-4.44	-13.45	-10.21	-12.02	-11.58	-13.99	-14.26	-16.14
% Change	-0.3%	-0.2%	-0.7%	-0.5%	-0.6%	-0.6%	-0.7%	-0.7%	-0.7%
European Union									
Baseline 2001	-2,478	-2,457	-2,551	-2,617	-2,685	-2,747	-2,803	-2,875	-2,926
Change	-4.13	26.59	43.69	11.58	24.58	27.16	29.93	29.33	30.96
% Change	0.2%	-1.1%	-1.7%	-0.4%	-0.9%	-1.0%	-1.1%	-1.0%	-1.1%
Sunflower Meal									
Argentina									
Baseline 2001	1,436	1,456	1,482	1,510	1,534	1,556	1,584	1,605	1,626
Change	0.62	1.23	1.31	0.81	-0.29	-0.75	-0.60	0.17	1.36
% Change	0.0%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%
European Union									
Baseline 2001	-1,711	-1,746	-1,852	-1,851	-1,837	-1,821	-1,820	-1,827	-1,817
Change	-0.49	0.00	-0.91	1.81	7.09	8.87	5.78	0.97	-7.45
% Change	0.0%	0.0%	0.0%	-0.1%	-0.4%	-0.5%	-0.3%	-0.1%	0.4%
Sunflower Oil									
Argentina									
Baseline 2001	958	975	995	1,019	1,044	1,066	1,090	1,111	1,131
Change	0.45	0.68	0.77	0.76	0.82	0.90	1.17	1.30	1.63
% Change	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Former Soviet Union									
Baseline 2001	363	361	360	362	368	367	358	334	304
Change	-7.06	-6.92	-7.50	-8.08	-9.02	-9.28	-9.73	-9.72	-10.24
% Change	-1.9%	-1.9%	-2.1%	-2.2%	-2.5%	-2.5%	-2.7%	-2.9%	-3.4%

TABLE A.10. Impacts on Chinese cotton

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Area Harvested				(Thousand Hectares)					
Baseline 2001	4,151	4,189	4,229	4,267	4,300	4,332	4,364	4,395	4,426
Change	0.00	1.63	5.35	10.41	20.18	38.72	57.64	75.70	93.68
% Change	0.00%	0.04%	0.13%	0.24%	0.47%	0.89%	1.32%	1.72%	2.12%
Production				(Thousand Metric Tons)					
Baseline 2001	4,338	4,407	4,479	4,548	4,614	4,679	4,743	4,808	4,873
Change	0.00	1.71	5.67	11.10	21.65	41.82	62.65	82.82	103.14
% Change	0.00%	0.04%	0.13%	0.24%	0.47%	0.89%	1.32%	1.72%	2.12%
Imports									
Baseline 2001	447	537	622	687	728	746	753	749	735
Change	18.45	54.99	115.50	192.25	271.95	350.87	438.62	535.66	635.17
% Change	4.13%	10.23%	18.56%	27.98%	37.35%	47.01%	58.24%	71.50%	86.40%
Consumption									
Baseline 2001	5,082	5,132	5,173	5,216	5,270	5,312	5,360	5,391	5,418
Change	18.45	56.70	121.16	203.35	293.61	392.69	501.27	618.47	738.33
% Change	0.36%	1.10%	2.34%	3.90%	5.57%	7.39%	9.35%	11.47%	13.63%
Exports									
Baseline 2001	54	42	32	30	30	28	28	28	28
Change	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Change	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Ending Stocks									
Baseline 2001	1,908	1,678	1,574	1,563	1,606	1,691	1,800	1,938	2,101
Change	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Change	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

TABLE A.11. Impacts on cotton trade for other countries

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
					(Thousand Metric Tons)				
Africa									
Baseline 2001	1,021	1,026	1,033	1,040	1,046	1,052	1,057	1,062	1,067
Change	0.67	2.40	5.29	9.07	13.20	17.35	21.71	26.34	31.71
% Change	0.1%	0.2%	0.5%	0.9%	1.3%	1.6%	2.1%	2.5%	3.0%
Australia									
Baseline 2001	741	770	794	817	839	861	883	905	926
Change	-0.04	0.11	0.58	1.40	2.47	3.61	4.71	5.87	7.14
% Change	0.0%	0.0%	0.1%	0.2%	0.3%	0.4%	0.5%	0.6%	0.8%
Uzbekistan									
Baseline 2001	745	749	751	751	749	747	745	743	740
Change	0.00	0.31	1.19	2.68	4.64	6.78	8.94	11.21	13.66
% Change	0.0%	0.0%	0.2%	0.4%	0.6%	0.9%	1.2%	1.5%	1.8%
United States									
Baseline 2001	1,880	1,901	1,934	1,970	2,005	2,038	2,071	2,102	2,130
Change	6.47	13.86	26.77	42.49	55.56	66.04	79.10	93.42	93.41
% Change	0.3%	0.7%	1.4%	2.2%	2.8%	3.2%	3.8%	4.4%	4.4%
Brazil									
Baseline 2001	-220	-162	-109	-76	-53	-38	-31	-28	-27
Change	2.01	6.94	16.43	30.33	47.13	65.42	85.17	106.77	132.66
% Change	-0.9%	-4.3%	-15.0%	-40.1%	-89.6%	-171.5%	-272.3%	-387.2%	-486.2%
European Union									
Baseline 2001	-500	-482	-466	-454	-445	-438	-430	-423	-415
Change	2.15	6.98	14.00	21.91	29.46	36.52	44.67	54.16	66.38
% Change	-0.4%	-1.4%	-3.0%	-4.8%	-6.6%	-8.3%	-10.4%	-12.8%	-16.0%
Mexico									
Baseline 2001	-421	-426	-433	-438	-443	-450	-458	-466	-474
Change	1.12	3.73	7.63	12.16	16.53	20.59	25.10	30.17	36.50
% Change	-0.3%	-0.9%	-1.8%	-2.8%	-3.7%	-4.6%	-5.5%	-6.5%	-7.7%
Russia									
Baseline 2001	-346	-355	-360	-364	-366	-367	-366	-365	-363
Change	1.84	7.19	16.73	29.87	45.13	61.40	79.07	98.49	120.84
% Change	-0.5%	-2.0%	-4.7%	-8.2%	-12.3%	-16.7%	-21.6%	-27.0%	-33.3%

