



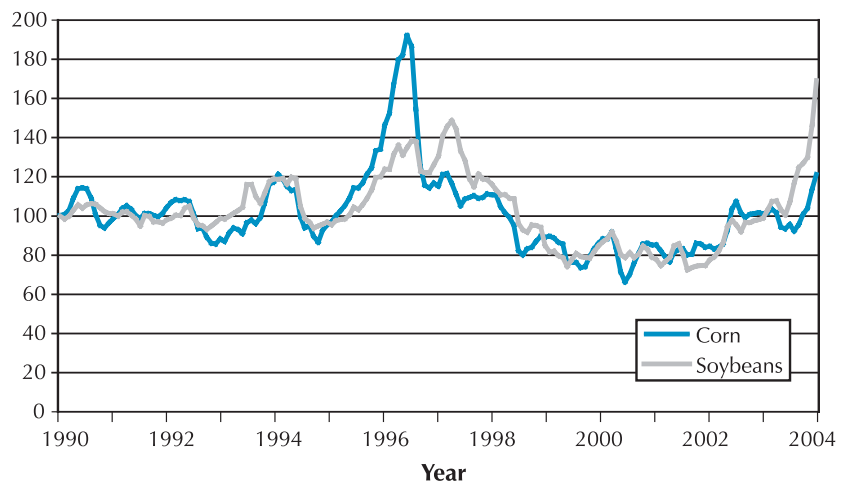
## Booming Commodities: How Long Will It Last?

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Who would have thought that we would once again see \$3 corn and \$10 soybeans? Iowa farmers have not seen such price strength since 1996 for corn and 1974 for soybeans. At the same time, Iowa hog prices have strengthened in recent months; egg prices have more than doubled in the last two years; and cattle prices would be at record highs if U.S. export markets had not closed down as a result of the mad cow disease scare. Even so, cattle prices have hovered around \$85.

Across the board, Iowa farmers are enjoying the benefits of a commodity boom. As farmers, processors, and input suppliers adjust to this new reality of higher commodity prices, some key questions arise: Could prices go higher? How long will this price strength last? Will the rest of this decade resemble the 1970s, with high inflation rates and skyrocketing interest rates, rather than the 1990s? Of course, nobody is certain of the answers (or we'd see more people leading lives of leisure and luxury through a few well-placed trades), but some insights can be obtained by examining the economic fundamentals that we are facing today.

I focus here on corn and soybeans, because over time, changes in feed prices are the primary determinants of what happens to livestock prices. Cheap feed translates into expanded supplies and lower prices. Expensive feed eventually translates into a drop in supplies and higher prices.



**FIGURE 1. MONTHLY PRICE INDICIES (JAN. 1990 = 100) FOR CORN AND SOYBEANS: 1990-2004**

### WHY HIGH PRICES NOW?

Figure 1 puts the recent price strength into a historical perspective. As shown, corn and soybean prices have been moving higher since about 2000, with the sharpest increase occurring after the 2003 harvest. An examination of why we have these higher prices now will help us judge whether they will continue or whether we will soon be back to the situation that existed in the late 1990s.

### SOYBEANS

U.S. soybean prices have doubled in the last two years and are up by about 70 percent in the last year alone. There are a number of factors underpinning strong soybean prices. The first factor is that the U.S. soybean crop in 2003 was the lowest it has been since 1996, down 16 percent from its peak in 2001. With less production, prices move higher. Under reasonable assumptions, the decrease in U.S. production has led to perhaps a 20 percent price increase,

holding demand constant. But demand has been growing.

Large U.S. and South American soybean crops in recent years have led to increased use, both domestically and internationally. Just as it takes time to build up use rates, once they are built up, it takes time to adjust use downward in response to higher prices. Export demand has also been enhanced somewhat by a weaker U.S. dollar, which effectively decreases the price of U.S. products in foreign markets. Strong demand growth possibly accounts for another 15 percent price increase.

Much of the increase in world demand for soybeans and soybean products since 1990 has been filled by Brazil. As shown in Figure 2, Brazil has about tripled its production since 1990. The world has come to expect dramatically increasing soybean production from Brazil, and until this year, Brazilian crops have grown faster than expected. However, the crop that was just harvested was

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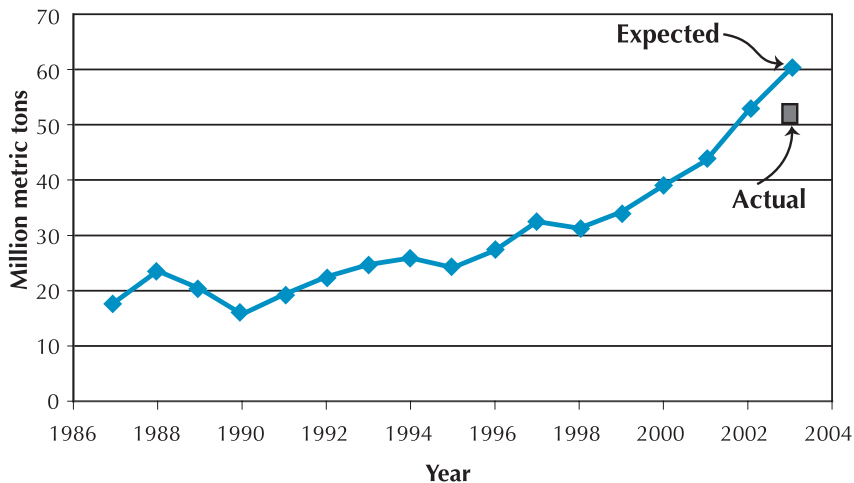


