

# CRS Report for Congress

## High Agricultural Commodity Prices: What Are the Issues?

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# High Agricultural Commodity Prices: What Are the Issues?

## Summary

Prices for nearly all major U.S. agricultural program crops — corn, barley, sorghum, oats, wheat, rice, and soybeans — have exhibited extreme price volatility since mid-2007, while rising to record or near-record levels in early 2008. Several international organizations have announced that the sharply rising commodity prices are likely to have dire consequences for the world's vulnerable populations, particularly in import-dependent, less developed nations. In the United States, high commodity prices have pushed farm income to successive annual records and have sharply lowered government farm program costs, but they have also stoked the flames of food price inflation and have raised costs for livestock producers and food processors. In addition, high, unexpectedly volatile prices have increased the risk and costs associated with grain merchandising. In particular, they have dramatically increased the cost of routine hedging activities (i.e., pricing commodities for purchase, delivery, or use at some future date) at commodity futures exchanges and, as a result, have diminished “forward contracting” opportunities for grain and oilseed producers who are eager to take advantage of record high market prices.

For some crops (particularly for wheat and rice), the price increases are likely to be relatively short-term in nature and are due to weather-related crop shortfalls in major producer and consumer countries, a weak U.S. dollar that has helped spark large increases in U.S. exports, a bidding war among major U.S. crops for land in the months leading up to spring planting in 2008, and the often perverse price effects resulting from international policy responses by several major exporting and importing nations to protect their domestic markets. Assuming a return to normal weather, these factors will likely self-correct within two growing seasons as global supplies are replenished and prices moderate. For coarse grains (corn, sorghum, barley, oats, and rye), oilseeds, and oilseed products (e.g., vegetable oil and meal), the price increases have also been due to strong, sustained demand deriving from two sources: robust income growth in developing countries (e.g., China and India), which has contributed to increased demand for meat products and the feed grains needed to produce that meat; and growing agricultural feedstock demand to meet large increases in government biofuel-usage mandates or goals in the United States, the European Union, and other countries.

Market analysts, including the United Nations' Food and Agricultural Organization (FAO), are predicting record global grain and oilseed production in 2008 in response to the high market prices. However, given the overall strength in demand growth, most market analysts predict that when commodity supplies eventually recover and prices moderate from current high levels, the new equilibrium prices will be significantly higher than has traditionally been observed during periods of market balance.

This report examines the causes, consequences, and outlook for prices of the major U.S. program crops, and provides references for more detailed information. It will be updated as events warrant.

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# High Agricultural Commodity Prices: What Are the Issues?

## Introduction

U.S. and international markets for major grains and oilseeds are presently experiencing a period of tight supplies, strong demand, and high prices not seen since the mid-1990s (**Figures 1 and 2**). While agricultural commodity prices rose sharply during 2007, they have jumped precipitously in early 2008. For example, export prices for the world's two major food crops — wheat and rice, rose by 81% and 21%, respectively, during 2007, but have surged even higher in early 2008. Wheat prices (HRW No. 2, f.o.b., U.S. Gulf ports) rose 44% between November 2007 and March 2008 — rising from \$334.6 per ton to \$481.5 — before falling back slightly in April.<sup>1</sup> Rice export prices (100% Grade B, f.o.b. Bangkok) have more than doubled since November 2007, rising from \$358.3 per ton to \$873.25 in late April 2008 — an increase of nearly 144%.

This report identifies the predominant factors behind the current (2007/2008 crop year) market conditions for major agricultural commodities, with a focus on U.S. farm program crops. In addition, it briefly discusses how higher, more volatile commodity prices have impacted farm incomes, government farm programs, hedging activities, the livestock and food processing sectors, food prices, and the international food security situation. It reviews both the near- and longer-term commodity price outlook, and finally, it discusses various viewpoints and policy options that have been suggested as possible responses to the perceived causes and consequences of the unusually high commodity prices.