TABLE A.12. Impacts on Chinese livestock

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef									
Production				(Thousand Metric Tons)					
Baseline 2001	2,595	2,690	2,777	2,862	2,951	3,042	3,127	3,212	3,296
Change	0.61	1.60	2.28	4.27	6.75	7.83	7.63	5.46	2.91
% Change	0.0%	0.1%	0.1%	0.1%	0.2%	0.3%	0.2%	0.2%	0.1%
Urban Consumption									
Baseline 2001	2,325	2,409	2,495	2,580	2,669	2,758	2,842	2,925	3,007
Change	7.61	13.08	24.07	29.54	31.35	21.81	14.43	12.39	0.01
% Change	0.3%	0.5%	1.0%	1.1%	1.2%	0.8%	0.5%	0.4%	0.0%
Rural Consumption									
Baseline 2001	220	228	237	245	252	259	265	269	273
Change	-0.47	-0.94	-1.49	-2.41	-4.19	-5.77	-6.95	-7.50	-9.03
% Change	-0.2%	-0.4%	-0.6%	-1.0%	-1.7%	-2.2%	-2.6%	-2.8%	-3.3%
Net Trade									
Baseline 2001	51	53	45	37	30	24	21	18	16
Change	-6.54	-10.54	-20.30	-22.85	-20.41	-8.21	0.15	0.56	11.93
% Change	-12.9%	-19.8%	-45.2%	-61.5%	-67.9%	-33.6%	0.7%	3.1%	72.7%
Pork									
Production									
Baseline 2001	30,809	31,467	31,990	32,472	32,980	33,532	34,066	34,565	35,036
Change	11.71	45.11	74.53	73.68	25.81	-65.09	-194.72	-318.35	-473.92
% Change	0.0%	0.1%	0.2%	0.2%	0.1%	-0.2%	-0.6%	-0.9%	-1.4%
Urban Consumption									
Baseline 2001	9,919	10,138	10,319	10,499	10,694	10,900	11,100	11,297	11,491
Change	9.55	16.59	26.84	66.56	117.44	156.09	180.66	152.55	130.61
% Change	0.1%	0.2%	0.3%	0.6%	1.1%	1.4%	1.6%	1.4%	1.1%
Rural Consumption									
Baseline 2001	20,908	21,325	21,662	21,980	22,309	22,650	22,979	23,289	23,577
Change	-8.99	-14.31	-26.29	32.20	129.90	242.66	322.24	284.38	237.06
% Change	0.0%	-0.1%	-0.1%	0.1%	0.6%	1.1%	1.4%	1.2%	1.0%
Net Trade									
Baseline 2001	-19	4	8	-6	-23	-18	-13	-22	-32
Change	11.15	42.83	73.97	-25.09	-221.53	-463.85	-697.62	-755.29	-841.59
% Change	-57.8%	1066.8%	874.6%	412.2%	954.8%	2508.1%	5556.0%	3468.9%	2638.0%
Poultry									
Production									
Baseline 2001	5,766	5,881	6,023	6,174	6,331	6,492	6,640	6,773	6,897
Change	9.02	32.65	42.62	46.60	-2.90	-100.96	-198.34	-286.26	-368.32
% Change	0.2%	0.6%	0.7%	0.8%	0.0%	-1.6%	-3.0%	-4.2%	-5.3%
Urban Consumption									
Baseline 2001	3,015	3,077	3,171	3,272	3,375	3,476	3,565	3,642	3,713
Change	7.83	12.92	22.25	24.49	46.78	74.67	98.61	124.84	144.21
% Change	0.3%	0.4%	0.7%	0.7%	1.4%	2.1%	2.8%	3.4%	3.9%
Rural Consumption									
Baseline 2001	3,568	3,623	3,687	3,755	3,826	3,899	3,969	4,035	4,097
Change	-4.00	-11.80	-14.56	-26.39	-15.56	15.42	42.43	72.87	95.32
% Change	-0.1%	-0.3%	-0.4%	-0.7%	-0.4%	0.4%	1.1%	1.8%	2.3%
Net Trade									
Baseline 2001	-817	-819	-836	-854	-870	-883	-894	-904	-913
Change	5.19	31.54	34.92	48.50	-34.12	-191.05	-339.38	-483.96	-607.84
% Change	-0.6%	-3.9%	-4.2%	-5.7%	3.9%	21.6%	37.9%	53.5%	66.6%