FIGURE 2. BRAZILIAN SOYBEAN PRODUCTION

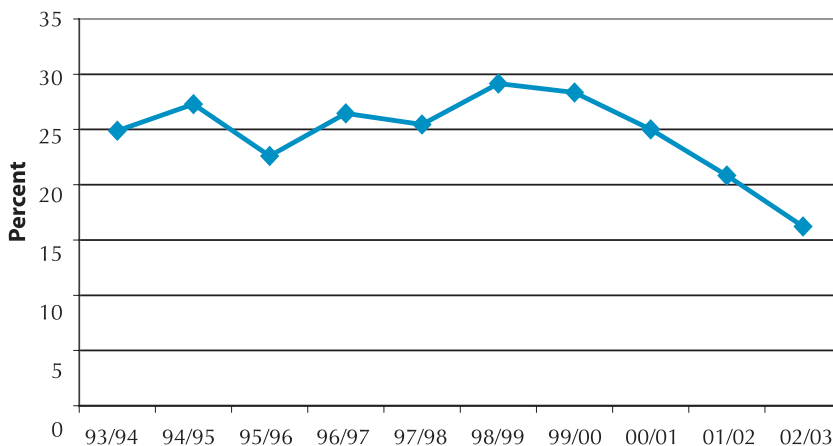


FIGURE 3. WORLD CORN STOCKS-TO-USE RATIO

a disappointment. Planted acreage increased by 13 percent in Brazil in 2003 but production was flat, which implies that yield decreased below trend yields by about 13 percent.

Thus, world markets have had to contend with sharply lower-than-expected production in both Brazil and the United States. The Brazilian shortage accounts for perhaps another 15 to 20 percent price increase.

Therefore, the higher U.S. soybean prices are accounted for by strong demand combined with short crops in South and North America, as well as a weaker dollar. So we would need for these factors to continue in order to see continued high soybean prices.

USDA reports that U.S. farmers expect to plant 75.4 million acres of soybeans this year. At a trend yield

of 39 bushels per planted acre, U.S. production in 2004 would be about 2.94 billion bushels, or 21.5 percent higher than the 2003 crop. Brazilian soybean production is projected to increase by about 23 percent if their next crop achieves trend yield. Production in Argentina is expected to increase also, by about 10 percent. Given that the United States and South America are by far the largest soybean producers in the world, a return to trend yields will result in a fairly large drop in soybean prices beginning with the U.S. harvest in late August. In addition, current strong soybean prices imply that countries that produce competing oils (palm, sunflower, peanut, and rapeseed) have an incentive to expand production. If

decent growing conditions return, we should see a 25 to 40 percent decline in soybean prices next year, assuming that the dollar stays at about the same level of exchange.

Of course, if we have another short crop, then we will see prices climb even higher than those that we see today. The 2003 U.S. soybean crop was about as short a soybean crop as could be expected. A repeat of this crop would mean production of about 2.4 billion bushels. This type of crop would send prices sharply higher next fall and winter, as the world waits for news about the South American crop.

## CORN

Corn prices have been slowly rising since August of 2000. As shown in Figure 3, this change in price direction coincides markedly with the beginning of a decline in the world stocks-to-use ratio of corn. A decline in this ratio is perhaps the best indicator that demand growth is outpacing supply growth. By itself, a moderate decline in the stocks-to-use ratio does not signal higher prices, but a decline does signal an increase in the potential for sharply higher prices if either supply unexpectedly decreases or demand unexpectedly increases.

By almost all measures, world corn supplies are plentiful. Total world production in 2003 was almost equal to an all-time high. U.S. corn production was its highest ever. This suggests that unexpectedly strong demand must be the reason for the strong prices.

The weaker U.S. dollar has increased demand for U.S. corn exports. This increase in demand shows up as an increase in U.S. corn prices. The other source of demand growth is the increased growth of U.S. ethanol plants. In January 2001, there were approximately 2 billion gallons of ethanol capacity either in operation or under construction in the United States. There is now 3.7 billion gallons of capacity. This added capacity represents approximately 620 million bushels of corn, or about 6 percent of the U.S. corn crop. And finally, there has been some demand growth that

occurred in response to higher soybean prices, as producers adjusted their feed rations.

USDA projects that U.S. corn farmers will plant about 78 million acres in 2004. This represents another 10-billion-bushel corn crop at the trend yield. There is no reason to believe that demand growth will slow substantially, which suggests that the likelihood of a large price drop is significantly lower for corn than for soybeans. Ideal growing conditions could result in an 11-billion-bushel crop. This is the size of crop that we would have to see if we expect to see a dramatic decrease in corn prices.

The stocks-to-use ratio for corn is projected to decline to about 10 percent at the end of this marketing year. This suggests that if we have a repeat of 1988 or 1993, then corn production could decline by 20 percent or more. This would likely raise corn prices by at least 40 percent above the levels that we see today.

Current market conditions indicate that corn prices are much more likely to remain at current levels than are soybean prices. Strong demand for corn from both domestic and international sources and a shrinking stocks-to-use ratio suggests that it will take a fairly large corn and feed grain crop to cause a substantial drop in price. In the case of soybeans, a return to trend yields should result in a sharp drop in price.

## POLICY IMPLICATIONS

Current federal commodity policy is designed to compensate crop farmers for low prices. Corn and soybean farmers will not receive a countercyclical payment for their 2003 crop, and few, if any, received a loan deficiency payment last fall. However, Iowa farmers will receive their direct payments because these arrive regardless of yields or prices. These payments will total about \$512 million for Iowa farmers for their 2003 crop.