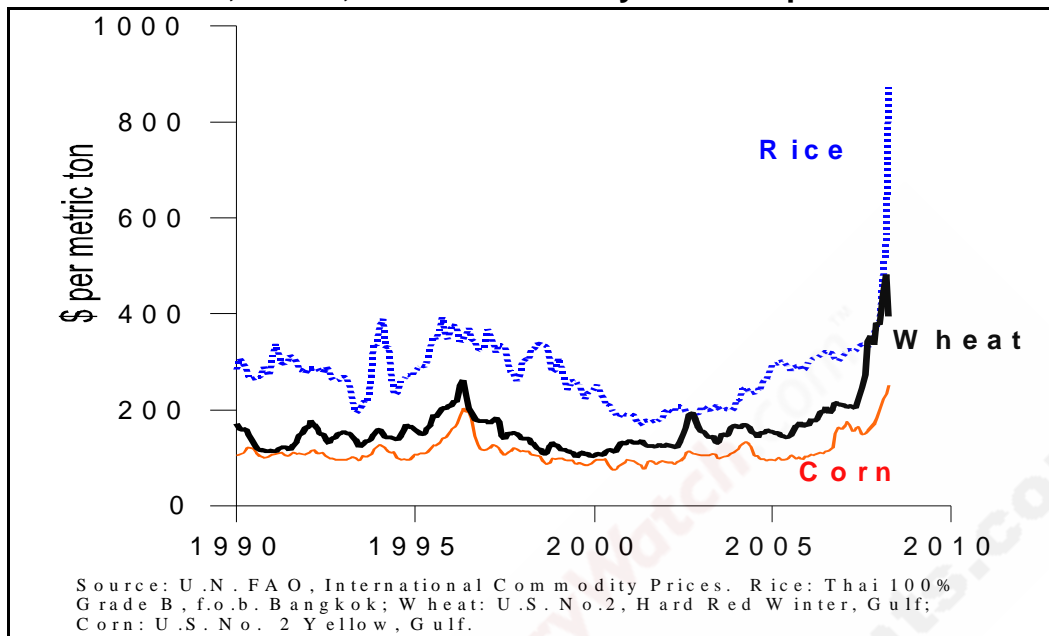
Because supply and demand circumstances vary widely across these crops — particularly in terms of their seasonality, their price elasticity, and the derived nature of their end products — readers are encouraged to review the brief commodity overviews provided in CRS Report RL33204, *Price Determination in Agricultural Commodity Markets: A Primer*, for background information on the underlying nature of the different commodity markets.<sup>2</sup>

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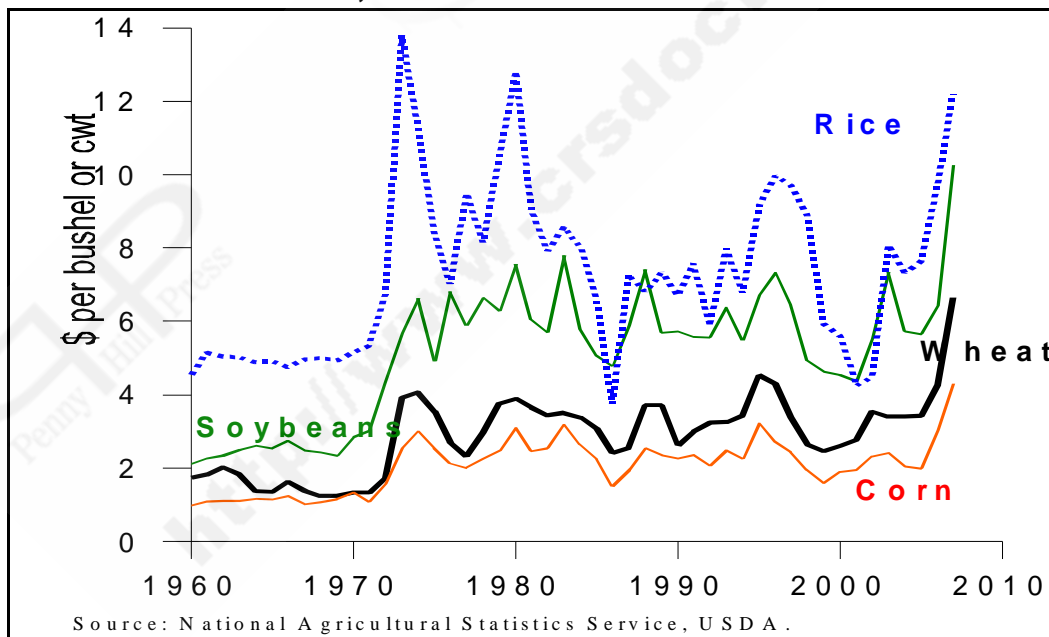
<sup>1</sup> Note that all data are in metric tons unless otherwise stated. These prices are from “World Food Situation website,” Food and Agricultural Organization (FAO), United Nations, at [<http://www.fao.org/es/esc/en/index.html>].

<sup>2</sup> An additional source for more detailed market and policy information for major program crops may be found at the online briefing rooms maintained by the Economic Research Service (ERS) of USDA, available at [<http://www.ers.usda.gov/briefing>].