TABLE A.13. Impacts on beef trade of other countries

	2002	2003	2004	2005	2006	2007	2008	2009	2010
					(Thousand Metric Tons)				
Argentina									
Baseline 2001	404	420	420	416	446	478	509	548	566
Change	0.70	0.48	2.36	3.45	6.33	8.09	9.70	10.56	11.79
% Change	0.2%	0.1%	0.6%	0.8%	1.4%	1.7%	1.9%	1.9%	2.1%
Australia									
Baseline 2001	1,273	1,320	1,340	1,370	1,376	1,365	1,341	1,310	1,267
Change	-0.08	1.04	0.36	1.32	2.55	3.32	4.17	4.20	4.23
% Change	0.0%	0.1%	0.0%	0.1%	0.2%	0.2%	0.3%	0.3%	0.3%
New Zealand									
Baseline 2001	522	554	563	574	579	582	583	590	594
Change	-0.01	0.80	0.34	0.88	1.53	1.91	2.18	1.89	1.47
% Change	0.0%	0.1%	0.1%	0.2%	0.3%	0.3%	0.4%	0.3%	0.2%
United States									
Baseline 2001	-285	-355	-211	-146	22	147	259	214	194
Change	1.68	3.09	5.31	4.51	-0.89	-8.40	-14.11	-12.03	-13.01
% Change	-0.6%	-0.9%	-2.5%	-3.1%	-4.1%	-5.7%	-5.5%	-5.6%	-6.7%
Mexico									
Baseline 2001	-389	-547	-560	-480	-533	-541	-525	-481	-448
Change	0.40	0.45	1.23	0.46	-1.45	-3.65	-4.26	-2.47	-0.59
% Change	-0.1%	-0.1%	-0.2%	-0.1%	0.3%	0.7%	0.8%	0.5%	0.1%
Russia									
Baseline 2001	-534	-533	-591	-637	-678	-688	-688	-683	-669
Change	0.86	0.87	1.45	0.65	-1.16	-4.13	-6.27	-6.89	-9.20
% Change	-0.2%	-0.2%	-0.2%	-0.1%	0.2%	0.6%	0.9%	1.0%	1.4%

TABLE A.14. Impacts on pork trade of other countries

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Brazil				(Thousand Metric Tons)					
Baseline 2001	199	129	133	156	189	182	168	175	163
Change	-0.65	-4.07	-3.34	5.77	16.44	25.71	32.32	26.69	29.14
% Change	-0.3%	-3.1%	-2.5%	3.7%	8.7%	14.1%	19.3%	15.3%	17.9%
Canada									
Baseline 2001	710	874	977	982	939	1,009	1,085	1,061	1,019
Change	-0.17	-1.90	-1.44	3.74	27.31	58.04	90.76	114.32	140.04
% Change	0.0%	-0.2%	-0.1%	0.4%	2.9%	5.8%	8.4%	10.8%	13.7%
Poland									
Baseline 2001	140	110	109	113	125	126	121	126	135
Change	-0.29	-2.29	-2.91	1.64	9.83	19.76	28.55	29.36	30.64
% Change	-0.2%	-2.1%	-2.7%	1.4%	7.8%	15.7%	23.5%	23.2%	22.7%
United States									
Baseline 2001	222	180	185	265	343	343	362	421	483
Change	-1.40	-6.75	-10.66	-5.06	18.81	60.33	118.88	165.16	215.70
% Change	-0.6%	-3.8%	-5.8%	-1.9%	5.5%	17.6%	32.8%	39.3%	44.7%
European Union									
Baseline 2001	1,104	1,272	1,178	1,078	1,071	1,019	960	1,023	1,197
Change	-5.22	-12.19	-35.18	1.55	76.77	176.73	265.92	278.14	278.13
% Change	-0.5%	-1.0%	-3.0%	0.1%	7.2%	17.3%	27.7%	27.2%	23.2%
Japan									
Baseline 2001	-948	-938	-923	-918	-955	-956	-950	-973	-1,004
Change	-0.21	-1.08	-0.86	1.19	5.40	8.82	11.20	10.24	10.98
% Change	0.0%	0.1%	0.1%	-0.1%	-0.6%	-0.9%	-1.2%	-1.1%	-1.1%
Mexico									
Baseline 2001	-251	-238	-208	-218	-265	-245	-209	-235	-285
Change	-0.13	-0.79	-0.83	1.48	8.28	16.84	26.69	32.77	38.27
% Change	0.1%	0.3%	0.4%	-0.7%	-3.1%	-6.9%	-12.8%	-13.9%	-13.4%
Russia									
Baseline 2001	-352	-382	-400	-395	-381	-389	-408	-431	-477
Change	-0.47	-2.95	-3.83	1.46	6.76	10.94	13.08	7.36	6.12
% Change	0.1%	0.8%	1.0%	-0.4%	-1.8%	-2.8%	-3.2%	-1.7%	-1.3%