Recall that there were two justifications for moving toward decoupled payments with the 1996 farm bill. As their original name im-

plies, Agricultural Market Transition Act (AMTA) payments were advertised as payments that would transition farmers away from government assistance toward reliance on markets. The second justification was that decoupled payments are not counted as being trade distorting under World Trade Organization (WTO) rules. Do either of these justifications hold today?

The large increase in federal assistance in the late 1990s and passage of the 2002 farm bill reveals that Congress has no intention of transitioning farmers away from government assistance. The name change in the decoupled payments from *transition* payments to *direct* payments perhaps is the best indicator of congressional intentions.

However, the WTO justification is just as valid today as ever. The European Union is moving ever faster toward use of decoupled payments as its main means of supporting farm incomes. In some areas, these payments are facilitating the consolidation of farms into more economically viable units that can make profits with lower government-guaranteed prices.

Clearly, decoupled payments will play a central role if a new WTO agreement is to be successfully negotiated. Such payments give farmers the incentive to look to the marketplace for cues about what to plant and how to grow their crops. Thus they serve to defuse the arguments that have been used successfully by developing countries and other exporters that high U.S. and E.U. domestic subsidies cause overproduction and lower world prices.

A potential downside of decoupled payments, however, is that they are difficult to justify when prices are good and farm income is high. How can it be equitable that Iowa farmers will receive \$512 million from the government even though farm income is high? Such questions should be anticipated as Congress and the administration struggle to balance the federal books in the coming years. ♦

## Policy Reforms in World Sugar Markets: What Would Happen?

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The international sugar market is not a “free” market because of extensive use of production quotas, import controls, government support prices, and preferential trade agreements of rich countries. In the United States, the European Union, and Japan, protectionist policies have resulted in domestic prices up to three times greater than the world sugar price. In recent years, the World Trade Organization (WTO), North American Free Trade Agreement (NAFTA), and regional agree-

ments have mounted international pressure to liberalize sugar markets in the most offending countries but without much success. Nevertheless, the major protectionist countries are becoming aware that current sugar policies cannot last indefinitely.

The European Union is currently working toward a more liberal sugar policy, which is scheduled to be released later this year. With regional trade agreements either concluded or on the horizon, the United States will also have to address the issue of sugar reform. Sweetener trade has been a controversial part of NAFTA. Mexican sugar exports to the United States face trade impediments currently under investigation by a NAFTA panel; in retaliation, Mexico has put up discriminatory barriers to

U.S. high fructose corn syrup (HFCS) exports, an action the WTO is currently investigating. The current sweetener disputes between the United States and Mexico illustrate the sad state of affairs in sweeteners markets in several member countries of the Organization for Economic Cooperation and Development (OECD); but they also stimulate our interest in knowing what sugar markets would look like if they were completely unfettered.

### MODELING SUGAR REFORMS: EFFECTS ON PRICES, PRODUCTION, AND TRADE

CARD economists recently analyzed the impact of the removal of current market interventions in world sugar markets. The main scenario considered removes all trade distortions

**TABLE 1. IMPACTS OF FULL MARKET LIBERALIZATION ON SUGAR PRICE AND NET EXPORTS\***

	01/02	06/07	11/12	Average		01/02	06/07	11/12	Average
	(Thousand Metric Tons)					(Thousand Metric Tons)			
<b>Brazil</b>					<b>Japan</b>				
Baseline	9,500	11,351	11,521	11,311.48	Baseline	-1,548	-1,524	-1,535	-1,531.41
WTO	9,500	16,686	16,442	15,952.01	WTO	-1,548	-1,927	-2,145	-1,922.46
Change	0.0	5,335.0	4,920.7	4,640.53	Change	0.0	-403.0	-610.4	-391.05
% chg	0.00%	47.00%	42.71%	40.90%	% chg	0.00%	26.45%	39.77%	25.57%
<b>European Union</b>					<b>United States</b>				
Baseline	1,850	3,555	4,634	3,734.87	Baseline	-1,344	-2,397	-3,132	-2,423.20
WTO	1,850	-9,162	-7,594	-8,251.26	WTO	-1,344	-3,085	-3,463	-2,974.49
Change	0.0	-12,718	-12,228	-11,986	Change	0.0	-687.4	-330.9	-551.29
% chg	0.00%	-358%	-264%	-324%	% chg	0.00%	28.67%	10.57%	24.00%
<b>Mexico</b>					<b>SUGAR PRICES</b>				
Baseline	530	1,076	1,812	1,218.33	<b>FOB Caribbean Price (U.S. Dollars per Metric Ton)</b>				
WTO	530	380	1,238	681.85	Baseline	190	215	239	214.61
Change	0.0	-696.8	-573.1	-536.48	WTO	190	344	351	351.36
% chg	0.00%	-64.73%	-31.64%	-43.40%	Change	0.0	129.9	112.0	136.74
<b>China</b>					% chg	0.00%	60.50%	46.89%	64.96%
Baseline	-1,177	-1,219	-2,155	-1,450.67	<b>New York Spot</b>				
WTO	-1,177	1,273	-684	899.12	Baseline	465	409	394	415.78
Change	0.0	2,492.5	1,470.1	2,349.79	WTO	465	367	373	373.40
% chg	0.00%	-204.44%	-68.23%	-177.34%	Change	0.0	-42.1	-21.5	42.38
					% chg	0.00%	-10.30%	-5.46%	-10.12%

\*Note: A negative net export value means the country is a net importer.