**Figure 1. Monthly International Export Prices for Corn, Wheat, and Rice: January 1990 to April 2008**



**Figure 2. U.S. Season Average Farm Prices for Corn, Soybeans, Wheat, and Rice: 1960/61 to 2007/08**



### Global Food Crises Declared by United Nations

While the high market prices have been a boon for producers and owners of agricultural commodities, they represent a drastically worsening food security outlook for low-income households, particularly those in poor, import-dependent countries. A global crisis was signaled when, on March 20, 2008, Josette Sheeran,

the executive director of the United Nations' World Food Program (WFP), issued an appeal for \$500 million from donor countries to close an immediate gap in the WFP's normal food distribution commitments resulting from rising commodity prices.<sup>3</sup> This was followed on April 14, 2008, by a warning from U.N. Secretary General Ban Ki-moon that a rapidly escalating global food crisis had reached emergency proportions and threatened to wipe out seven years of progress in the fight against poverty.<sup>4</sup> World Bank president Robert B. Zoellick announced that the surge in food prices could push 100 million people living in low-income countries into deeper poverty.<sup>5</sup> That same month the U.N.'s Food and Agricultural Organization (FAO) identified 37 countries in food crisis requiring external assistance — 21 of them in Africa.<sup>6</sup> Then, on April 22, 2008, barely a month after her first announcement, executive director Sheeran announced that the WFP's operation funding gap had now risen to \$755 million, up from the earlier estimate of \$500 million, due to continuing increases in commodity prices since mid-March.<sup>7</sup>

In addition to global food security concerns, higher commodity prices have stoked the flames of food price inflation and its potentially deleterious effect on lower-income households while raising costs for livestock feeders and food processors. Because the rising prices have been associated with unexpectedly large price volatility, they also have increased the risk and costs of grain merchandising all along the marketing chain. Finally, the high, volatile commodity prices have dramatically increased the cost of routine hedging activities (i.e., pricing commodities for purchase, delivery, or use at some future date) at commodity futures exchanges and thereby diminished "forward contracting" opportunities for grain and oilseed producers who are eager to take advantage of record high market prices.

## Not All Commodities Are Equal

The specific circumstances leading to high market prices — e.g., weather-related supply shortfalls, unexpected surges in demand, market-distorting government policies — vary in important ways for each of the major U.S. program crops. For wheat, a combination of international weather-related crop failures over the past two years that has resulted in historically low U.S. and global stock levels is the primary impetus behind high prices. Government policies by several key foreign producers to limit exports in favor of domestic markets also have contributed to higher prices. For coarse grains and oilseeds, a combination of growing demand bolstered by rapid income growth in developing markets and government biofuels

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<sup>3</sup> "WFP letter of appeal to Government donors to address critical funding gap," WFP News Room, March 20, 2008, at [<http://www.wfp.org/>].

<sup>4</sup> "UN chief: Food crisis in now emergency," by Edith M. Lederer, *Breitbart.com*, April 14, 2008, at [[http://www.breitbart.com/article.php?id=D901PT181&show\\_article=1](http://www.breitbart.com/article.php?id=D901PT181&show_article=1)].

<sup>5</sup> "Food Price Crisis Imperils 100 Million in Poor Countries, Zoellick Says," The World Bank, News Release, April 14, 2008, at [<http://www.worldbank.org/html/extdr/foodprices/>].

<sup>6</sup> *Crop Prospects and Food Situation* report, No. 2, April, 2008, FAO, U.N., at [<http://www.fao.org/giews/english/cpfs/index.htm>].

<sup>7</sup> "Food Crisis Is Depicted as 'Silent Tsunami'," by Kevin Sullivan, *Washington Post*, April 23, 2008.

mandates are the key drivers. For rice, the combination of population-driven demand growth outpacing crop yields over several years, and recent government policies by several major rice exporting countries to limit exports, are the primary catalysts. For cotton, where global supplies remain relatively abundant, the general “bull market” mentality that currently dominates global markets for nearly all commodities has likely been a major contributor to what are otherwise unusually high prices given cotton’s current supply and demand balance.

Of course, no single event or circumstance fully explains high prices for any single commodity. Global economic growth, in general, reinforces demand for all agricultural commodities. Lack of sustained investment in the agricultural sector diminishes long-term productivity potential, dampens producer incentives, and contributes to the slow erosion of food supply availability. High prices for one crop spill over into markets for other crops that compete for the same agricultural land. A ban on rice or wheat exports by one country ripples through all commodity markets that compete for the consumer’s food budget. And, as a backdrop, record oil prices have raised costs all along the various commodity marketing chains from field to kitchen table.

## High Prices: A Case of Deja Vu

The last period of similarly high commodity prices occurred in the 1995-1996 period, when several years of government stock reductions were followed by an unusual combination of global supply-reducing weather events and strong international demand.<sup>8</sup> However, current commodity market conditions for major U.S. farm program crops — which have occurred simultaneously with dramatic price rises in coffee, cocoa, and tea markets, as well as in non-agricultural markets (e.g., petroleum, gold, silver, platinum, copper, aluminum, iron ore, and coal) — appear more reminiscent of the 1972-1974 period, when increasing inflation, gasoline shortages, and fears of widespread resource depletion appeared to place constraints on economic growth and food production.

In the current farm commodity bull market, global stocks-relative-to-use ratios for vegetable oils and several grain crops are projected to reach historic lows by mid-2008 (**Table 1**). As a result, commodity prices in both cash and futures markets have approached or surpassed historic highs (**Tables 2 and 3**) while exhibiting heightened sensitivity to crop prospects across the globe this year. This sensitivity has translated into record price volatility in agricultural markets. The full consequences of historically high, but unpredictably volatile, commodity prices are only beginning to emerge, but clearly they have raised the cost of doing business and such costs have not been spread evenly among market participants.