TABLE A.15. Impacts on broiler trade of other countries

	2002	2003	2004	2005	2006	2007	2008	2009	2010
					(Thousand Metric Tons)				
Brazil									
Baseline 2001	924	1,025	1,155	1,175	1,206	1,245	1,255	1,243	1,235
Change	-0.95	-10.65	-5.65	-5.68	11.93	46.13	72.19	90.29	104.75
% Change	-0.1%	-1.0%	-0.5%	-0.5%	1.0%	3.7%	5.8%	7.3%	8.5%
Thailand									
Baseline 2001	274	241	204	196	206	231	255	283	318
Change	-0.41	-4.48	-3.40	-3.35	0.58	15.11	29.64	41.99	53.09
% Change	-0.2%	-1.9%	-1.7%	-1.7%	0.3%	6.5%	11.6%	14.9%	16.7%
United States									
Baseline 2001	2,554	2,544	2,531	2,584	2,584	2,595	2,635	2,712	2,777
Change	0.05	-3.19	-5.29	-13.11	-5.03	19.13	51.03	95.76	137.53
% Change	0.0%	-0.1%	-0.2%	-0.5%	-0.2%	0.7%	1.9%	3.5%	5.0%
Argentina									
Baseline 2001	-64	-48	-35	-35	-35	-25	-15	-11	-1
Change	-0.05	-0.73	-0.34	-1.11	2.24	7.38	11.76	16.04	19.17
% Change	0.1%	1.5%	1.0%	3.1%	-6.5%	-29.5%	-76.5%	-140.7%	-1800.9%
Indonesia									
Baseline 2001	-28	6	-21	-17	-24	-34	-38	-52	-41
Change	-1.80	3.02	-3.13	-1.76	1.12	7.30	13.71	18.67	22.66
% Change	6.5%	48.3%	14.7%	10.2%	-4.6%	-21.7%	-35.8%	-35.6%	-55.0%
Mexico									
Baseline 2001	-109	-128	-139	-138	-115	-130	-148	-135	-116
Change	-0.23	-3.02	-2.19	-2.93	6.28	20.85	34.10	46.34	56.62
% Change	0.2%	2.4%	1.6%	2.1%	-5.4%	-16.0%	-23.0%	-34.3%	-48.6%
Philippines									
Baseline 2001	-59	-56	-52	-57	-60	-57	-56	-60	-63
Change	-0.15	-1.45	-1.33	-2.00	2.23	8.78	14.87	20.74	25.57
% Change	0.3%	2.6%	2.6%	3.5%	-3.7%	-15.5%	-26.5%	-34.4%	-40.9%
Russia									
Baseline 2001	-897	-861	-835	-824	-813	-789	-790	-836	-901
Change	-0.31	-2.60	-3.01	-5.62	-0.95	6.37	12.73	20.03	24.53
% Change	0.0%	0.3%	0.4%	0.7%	0.1%	-0.8%	-1.6%	-2.4%	-2.7%

TABLE A.16. Impacts on world livestock production and trade

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Production									
Beef				(Thousand Metric Tons)					
Baseline 2001	43,358	44,013	44,905	45,747	46,468	47,235	47,777	48,119	48,388
Change	3.12	-2.90	6.40	13.28	26.09	32.10	38.83	40.69	46.16
% Change	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
Pork									
Baseline 2001	76,832	77,789	78,690	79,633	80,718	81,673	82,663	83,777	84,935
Change	9.89	17.04	22.24	55.08	122.72	210.88	273.30	252.59	165.97
% Change	0.0%	0.0%	0.0%	0.1%	0.2%	0.3%	0.3%	0.3%	0.2%
Broiler									
Baseline 2001	43,426	44,380	45,422	46,382	47,464	48,593	49,734	50,892	52,132
Change	7.41	-5.09	7.26	11.06	32.41	68.52	100.01	116.36	137.06
% Change	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.2%	0.2%	0.3%
Trade									
Beef									
Baseline 2001	3,237	3,432	3,589	3,705	3,859	3,977	4,037	4,015	4,006
Change	-2.33	-3.09	-6.32	-6.28	-4.98	-0.34	2.87	3.98	9.03
% Change	-0.1%	-0.1%	-0.2%	-0.2%	-0.1%	0.0%	0.1%	0.1%	0.2%
Pork									
Baseline 2001	2,567	2,710	2,701	2,720	2,816	2,821	2,831	2,941	3,124
Change	-8.49	-29.08	-57.56	9.46	158.75	358.39	560.78	635.03	715.29
% Change	-0.3%	-1.1%	-2.1%	0.3%	5.6%	12.7%	19.8%	21.6%	22.9%
Broiler									
Baseline 2001	4,203	4,296	4,388	4,461	4,515	4,600	4,688	4,780	4,882
Change	-1.69	-18.51	-16.12	-23.83	9.65	88.11	165.39	244.27	314.71
% Change	0.0%	-0.4%	-0.4%	-0.5%	0.2%	1.9%	3.5%	5.1%	6.4%