(tariffs, export taxes/subsidies, tariff rate quotas, and state trading) and all domestic support to producers and taxes on consumers. In our model, we implement the reforms in the 2002/03 trade year and measure their resulting deviations from the baseline through 2011/12.

Under the full removal of all trade and domestic production and consumption distortions, major changes occur (see Tables 1 and 2). Prices increase by 47 percent by the end of the projection period. Aggre-

gate trade expands moderately, but the location of production and trade patterns are substantially affected. Protectionist OECD countries (the European Union, Japan, and, to a lesser extent, Mexico and the United States) experience an import expansion or export reduction and significant contraction in production.

World sugar beet production decreases by 21 percent by the end of the decade, whereas world sugarcane production increases by 7 percent. Hence, as conventional

wisdom suggests, cane sugar production tends to be more competitive than beet sugar production. The full set of country-specific results is available at [www.card.iastate.edu](http://www.card.iastate.edu) in the paper ("Multilateral Trade and Agricultural Policy Reforms in Sugar Markets"). These full results show that Brazil, Australia, Cuba, Indonesia, Malaysia, and Turkey significantly expand sugar production when all distortions are removed. Aggregate world sugar production

*Continued on page 11*

**TABLE 2. IMPACTS OF FULL MARKET LIBERALIZATION ON SUGAR PRODUCTION AND CONSUMPTION**

	01/02	06/07	11/12	Average		01/02	06/07	11/12	Average
	(Thousand Metric Tons)					(Thousand Metric Tons)			
<b>United States</b>					<b>European Union</b>				
Production					Production				
Baseline	7,189	7,942	7,983	7965.40	Baseline	16,178	18,522	19,752	18702.35
WTO	7,189	7,264	7,585	7454.10	WTO	16,178	6,309	7,956	7202.49
Change	0.0	-678.2	-398.4	-511.29	Change	0.0	-12,213	-11,797	-11,500
% chg	0.00%	-8.54%	-4.99%	-6.42%	% chg	0.00%	-65.94%	-59.72%	-61.43%
Consumption					Consumption				
Baseline	9,335	10,203	10,976	10258.58	Baseline	14,700	14,921	15,088	14932.70
WTO	9,335	10,254	10,995	10309.33	WTO	14,700	15,413	15,527	15390.47
Change	0.0	50.9	19.7	50.75	Change	0.0	491.4	439.3	457.76
% chg	0.00%	0.50%	0.18%	0.50%	% chg	0.00%	3.29%	2.91%	3.06%
<b>Brazil</b>					<b>Japan</b>				
Production					Production				
Baseline	18,500	21,893	22,729	21871.81	Baseline	795	852	898	854.26
WTO	18,500	26,369	26,713	25582.09	WTO	795	506	321	514.23
Change	0.0	4,475.1	3,984.5	3710.28	Change	0.0	-346.1	-576.9	-340.03
% chg	0.00%	20.44%	17.53%	16.85%	% chg	0.00%	-40.63%	-64.25%	-39.06%
Consumption					Consumption				
Baseline	9,450	10,549	11,211	10565.25	Baseline	2,350	2,376	2,433	2383.36
WTO	9,450	9,673	10,265	9657.02	WTO	2,350	2,432	2,467	2433.79
Change	0.0	-876.3	-946.1	-908.23	Change	0.0	56.9	34.3	50.43
% chg	0.00%	-8.31%	-8.44%	-8.61%	% chg	0.00%	2.40%	1.41%	2.12%
<b>China</b>					<b>Mexico</b>				
Production					Production				
Baseline	7,623	8,359	8,980	8375.08	Baseline	5,092	5,817	6,850	6005.68
WTO	7,623	9,704	9,737	9437.40	WTO	5,092	5,180	6,345	5528.99
Change	0.0	1,344.9	756.9	1062.32	Change	0.0	-636.8	-504.9	-476.68
% chg	0.00%	16.09%	8.43%	12.72%	% chg	0.00%	-10.95%	-7.37%	-7.79%
Consumption					Consumption				
Baseline	8,800	9,582	11,149	9834.95	Baseline	4,543	4,747	5,047	4793.55
WTO	8,800	8,397	10,418	8563.96	WTO	4,543	4,805	5,116	4850.27
Change	0.0	-1,184.3	-731.0	-1270.98	Change	0.0	58.2	68.5	56.71
% chg	0.00%	-12.36%	-6.56%	-13.31%	% chg	0.00%	1.23%	1.36%	1.18%

Agricultural Situation  
Spotlight

Ethanol: Policies, Production, and Profitability

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The proposed federal energy bill, currently back in committee for further debate, has targeted a dramatic increase in the use of renewable fuel sources, and that has helped focus a vast amount of attention on ethanol over the past year. By 2012, five billion gallons of renewable fuels would make up part of the nation's fuel supply. That is nearly double the current amount of ethanol in use.

Congress is also considering a long-term transportation bill that includes an extension of the ethanol fuel tax break and a modification of the relationship between federal highway funds and fuel taxes. Currently, the federal government provides a 5.2¢ tax credit for 10 percent ethanol-blended gasoline. This credit is scheduled to fall to 5.1¢ in 2005 and expire at the end of 2006. The modification is called the Volumetric Ethanol Excise Tax Credit (VEETC). In short, the VEETC would change how the ethanol tax credit is used. Currently, the tax credit reduces payments to the Highway Trust Fund, which supports the interstate highway system. The VEETC would fund the credit through the federal government's general revenues, with the value of the credit being passed through to the Highway Trust Fund. An estimated \$2 billion would be added to the Highway Trust Fund with the VEETC, while the impact to refiners and marketers would be minimal.