On the positive side, high commodity prices have contributed to record U.S. farm income in 2007 and the outlook for even higher returns in 2008, while dramatically reducing government outlays for price-contingent commodity

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<sup>8</sup> For a brief description of these earlier periods, see “Global Grain Markets in 1996: Shades of 1972-74?” by Pete Riley, *Agricultural Outlook*, September 1996, pp. 2-6.

programs.<sup>9</sup> On the other hand, the outlook for sustained high commodity prices has contributed to the concerns of the U.S. livestock sector and food processors about the continued timely availability of grain and oilseed supplies, and the impact such high input prices have had on their profitability. Historic high price levels and volatility have sharply increased the costs of routine hedging activities of commercial elevators, grain merchandisers, and food processors. In addition, as commodity prices have risen in tandem with food prices, consumers from low-income households and import-dependent nations have expressed concerns, often in the form of riots, about food price inflation, domestic and international food aid, and the ability of agricultural producers to meet projections for continued strong demand growth.

## **U.S. and Global Stocks Near Historic Lows for Several Crops**

U.S. and global stocks for several major U.S. program commodities are expected to be at or near historically low levels — particularly when measured as a share of total usage — prior to the next harvest this coming summer and fall of 2008 (**Table 1** and **Figures 3-8**). For example, global end-of-year stocks for coarse grains and wheat are projected to drop by mid-2008 to the lowest levels since 1977, while ending stocks of total grains fall to the lowest level since 1981. More importantly, their respective stocks-to-use ratios are all projected to reach record lows. Similarly, the stocks-to-use ratios for global corn and vegetable oils are projected to be the tightest since the early 1970s. Global rice stocks, as well as the stocks-to-use ratio, are projected up slightly from the previous year at 77.2 million tons and 18.2% in 2007/2008. However, the previous year's stocks-to-use ratio of 18.1% was the lowest since 1976. Current rice stock levels represent a halving of available supplies from the year 2000, when global ending stocks peaked at 147.1 million tons.

A certain amount of stocks at the end of the marketing year are necessary to provide a continuous flow of grain to processors and exporters before the new crop is harvested — such stocks are referred to as pipeline supplies. Although there is no hard and fast rule on what volume of stocks represents desirable pipeline levels for the major grain and oilseed crops, whenever stocks approach historically low levels market analysts speculate about what pipeline-stock levels might be. For wheat, U.S. pipeline stocks are estimated to be in a range of 9.5 to 11 million tons (350 to 400 million bushels); for corn, 10 to 12 million tons (400 to 500 million bushels); and for soybeans, about 4 to 5.5 million tons (150 to 200 million bushels).<sup>10</sup> Whenever USDA ending stock projections approach these levels, market prices become very sensitive to unexpected market news and prices tend to be more volatile than during periods of abundant stocks.

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<sup>9</sup> For more information, see CRS Report RS21970, *The U.S. Farm Economy*.

<sup>10</sup> Pipeline ranges are derived by CRS from various sources.

**Table 1. Summary of Global and U.S. 2007/2008 Ending Stocks**

Commodity	Ending Stocks			Stock-to-Use Ratio	
	Million tons	Lowest since	Change from 2006/07	%	Lowest since
<b>Global<sup>a</sup></b>					
Total Grains <sup>c</sup>	317.2	1981	-6%	13%	on record
Coarse Grains <sup>d</sup>	127.5	1977	-7%	11%	on record
Wheat	112.5	1977	-10%	16%	on record
Corn	103.0	1983	-5%	12%	1973
Rice	77.2	2006	1%	17%	2006 <sup>e</sup>
Soybeans	49.3	2004	0%	16%	2003
Cotton	13.0	2004	-3%	36%	2003
Vegetable Oil	8.9	2003	-3%	5%	1972
<b>United States<sup>b</sup></b>					
Total Grains <sup>c</sup>	43.1	1996	-13%	10%	1995
Coarse Grains	35.9	1996	-1%	10%	1995
Wheat	6.6	1947	-47%	10%	1946
Corn	32.6	2003	-2%	10%	2003
Rice	0.7	1980	-45%	9%	1974
Soybeans	4.4	2003	-72%	5%	2003
Cotton	2.1	2006	2%	51%	2005
Vegetable Oil	1.5	2004	-7%	13%	2004

**Source:** USDA, PSD data base, April 9, 2008.

**Note:** The 2007 crop year covers the period from the start of the 2007 harvest to the start of the 2008 harvest. Thus, ending stocks for the 2007 crop represent supplies available in 2008 just prior to the harvest for the 2008 crop. Similarly, the stocks-to-use ratio for the 2007 crop is a measure of available supplies relative to use just prior to the harvest of the 2008 crop.