TABLE A.17. Impacts on United States livestock

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Beef									
Production				(Thousand Metric Tons)					
Baseline 2001	11,764	11,781	12,037	12,279	12,657	13,036	13,217	13,186	13,160
Change	0.05	-0.25	-0.40	0.03	0.50	1.70	3.95	6.94	9.97
% Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%
Consumption									
Baseline 2001	12,049	12,136	12,245	12,423	12,633	12,886	12,959	12,972	12,967
Change	-1.61	-3.36	-5.64	-4.49	1.42	10.05	18.02	18.90	22.94
% Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.2%
Net Trade									
Baseline 2001	-285	-355	-211	-146	22	147	259	214	194
Change	1.68	3.09	5.31	4.51	-0.89	-8.40	-14.11	-12.03	-13.01
% Change	-0.6%	-0.9%	-2.5%	-3.1%	-4.1%	-5.7%	-5.5%	-5.6%	-6.7%
Pork									
Production									
Baseline 2001	9,137	9,033	9,079	9,300	9,519	9,515	9,589	9,775	9,965
Change	-0.29	-2.48	-7.37	-11.03	-4.13	21.61	67.54	123.42	174.39
% Change	0.0%	0.0%	-0.1%	-0.1%	0.0%	0.2%	0.7%	1.3%	1.8%
Consumption									
Baseline 2001	8,915	8,866	8,894	9,027	9,172	9,178	9,227	9,348	9,478
Change	1.10	4.17	3.44	-5.62	-22.41	-38.39	-51.21	-42.23	-41.24
% Change	0.0%	0.0%	0.0%	-0.1%	-0.2%	-0.4%	-0.6%	-0.5%	-0.4%
Net Trade									
Baseline 2001	222	180	185	265	343	343	362	421	483
Change	-1.40	-6.75	-10.66	-5.06	18.81	60.33	118.88	165.16	215.70
% Change	-0.6%	-3.8%	-5.8%	-1.9%	5.5%	17.6%	32.8%	39.3%	44.7%
Broiler									
Production									
Baseline 2001	14,553	14,982	15,438	15,852	16,285	16,721	17,184	17,655	18,160
Change	0.39	0.04	-2.94	-5.97	-3.27	11.63	37.18	68.08	101.38
% Change	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.4%	0.6%
Consumption									
Baseline 2001	11,849	12,283	12,746	13,105	13,532	13,952	14,369	14,757	15,189
Change	0.31	3.16	2.69	7.30	1.85	-8.37	-15.46	-29.60	-38.14
% Change	0.0%	0.0%	0.0%	0.1%	0.0%	-0.1%	-0.1%	-0.2%	-0.3%
Net Trade									
Baseline 2001	2,554	2,544	2,531	2,584	2,584	2,595	2,635	2,712	2,777
Change	0.05	-3.19	-5.29	-13.11	-5.03	19.13	51.03	95.76	137.53
% Change	0.0%	-0.1%	-0.2%	-0.5%	-0.2%	0.7%	1.9%	3.5%	5.0%

TABLE A.18. Impacts on Chinese dairy

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Milk									
Milk Cow Numbers					(Thousand Head)				
Baseline 2001	4,834	4,848	4,866	4,876	4,883	4,889	4,894	4,902	4,910
Change	0.00	11.52	12.65	8.11	0.94	-7.70	-12.04	-14.20	-15.34
% Change	0.0%	0.2%	0.3%	0.2%	0.0%	-0.2%	-0.2%	-0.3%	-0.3%
Milk Production					(Thousand Metric Tons)				
Baseline 2001	8,108	8,238	8,391	8,531	8,667	8,802	8,938	9,078	9,220
Change	9.22	25.12	23.26	11.66	-4.94	-20.49	-28.61	-32.98	-34.98
% Change	0.1%	0.3%	0.3%	0.1%	-0.1%	-0.2%	-0.3%	-0.4%	-0.4%
Fluid Milk Consumption									
Baseline 2001	4,443	4,444	4,565	4,710	4,895	5,084	5,247	5,402	5,560
Change	36.84	77.36	119.71	165.57	216.22	224.42	229.92	234.62	239.65
% Change	0.8%	1.7%	2.6%	3.5%	4.4%	4.4%	4.4%	4.3%	4.3%
Cheese									
Consumption									
Baseline 2001	226	229	239	249	264	278	290	301	313
Change	6.11	12.94	20.19	28.11	36.66	37.28	37.67	37.94	38.21
% Change	2.7%	5.7%	8.5%	11.3%	13.9%	13.4%	13.0%	12.6%	12.2%
Net Imports									
Baseline 2001	22	25	33	43	57	70	80	89	100
Change	8.30	17.57	27.52	38.52	50.53	51.31	51.74	51.95	52.10
% Change	37.7%	71.1%	82.8%	90.1%	88.8%	73.5%	65.0%	58.4%	52.2%
Butter									
Consumption									
Baseline 2001	111	112	114	117	120	124	127	129	132
Change	1.24	2.65	4.23	6.02	8.08	8.35	8.57	8.80	9.00
% Change	1.1%	2.4%	3.7%	5.2%	6.7%	6.8%	6.8%	6.8%	6.8%
Net Imports									
Baseline 2001	28	29	31	33	36	39	41	43	46
Change	1.16	2.49	3.98	5.67	7.63	7.90	8.11	8.35	8.56
% Change	4.1%	8.6%	12.9%	17.3%	21.4%	20.5%	19.7%	19.3%	18.8%
Nonfat Dry Milk									
Consumption									
Baseline 2001	64	63	64	65	67	68	69	70	71
Change	0.86	1.80	2.79	3.89	5.09	5.25	5.32	5.35	5.41
% Change	1.4%	2.9%	4.4%	6.0%	7.6%	7.7%	7.7%	7.6%	7.6%
Net Imports									
Baseline 2001	12	10	10	11	11	12	12	12	12
Change	0.63	1.31	2.02	2.81	3.66	3.80	3.86	3.89	3.97
% Change	5.1%	12.8%	19.6%	25.7%	32.4%	32.6%	32.7%	32.8%	33.7%
Whole Milk Powder									
Consumption									
Baseline 2001	487	490	497	505	515	525	533	541	548
Change	3.28	7.04	10.89	15.00	19.43	19.93	20.22	20.46	20.74
% Change	0.7%	1.4%	2.2%	3.0%	3.8%	3.8%	3.8%	3.8%	3.8%
Net Imports									
Baseline 2001	25	10	15	22	27	44	54	62	71
Change	6.21	12.45	21.24	31.86	43.87	47.49	49.59	51.08	52.37
% Change	24.5%	119.9%	145.6%	146.3%	160.0%	108.4%	91.4%	81.8%	74.2%