**ETHANOL PRODUCTION AND THE CORN MARKET**

Ethanol production has increased tremendously over the last several years. As Figure 1 shows, ethanol production was under 500 million

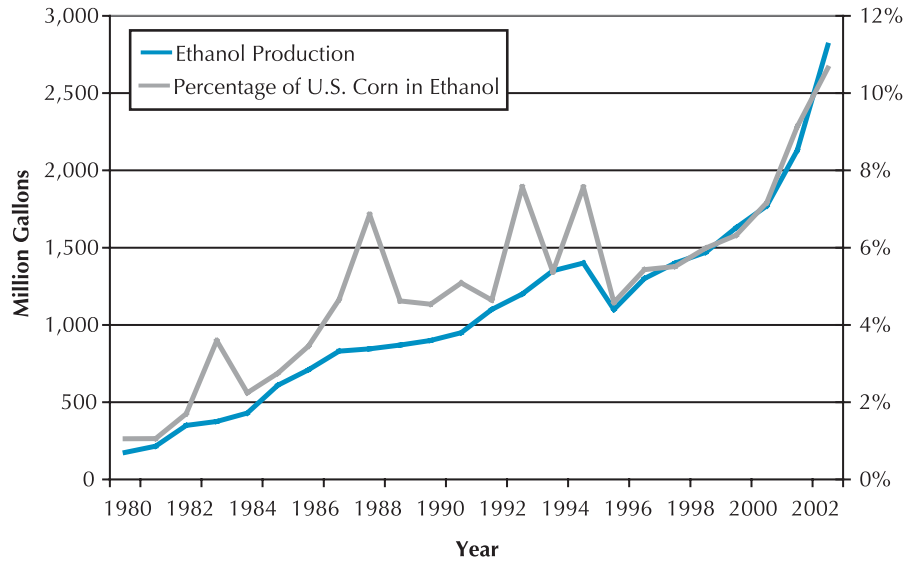


FIGURE 1. U.S. ETHANOL PRODUCTION AND CORN USAGE IN ETHANOL

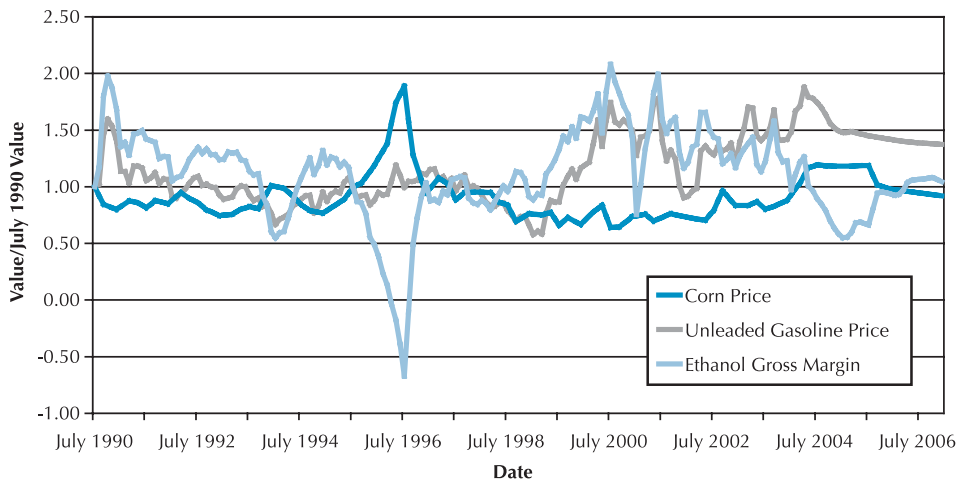


FIGURE 2. PRICE AND PROFITABILITY INDICES

gallons in the early 1980s. There was fairly steady expansion through the 1980s and early 1990s. A corn price run-up in 1996 put the first dent in ethanol expansion, but that decline was reversed by the next year. Over the past three years, the industry has experienced record growth. As production has increased, ethanol's share of the domestic corn market

also has grown. The other line on Figure 1 shows the proportion of the U.S. corn crop used by the ethanol industry. The spikes in 1983, 1988, 1993, and 1995 reflect short corn crops in those years. In 2003, nearly 11 percent of the U.S. corn crop was converted into ethanol. In 2004, the industry is projected to produce 3.3 billion gallons of etha-

nol. Ethanol production is estimated to add between 20¢ and 40¢ per bushel to the corn price.

The ethanol industry is centered in the Corn Belt. Table 1 outlines current and planned ethanol production capacity in the United States. Illinois and Iowa have 45 percent of the nation's ethanol production capacity. When all of the new production capacity comes online, eight states will be able to produce at least 100 million gallons of ethanol per year. Minnesota currently has the largest number of ethanol plants, but Iowa is set to take the lead, with four new plants in the planning or construction stages. Combined, the United States has 75 ethanol plants, with another 12 plants underway. In addition to Iowa's four new plants, Illinois is adding two plants; Missouri, South Dakota, and Wisconsin are adding one plant each; and Nebraska has three new plants underway.

#### A PROFITABILITY INDEX FOR ETHANOL

Ethanol production has been refined over the years. The dry-mill production technique uses one bushel of corn and 165 thousand British thermal units of natural gas to produce 2.7 gallons of ethanol and 17 pounds of dried distillers grains and solubles (DDGS), a livestock feed. Based on this production technique and the prices for these commodities, we can construct a profitability index for ethanol. As ethanol and DDGS do not have futures markets, we have linked ethanol prices to unleaded gasoline prices and DDGS prices to corn prices in order to make projections. Figure 2 shows corn prices, unleaded gasoline prices, and a profitability index for ethanol. The profitability index compares the receipts of ethanol and DDGS to the costs of corn and natural gas. The index does not imply that any ethanol plant will make a profit; it does indicate that the leverage from the output commodities exceed the costs of the input commodities. All of the series shown in Figure 2 have been normalized by their July 1990 values.