<sup>a</sup> USDA's PSD database for global commodities extends back to 1960; thus, "lowest on record" means the lowest data point" since 1960.

<sup>b</sup> USDA domestic data extends back prior to 1900 for most commodities.

<sup>c</sup> Total grains include coarse grains, wheat, and rice.

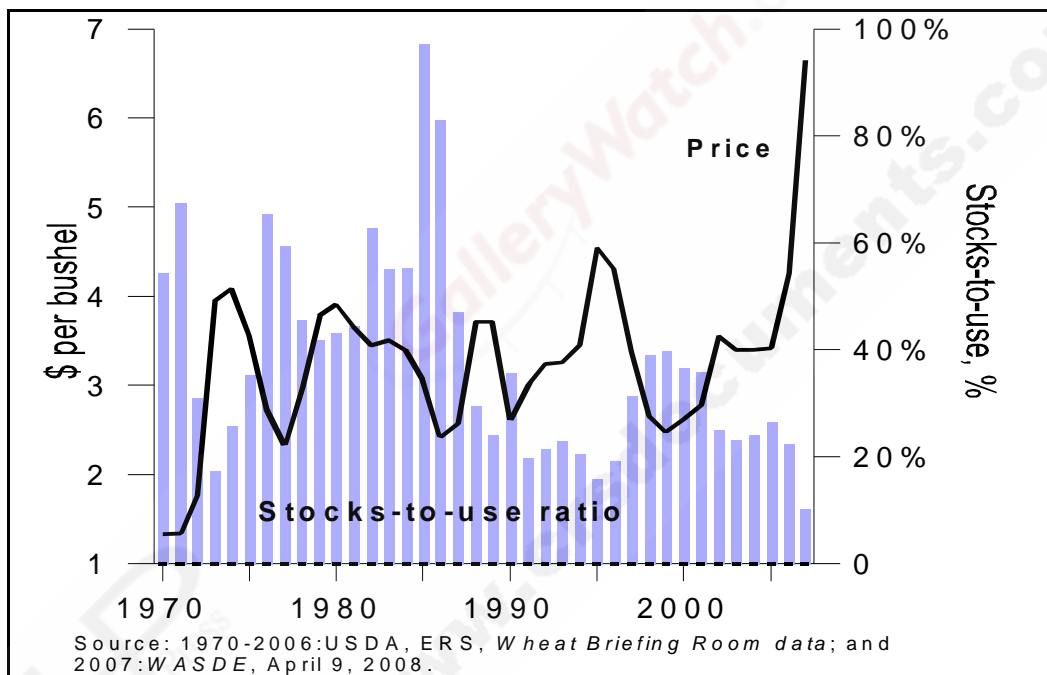
<sup>d</sup> Coarse grains include corn, sorghum, barley, oats, and rye.

<sup>e</sup> Rice stocks in 2006 were the lowest since 1976.

U.S. wheat ending stocks for 2007/2008 are projected to fall to their lowest level (242 million bushels or 6.6 million tons) since 1947 — well below their pipeline range. U.S. soybean stocks of 4.4 million tons are projected at the lower end of their pipeline range. U.S. corn ending stocks, although projected at what would appear to be an ample level, are low in historical global supply-to-use terms. Furthermore, the multi-year outlook for corn supplies is strongly impacted by the biofuels usage mandate in the Energy Independence and Security Act of 2007 (P.L. 110-140), which suggests that corn supplies will continue to tighten through 2015. Among the major program crops, cotton is the principal exception, with global and U.S. ending stocks projected at relatively abundant levels.