TABLE A.19. Impacts on dairy trade of other countries

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cheese									
Argentina				(Thousand Metric Tons)					
Baseline 2001	11	10	5	7	9	13	18	24	31
Change	0.91	1.76	2.86	4.01	5.31	5.53	5.85	6.20	6.52
% Change	8.1%	18.0%	62.4%	60.8%	58.2%	43.9%	33.3%	25.9%	21.2%
Australia									
Baseline 2001	191	196	204	212	218	225	233	241	248
Change	0.65	1.19	1.92	2.59	3.33	3.20	3.28	3.32	3.39
% Change	0.3%	0.6%	0.9%	1.2%	1.5%	1.4%	1.4%	1.4%	1.4%
European Union									
Baseline 2001	250	253	254	259	265	274	281	287	294
Change	1.96	3.67	5.80	8.00	10.40	9.75	9.62	9.75	9.85
% Change	0.8%	1.5%	2.3%	3.1%	3.9%	3.6%	3.4%	3.4%	3.4%
New Zealand									
Baseline 2001	249	264	273	282	290	300	310	320	328
Change	0.24	0.86	1.41	2.12	2.91	2.97	2.90	2.73	2.78
% Change	0.1%	0.3%	0.5%	0.8%	1.0%	1.0%	0.9%	0.9%	0.8%
Brazil									
Baseline 2001	10	14	13	12	11	13	14	14	11
Change	-1.08	-2.07	-3.24	-4.42	-5.62	-5.27	-5.19	-5.19	-5.34
% Change	-10.9%	-15.3%	-24.1%	-36.6%	-52.1%	-39.3%	-36.6%	-37.9%	-48.3%
WMP									
Argentina									
Baseline 2001	117	129	135	141	146	153	159	166	174
Change	0.57	1.09	1.79	2.62	3.55	3.77	3.89	3.98	4.07
% Change	0.5%	0.8%	1.3%	1.9%	2.4%	2.5%	2.4%	2.4%	2.3%
Australia									
Baseline 2001	181	183	184	185	186	186	187	187	187
Change	-0.01	-0.07	-0.03	0.09	0.27	0.48	0.58	0.67	0.72
% Change	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.3%	0.4%	0.4%
European Union									
Baseline 2001	519	526	527	524	523	524	524	524	527
Change	0.79	1.36	2.32	3.52	4.84	4.66	4.62	4.62	4.59
% Change	0.2%	0.3%	0.4%	0.7%	0.9%	0.9%	0.9%	0.9%	0.9%
New Zealand									
Baseline 2001	466	474	484	491	498	505	513	520	526
Change	0.79	1.27	2.09	3.10	4.23	4.18	4.21	4.04	3.99
% Change	0.2%	0.3%	0.4%	0.6%	0.8%	0.8%	0.8%	0.8%	0.8%
Brazil									
Baseline 2001	135	136	137	135	133	134	134	135	134
Change	-0.39	-0.81	-1.38	-2.09	-2.87	-3.00	-2.99	-2.95	-2.95
% Change	-0.3%	-0.6%	-1.0%	-1.6%	-2.2%	-2.2%	-2.2%	-2.2%	-2.2%

TABLE A.20. Impacts on international crop prices

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
					(U.S. Dollars per Metric Ton)				
Wheat, FOB Gulf									
Baseline 2001	131.63	136.84	139.89	142.66	146.26	150.15	152.33	155.14	159.05
Change	0.06	3.05	2.55	3.15	3.44	4.00	4.24	4.71	5.04
% Change	0.0%	2.2%	1.8%	2.2%	2.4%	2.7%	2.8%	3.0%	3.2%
Corn, FOB Gulf									
Baseline 2001	98.60	100.39	102.31	104.64	107.40	109.83	111.81	114.47	117.53
Change	0.51	0.69	1.00	1.19	1.56	1.74	1.94	2.32	2.17
% Change	0.5%	0.7%	1.0%	1.1%	1.5%	1.6%	1.7%	2.0%	1.8%
Barley, FOB Gulf									
Baseline 2001	128.62	133.01	134.31	135.57	137.73	139.19	140.58	141.20	143.54
Change	-0.20	0.90	1.12	1.43	2.77	3.48	4.02	4.42	5.45
% Change	-0.2%	0.7%	0.8%	1.1%	2.0%	2.5%	2.9%	3.1%	3.8%
Sorghum, FOB Gulf									
Baseline 2001	93.50	95.55	97.61	100.48	103.24	105.21	107.08	109.90	113.01
Change	0.38	0.52	0.91	1.13	1.42	1.68	1.92	2.36	2.29
% Change	0.4%	0.5%	0.9%	1.1%	1.4%	1.6%	1.8%	2.1%	2.0%
Rice, FOB Bangkok 100% B Grade									
Baseline 2001	218.30	233.50	236.31	243.97	249.19	259.06	262.35	268.80	276.42
Change	-1.93	-2.11	-2.34	-2.21	-2.53	-1.40	-1.46	-0.54	-0.42
% Change	-0.9%	-0.9%	-1.0%	-0.9%	-1.0%	-0.5%	-0.6%	-0.2%	-0.2%
Cotton, A Index, CIF N. Europe									
Baseline 2001	1,533	1,544	1,566	1,588	1,607	1,626	1,645	1,667	1,691
Change	6.95	21.99	43.16	66.07	86.98	105.98	128.39	154.77	189.37
% Change	0.5%	1.4%	2.8%	4.2%	5.4%	6.5%	7.8%	9.3%	11.2%