**TABLE 1. CURRENT AND PLANNED ETHANOL PRODUCTION CAPACITY**

State	Current Capacity	Expansion and New Plant Capacity	Total
		(million gallons per year)	
Iowa	714	140	854
Illinois	734	70	804
Nebraska	405	112	517
South Dakota	377	45	422
Minnesota	418	0	418
Wisconsin	91	40	131
Kansas	110	0	110
Missouri	60	40	100
Indiana	95	0	95
Tennessee	65	0	65
Michigan	45	0	45
North Dakota	39	0	39
Kentucky	24	0	24
New Mexico	15	0	15
California	9	0	9
Wyoming	5	0	5
Idaho	4	0	4
Colorado	2	0	2
Washington	1	0	1
Total	3,211	447	3,658

For corn, the July 1990 average price was \$2.83/bushel. For unleaded gasoline, the July 1990 average price was \$0.60/gallon. This price is from the New York Mercantile Exchange unleaded gasoline futures market. The calculated gross margin for ethanol in July 1990 was \$1.17/bushel of corn. For the ethanol gross margin, positive values indicate that, for existing ethanol plants, ethanol adds value to corn. Since the profitability index does not include fixed costs, such as plant construction costs, a positive index value does not necessarily indicate that new ethanol plant construction will be profitable. The ethanol profitability index has been above one for most of the historical period. Relatively low unleaded gasoline prices held ethanol profitability down in early 1994. Relatively high corn prices restricted ethanol profitability in mid-1996. The natural gas price spike of late 2000 took a bite out of ethanol profitability. However, even during most of these episodes, ethanol remained profitable. Only during the summer

of 1996 when corn prices exceeded \$4.00 per bushel did the ethanol gross margin fall below zero.

Based on futures prices, the relatively high corn prices we are seeing today would limit ethanol profitability over the next 18 months, even though unleaded gasoline futures are relatively high as well. But the index is projected to remain positive over the foreseeable future. The revenue from ethanol sales from existing ethanol plants is projected to exceed the costs of the inputs, based on a dry-mill ethanol production technique. Whether the projected profitability margin would sustain new ethanol plant construction depends on the fixed costs of the new plants. But these results, in combination with the federal incentives for ethanol (in tax credits, loans, and rural development grants), are promoting the current expansion we are seeing in ethanol. If corn prices fall and/or unleaded gasoline prices rise, the ethanol profitability index will rise. ♦

# China's Challenge: Conforming to Sanitary and Phytosanitary Measures for Agricultural Exports

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After 15 years of negotiations, China became a full member of the World Trade Organization (WTO) in 2001. Since then, with eliminated or lowered tariffs, China's bilateral trade has grown significantly. In 2002, the value of Chinese exports and imports for agricultural products reached \$14.5 billion and \$16.1 billion, respectively, and its total value of exports in agricultural products increased by \$1.2 billion from the previous year (see Figure 1).

However, several problems have emerged. Chinese farmers and exporters had anticipated a large, positive impact on domestic production with accession to the WTO, especially for labor-intensive agricultural products such as vegetables, fruits, livestock and poultry products, and seafood, but these expectations proved unrealistic. In fact, these products have been hardest hit by the need to meet significant sanitary and phytosanitary (SPS) standards, and this has prevented substantial growth in these agricultural exports. According to an investigation by China's Ministry of Commerce, about 90 percent of China's exporters of foodstuffs, domestic produce, and animal by-products were affected by foreign technical trade barriers, and China suffered losses totaling U.S.\$9 billion in 2002.

## SPS PROBLEMS ARISING IN CHINA'S AGRICULTURAL TRADE

China's recent experiences with SPS barriers have been mainly with the European Union, Japan, and the

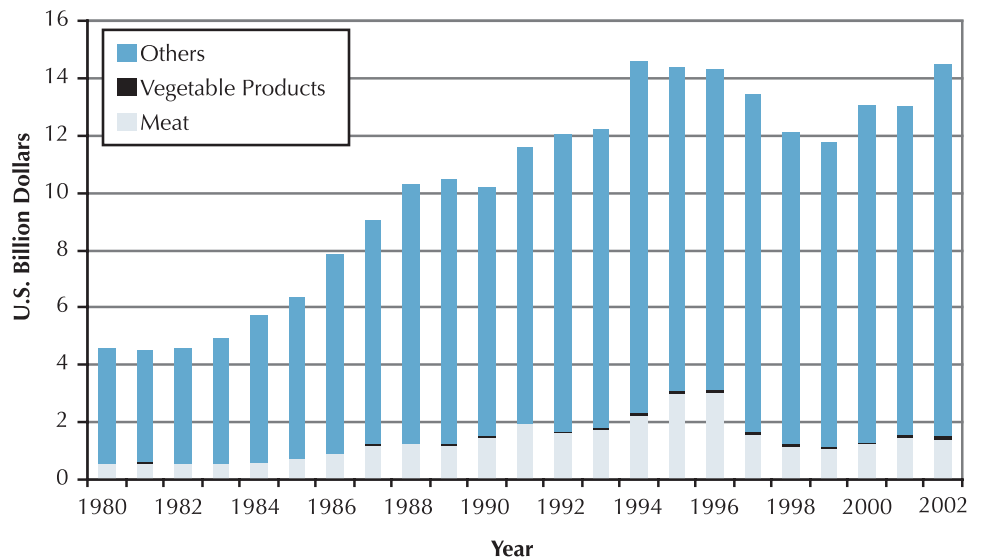


FIGURE 1. CHINESE AGRICULTURAL PRODUCT EXPORTS

United States. These three countries accounted for 41, 30, and 24 percent, respectively, of the trade losses attributable to SPS measures in 2002. And, because failure to pass SPS inspections often leads to closer inspection of future exports, China's agricultural products have confronted much stricter inspection in these markets following several of the SPS-related problems.