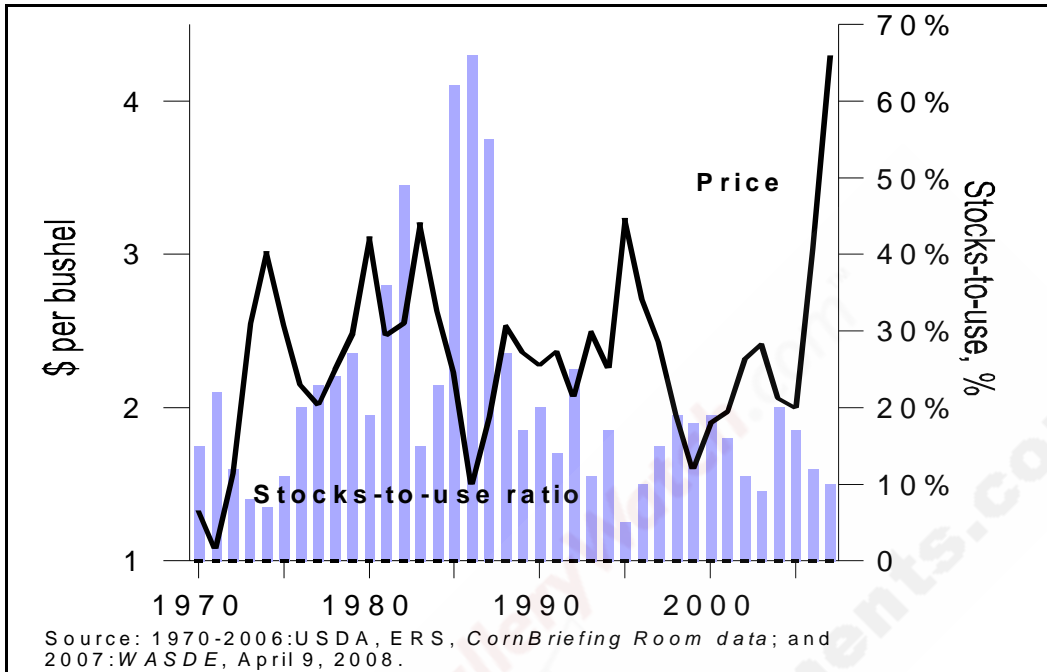
Ending stocks are calculated as the difference between total supplies (beginning stocks plus production plus imports) and total disappearance (all domestic uses plus exports). As such, season-ending stocks of an annually produced commodity summarize the effects of both supply and demand factors during the marketing year. Expected ending stocks — expressed as a ratio over expected total use — are frequently used as an indicator of a commodity's expected price outcome by USDA and other market observers.<sup>11</sup> For most seasonal commodities, annual prices tend to have a strong negative correlation with their ending stocks-to-use ratio (**Figures 3-8**). As a result, expectations for high stocks relative to use typically result in lower prices, while expectations for low stocks relative to use tend to raise prices.

**Figure 3. All Wheat: U.S. Season-Average Farm Price vs. Stocks-to-Use Ratio**

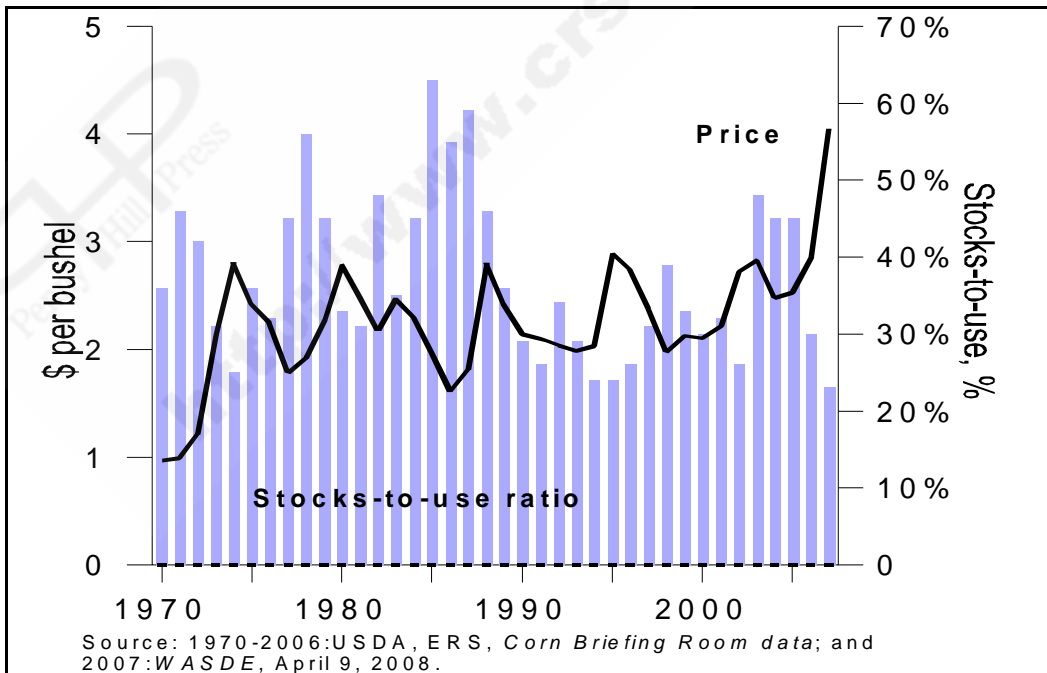


<sup>11</sup> For more information, see CRS Report RL33204, *Price Determination in Agricultural Commodity Markets: A Primer* by Randy Schnepf.