TABLE A.21. Impacts on international oilseed product prices

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Soybean, FOB Gulf				(U.S. Dollars per Metric Ton)					
Baseline 2001	177	181	188	194	199	205	211	215	218
Change	0.85	0.85	1.38	2.11	2.83	3.67	4.12	3.55	4.55
% Change	0.5%	0.5%	0.7%	1.1%	1.4%	1.8%	2.0%	1.6%	2.1%
Soybean Meal, FOB Decatur 48%									
Baseline 2001	193	195	200	203	206	209	212	214	215
Change	-1.25	-1.40	-1.25	-1.03	-0.88	-0.24	0.34	0.47	1.36
% Change	-0.6%	-0.7%	-0.6%	-0.5%	-0.4%	-0.1%	0.2%	0.2%	0.6%
Soybean Oil, FOB Decatur									
Baseline 2001	332	347	364	383	403	424	447	463	484
Change	14.03	16.17	18.67	21.58	24.97	26.39	27.65	27.31	29.09
% Change	4.2%	4.7%	5.1%	5.6%	6.2%	6.2%	6.2%	5.9%	6.0%
Rapeseed, CIF Hamburg									
Baseline 2001	184	184	194	197	204	207	216	217	222
Change	6.28	6.93	9.01	10.24	12.39	14.55	16.27	16.69	18.42
% Change	3.4%	3.8%	4.6%	5.2%	6.1%	7.0%	7.5%	7.7%	8.3%
Rapeseed Meal, FOB Hamburg									
Baseline 2001	143	141	147	148	151	150	154	153	153
Change	-0.81	-1.57	-1.79	-2.99	-4.18	-4.39	-4.06	-3.93	-3.27
% Change	-0.6%	-1.1%	-1.2%	-2.0%	-2.8%	-2.9%	-2.6%	-2.6%	-2.1%
Rapeseed Oil, FOB Hamburg									
Baseline 2001	345	358	379	396	419	441	466	486	509
Change	30.74	32.66	36.38	39.84	44.34	46.36	49.50	51.36	54.84
% Change	8.9%	9.1%	9.6%	10.1%	10.6%	10.5%	10.6%	10.6%	10.8%
Sunflower, CIF Lower Rhine									
Baseline 2001	191	193	200	205	208	212	217	220	221
Change	0.54	1.02	1.31	1.51	1.96	2.11	2.32	2.51	2.61
% Change	0.3%	0.5%	0.7%	0.7%	0.9%	1.0%	1.1%	1.1%	1.2%
Sunflower Meal, CIF Rotterdam									
Baseline 2001	120	119	122	125	126	125	128	128	127
Change	-0.57	-0.43	-0.44	-0.66	-0.87	-0.57	0.09	0.91	1.82
% Change	-0.5%	-0.4%	-0.4%	-0.5%	-0.7%	-0.5%	0.1%	0.7%	1.4%
Sunflower Oil, FOB NW Europe									
Baseline 2001	391	408	430	454	479	504	532	556	580
Change	2.75	3.73	4.46	5.21	6.27	6.44	6.46	6.25	6.02
% Change	0.7%	0.9%	1.0%	1.1%	1.3%	1.3%	1.2%	1.1%	1.0%
Palm Oil, CIF Rotterdam									
Baseline 2001	296	301	308	326	352	381	413	441	458
China Scenario	298	303	310	329	355	387	420	448	466
Change	1.64	1.87	2.03	2.30	2.67	6.05	7.03	7.53	7.99
% Change	0.6%	0.6%	0.7%	0.7%	0.8%	1.6%	1.7%	1.7%	1.7%

TABLE A.22. Impacts on international livestock and dairy prices

	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11
Beef, NB Direct Fed Steer				(U.S. Dollars per Metric Ton)					
Baseline 2001	76	77	74	72	70	68	67	68	69
Change	0.03	0.02	0.10	0.17	0.30	0.36	0.38	0.31	0.22
% Change	0.0%	0.0%	0.1%	0.2%	0.4%	0.5%	0.6%	0.5%	0.3%
Pork, Barrow & Gilt									
Baseline 2001	35	41	46	43	39	42	46	43	41
Change	-0.01	-0.11	-0.03	0.26	0.82	1.32	1.70	1.43	1.43
% Change	0.0%	-0.3%	-0.1%	0.6%	2.1%	3.1%	3.7%	3.3%	3.5%
Broiler, 12 City									
Baseline 2001	57	57	57	57	57	57	58	58	58
Change	-0.01	-0.10	-0.03	0.01	0.33	0.68	0.93	1.09	1.26
% Change	0.0%	-0.2%	-0.1%	0.0%	0.6%	1.2%	1.6%	1.9%	2.2%
Butter, FOB Price N. Europe									
Baseline 2001	1,579	1,603	1,639	1,670	1,689	1,718	1,758	1,808	1,869
Change	6.42	9.10	13.16	17.44	22.58	22.20	23.43	22.97	24.91
% Change	0.4%	0.6%	0.8%	1.0%	1.3%	1.3%	1.3%	1.3%	1.3%
Cheese, FOB Price N. Europe									
Baseline 2001	1,938	1,959	2,002	2,037	2,061	2,097	2,148	2,205	2,254
Change	17.49	32.13	50.26	68.35	87.85	85.06	86.72	90.42	93.74
% Change	0.9%	1.6%	2.5%	3.4%	4.3%	4.1%	4.0%	4.1%	4.2%
NFD, FOB Price N. Europe									
Baseline 2001	1,728	1,757	1,794	1,816	1,851	1,878	1,908	1,942	1,977
Change	6.70	11.13	17.67	24.03	30.63	28.84	29.83	32.40	33.53
% Change	0.4%	0.6%	1.0%	1.3%	1.7%	1.5%	1.6%	1.7%	1.7%
WMP, FOB Price N. Europe									
Baseline 2001	1,808	1,838	1,875	1,904	1,934	1,963	1,996	2,032	2,071
Change	9.17	15.66	24.93	35.10	46.36	46.29	47.77	49.64	51.30
% Change	0.5%	0.9%	1.3%	1.8%	2.4%	2.4%	2.4%	2.4%	2.5%