Currently, Chinese exports of seafood, vegetables and fruits, tea, honey, poultry meats, and red meats are creating the most frequently encountered SPS problems. U.S. technical standards preclude imports of beef, pork, and poultry meat into the United States in an effort to prevent the import of highly contagious animal diseases that are endemic in China, including foot-and-mouth disease. From August 2002 to July 2003, the U.S. Food and Drug Administration refused 1,285 shipments of Chinese foodstuffs from entry into the United States. Agricultural and aquatic products accounted for 630 of these shipments, or nearly half of all refusals (see Table 1). Except for some problems related to labeling and packaging, most refusals result

from violations of SPS measures. Excessive pesticide residues, low food hygiene, unsafe additives, contamination, and misuse of veterinary drugs have been major issues. Although China's export mix varies from country to country, Table 1 clearly shows some common SPS problems with Chinese agricultural products.

## CURRENT SPS CONDITIONS IN CHINESE AGRICULTURAL PRODUCTION

SPS problems have existed in agricultural production in China for a long time but have only received worldwide attention since China's accession to the WTO. The causes of China's SPS problems can be attributed to many factors, most of which are common to developing countries.

First, China's food quality regulatory and supervisory system does not yet provide the necessary guidelines for agricultural and food production. Current regulations in China, which are outdated and inconsistent with international standards, are insufficient to meet the present requirements of international trade.



Second, the lack of effective regulation and supervision to control agricultural production and processing, coupled with noncompliance with regulations, has resulted in Chinese producers often misusing or abusing chemical fertilizers, pesticides, and antibiotics. Antiquated production techniques and technology also have an impact. In animal production, there are persistent violations of regulations on drug additives and quality standards. According to a report for sample inspections by China's Ministry of Agriculture in 2002, besides prohibited drug additives, lead, aflatoxin B1, and Salmonella were the most common adulterants or types of contamination found in animal feed.

Moreover, the scattered location and small scale of fresh produce and

livestock operations in China contribute to the abuse of agricultural chemicals and noncompliance with regulations. For example, 92 percent of swine producers have an annual production with only one to five pigs. Controlling the use of chemicals and veterinary drugs in such a vast country—with more than 900 million farmers and countless household farming operations—is extremely difficult. Small-scale farmers have little or no motivation to comply with SPS regulations if they do not face penalties for noncompliance or if they face increased production risks. In addition, most farmers do not have access to information about SPS standards, nor do they have the required technologies or expertise.

## CHINA'S PROGRESS IN RESOLVING SPS PROBLEMS

Today, with increasing interaction with world markets, China's government and traders have recognized SPS problems and are taking actions to improve the production and marketing environment. Besides updating agricultural and food standards and regulations, educating producers, and establishing demonstration farms that show safe production practices for agri-food products, the Chinese government is also trying to attract foreign direct investment (FDI) in agriculture. Such investment can introduce capital, advanced technology, and management and marketing skills to improve product quality, increase exports, and assist in the transition from traditional to modern agricultural operations. The United States, Japan, and South Korea are the most important investing countries.

The Chinese government has supported the development of leading large-scale enterprises, or "dragon-head" enterprises. Approximately 30 percent of all farmer households produce products sold to these industrial enterprises. The key dragon-head enterprises at the national and provincial levels are mainstays of the move toward a more industrialized agricultural system. Efforts to organize the small-scale farmers to operate as single large-scale entities would allow them not only to gain economies of scale but also to more easily standardize production and comply with SPS measures at lower costs.

Following the lead (and requirements) of the United States and other countries, China has turned to implementation of Hazard Analysis and Critical Control Point (HACCP) systems as another useful approach for reducing SPS problems. In 2002, China introduced regulations requiring export-oriented enterprises producing six kinds of food (canned food, aquatic products [excluding fresh, frozen, air-cured, pickled/salted products], meat and meat

**TABLE 1. U.S. FOOD AND DRUG ADMINISTRATION REFUSALS OF CHINESE AGRICULTURAL FOODSTUFF SHIPMENTS**

Product	Number Type of Refusals	Reason Cited
Seafood	34	Salmonella
	19	Veterinary drugs
	35	Filthy
	34	Other (unsafe additives, poisonous, chloramphenicol, listeria, filthy, improper information or labeling)
Crushed Pepper	15	Pesticide
	3	Filthy
	1	Salmonella
	2	Other
Honey	5	Chloramphenicol
	1	Veterinarian Drugs
	2	Unsafe additives
Fruit/vegetables	27	Pesticides
	13	Other (unsafe additives/color, labeling, etc.)
Dried Mushroom/Fungus	50	Filthy
	8	Other
Other Foodstuffs	115	Filthy
	115	Unsafe additives/color
	146	Other

Note: Some products were refused for more than one reason and only the reason listed first is shown here.

products, frozen vegetables, fruit/vegetable juice, and frozen convenience food containing meat or aquatic products) to pass a HACCP system examination for hygiene certification before producing, processing, or storing exported food. Use of HACCP systems is expected to improve greatly the sanitary situation of those exported foods.