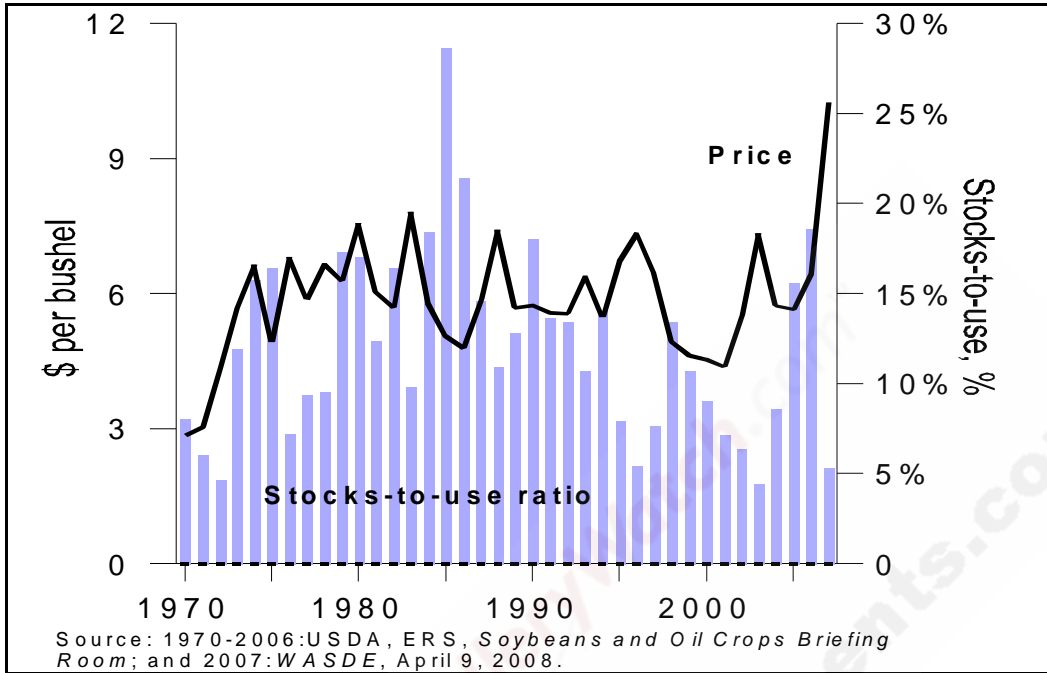
**Figure 4. Corn: U.S. Season-Average Farm Price vs. Stocks-to-Use Ratio**



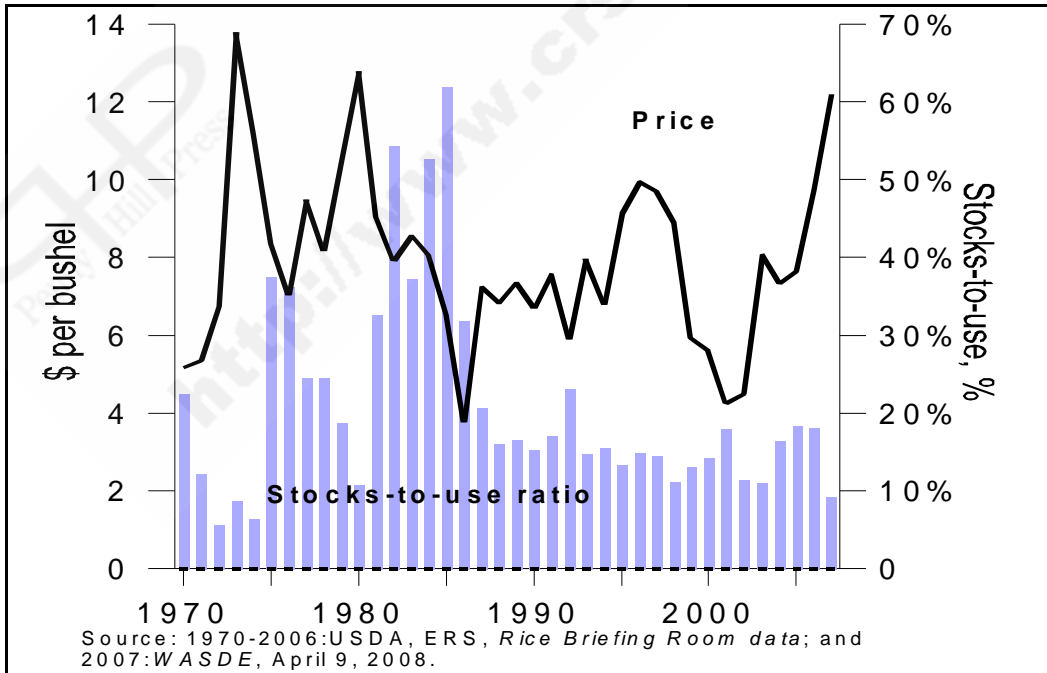
**Figure 5. Barley: U.S. Season-Average Farm Price vs. Stocks-to-Use Ratio**