References

Anderson, K. (1996). "China's Accession to the WTO: Why, How, and When?" Chapter 14 in *Strengthening the Global Trading System: From GATT to WTO*, edited by K. Anderson. Adelaide: Center for International Economic Studies.

_____. (1997). "On the Complexities of China's WTO Accession." *The World Economy* 20(6): 749-72.

Anderson, K., ed. (1998). "China's WTO Accession: Foreign Investment, Government Procurement, Grain Self-sufficiency, and Labour Standards." Center for International Economic Studies Seminar Paper 98-10, November. Anderson, K., B. Dimarana, T. Hertel, and W. Martin. (1996). "Asia-Pacific Food Markets and Trade in 2005: A Global Economy-wide Perspective." Center for Economic Policy and Research Discussion Paper # 1474, September, London.

Brown, L. (1995). Who Will Feed China. Wake-up Call for a Small Planet. Worldwatch Institute, September.

Fan, S., and P.G. Pardey. (1997). "Research, Productivity, and Output Growth in Chinese Agriculture." *Journal of Development Economics* 55: 115-137.

Fang, C., and J.C. Beghin. (2000). "Protection and Comparative Advantage of Chinese Agriculture: Implications for Regional and National Specialization," Unpublished, Iowa State University, revised, December.

Food and Agricultural Policy Research Institute (FAPRI). (2001). *The 2001 U.S. and World Agricultural Outlook*, Iowa State University, and University of Missouri-Columbia, Staff Report 1-01.

Hayes, D.J., and R. Clemens. (1997). "The Chinese Market for U.S. Pork and Pork Variety Meats," *U.S. Meat Export Analysis and Trade News*, February, Meat Export Research Center, Iowa State University.

Huang, J., and C. Chen. (1999a). "Effects of Trade Liberalization on Agriculture in China: Commodity Aspects," CGPRT Center Working Paper #43, August, Bogor, Indonesia.

_____. (1999b). "Effects of Trade Liberalization on Agriculture in China: Institutional and Structural Aspects." CGPRT Center Working Paper #42, May, Bogor, Indonesia.

Huang, J., and S. Rozelle. (1996). "Technical Change: Rediscovering the Engine of Productivity Growth in China's Rural Economy." *Journal of Development Economics* 49: 337-69.

Ianchovichina, E., W. Martin, and E. Fukase. (2000). "Assessing the Implications of Merchandise Trade Liberalization in China's Accession to WTO." The World Bank, Washington, D.C., July.

Jiang, J., N.E. Piggott, and M.K. Wohlgenant. (2001). "Trade Policy Changes in China: Implications for the U.S. Soybean Sector." Paper presented at the 2001 Australian Agricultural and Resource Economics Meetings, Adelaide, Australia.

Johnson, D.G. (1999). "China's Grain Trade: Some Policy Considerations." Paper 99-05, 1999, Office of Agricultural Economics Research, The University of Chicago.

Koo, W.W. (2000). "The Impact of China's Accession into the WTO on the U.S. Wheat Industry." Agricultural Economics Report No 440, Northern Plains Trade Research Center, Fargo, North Dakota, June.

Li, S., and F. Zhai. (2000). "The Impact of Accession to WTO on China's Economy." mimeo, Development Research Center, The State Council, People's Republic of China, May.

Schmidhuber, J. (2001). "The Effects of WTO Accession on China's Agriculture." Paper presented at a joint World Bank/Ministry of Foreign Trade and Economic Cooperation workshop on China's Agriculture and the WTO, Beijing, China, January.

Tuan, F.C., and G. Cheng. (1999). "A Review of China's Agricultural Trade Policy." Presented at the 1999 International Agricultural Trade Research Consortium summer meetings, San Francisco, CA, June 25-26.

Tuan, F.C., G. Cheng, and T. Peng. (2001). "Comparative Advantage and Trade Competitiveness of Major Agricultural Products in China." Mimeo., U.S. Department of Agriculture, Economic Research Service, Washington, D.C.

U.S. Department of Agriculture, Economic Research Service (USDA-ERS). (2000). "China's WTO Accession Would Boost U.S. Ag Exports & Farm Income." World Agriculture & Trade, in *Agricultural Outlook,* March.

Wang, Q., F. Fuller, D. Hayes, and C. Halbrendt. (1998). "Chinese Consumer Demand for Animal Products and Implications for U.S. Pork and Poultry Products." *Journal of Agricultural and Applied Economics* 30 (July): 127-40.

Zhao, F., T.I. Wahl, and H. Wang. (2000). "Trade Liberalization under China's WTO Accession: Implications for China and US Grain Markets." Paper presented at the 2000 American Agricultural Economic Association Meetings, Tampa, FL, July.