Organic food production is getting more and more attention because of increasingly strong demand from the world market. World trade in organic foods totaled U.S.\$21 billion in 2002 and the market continues to grow rapidly. Many Chinese producers choose organic food production to take advantage of relatively higher product market prices and a production technology that may favor smaller producers and those with relatively low labor costs.

### MARKET OPPORTUNITIES FOR CHINA IN RESPONSE TO CURRENT SPS MEASURES

Although SPS condition levels as a whole in China are low, the coastal and open provinces and regions have reached SPS conditions consistent with international standards as a result of their relatively open markets and exports to developed countries. These markets are now mostly controlled by the “invisible hand” of international market forces, and producers can quickly adjust production to market signals. However, large regional differences limit prospects in international markets, and it will take some time to make the necessary adjustments to improve the overall SPS conditions in China. During the transition, the potential for exports of China’s agricultural production will vary, depending on the level and changes in

SPS requirements by major importing countries, Chinese producers’ adjustment, and the competition from other exporting countries.

As China works to respond to the SPS regulations of other countries, concerns have arisen that some countries will use SPS barriers to keep out lower-cost Chinese products in order to protect domestic markets by setting relatively high standards or strict inspections. As China faces more SPS conflicts, the government will participate in bilateral negotiations to resist unfair trade restrictions and discrimination and is likely to utilize the WTO to coordinate and resolve trade disputes. As a member of the WTO, China can participate in the negotiation and establishment of international regulations and standards to obtain a more equal position for its agricultural exports. ♦

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*Policy Reforms in World Sugar Markets*  
Continued from page 5

and use decrease by 3 percent. The world price increases dramatically, to 47 percent above the baseline level in 2011/12. Production declines significantly in the most protected OECD markets (dropping, on average, 61 percent for the European Union, and 39 percent for Japan). The declines are smaller for Mexico (8 percent) and the United States (6 percent). Production increases in competitive countries (Brazil, 17 percent; Cuba, 16 percent; Australia, 10 percent). This result is caused by the high world price resulting from the removal of trade and domestic distortions that affect sugar production. The net incentive effect is positive for producers (a world price increase net of tariff and subsidy removal).

#### REFORM EFFECTS ON CONSUMPTION

The changes in consumption are also pronounced. Countries with moderate border protection experience higher consumer prices. For example, in China, consumption, on average, decreases by 13 percent. In countries with high tariffs, the benefits from policy reforms accruing to domestic consumers are mitigated by the stronger world price increases. However, since sugar demand tends to be inelastic (that is, insensitive) to price, these changes are not dramatic. Sugar consumption increases by 3 percent in the European Union and by 2 percent in Japan. U.S. consumption of sugar increases by less than 1 percent.

Consumption distortions exist in a few countries (Egypt, Cuba, and Morocco) and their removal has a negligible impact on world market prices. In Egypt, consumption decreases by 21 percent. In Cuba, be-

cause of the large subsidy removal, consumption decreases significantly, by an average of 42.5 percent between 2002/03 and 2011/12. Finally, in Morocco, the removal of the consumption subsidy results in the reduction of sugar consumption by 11 percent relative to the baseline.

Despite the stalled WTO agricultural negotiations in the Doha Round, the U.S. sugar industry is keen on promoting a multilateral approach to sugar policy reform and has vehemently opposed the bilateral negotiations of the current U.S. administration. The multilateral negotiation argument has been a convenient veil of legitimacy for U.S. protectionist interests. For example, the sugar industry fought the U.S.-Australia Free Trade Agreement (FTA) on that basis. Nevertheless, the numbers presented here provide some credence to the U.S. sugar industry's claim about creating a "world dump price." It appears that the competitive segment of the U.S. sugar industry would survive in unfettered markets. A major qualifier is that the analysis understates exit/entry and investment decisions in sugar production. The predicted drastic increases in the world price may induce massive investment in sugar production and reduce these price changes considerably.

#### WINNERS AND LOSERS IN UNFETTERED MARKETS

Despite these limitations, it is clear that removing all policies would cause a massive production relocation away from protected OECD markets (the European Union, Japan, and, to a lesser extent, Mexico and the United States) and toward producers in competitive countries, chiefly Brazil, Cuba, and Australia. Hence, there is a large contingent of foreign sugar

interests demanding open U.S. borders. Producers in the European Union and Japan would be the biggest losers under unfettered markets. The large increase in price is little solace for their sugar producers, who would probably be wiped out. European Union producers might want to focus on quickly negotiating a buy-out program within the ongoing Common Agricultural Policy reforms, while the Doha Round evolves slowly and the Everything But Arms agreement is not yet fully implemented. Japanese sugar producers may well be the last bastion of protectionism in global sugar markets.

In contrast, sugar interests in Mexico and the United States would lose in unfettered markets (free trade and no domestic subsidies), but they would survive the global policy reform. Although at odds within NAFTA, the two countries have a common goal in resisting global sugar policy reform. This is ironic since they are implicated in the undoing of their own protections because of their NAFTA and Uruguay Round commitments. The analysis also makes clear that trade liberalization without domestic reforms would induce import surges in the United States. These surges would make domestic programs unsustainable because of current policy commitments. A similar pattern emerges in the European Union, which would be constrained in its ability to export expensive domestic sugar displaced by cheaper imports. Of course, one should never underestimate the strength of the sugar lobby in OECD countries. The imminent unraveling of sugar protectionism has been predicted before, as shown in the recent outcome of the U.S.-Australia FTA, which took sugar off the negotiating table. ♦

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