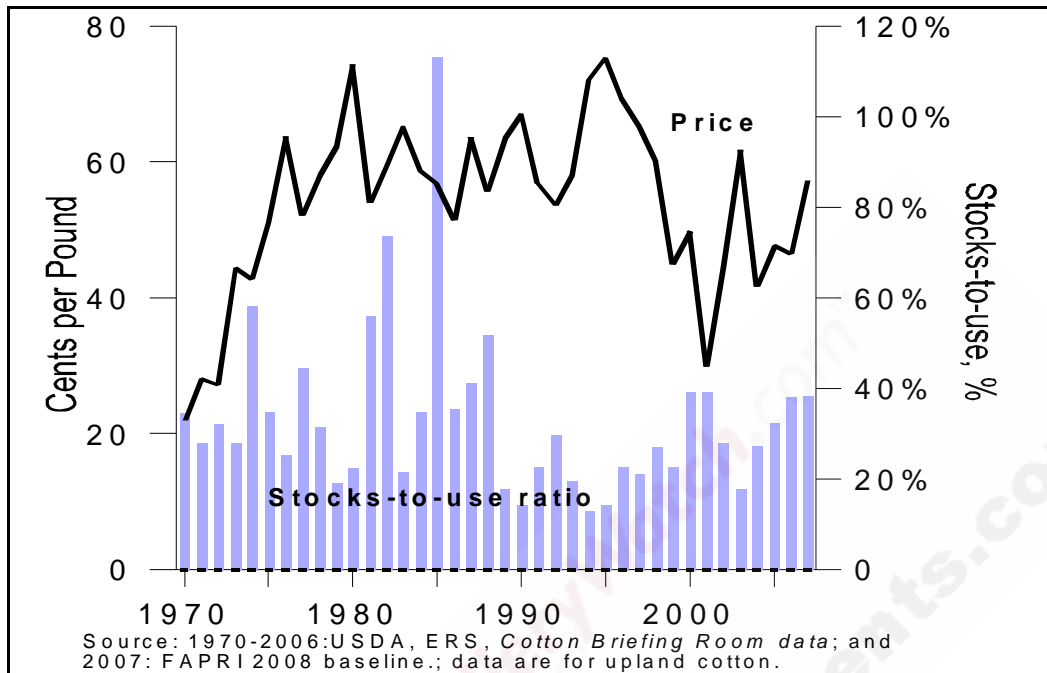
**Figure 6. Soybeans: U.S. Season-Average Farm Price vs. Stocks-to-Use Ratio**



**Figure 7. Rice: U.S. Season-Average Farm Price vs. Stocks-to-Use Ratio**



**Figure 8. Cotton: U.S. Season-Average Farm Price vs. Stocks-to-Use Ratio**



## Many Commodity Price Records Established in 2008

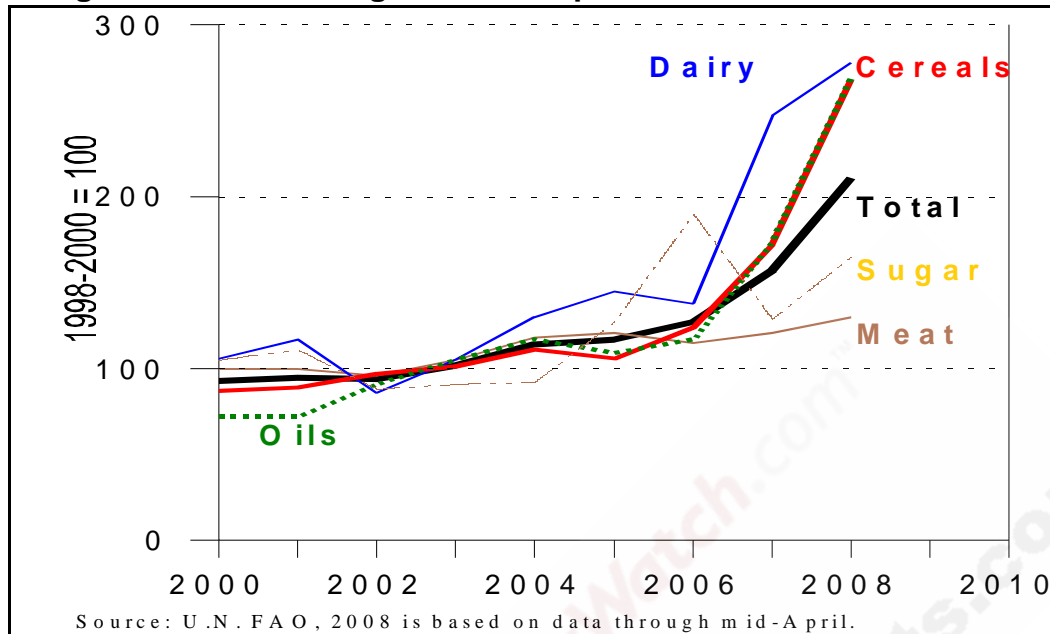
The tight supply situation for many agricultural commodities has sparked higher commodity prices throughout the global marketing chain — farm gate, futures markets, major international ports of call, wholesale distribution points, and finally to retail prices.

### International Index of Export Prices Record High

According to the United Nations' Food and Agricultural Organization (FAO), export prices for major agricultural commodities rose 23% during 2007 following a 34% rise in 2006 (**Figure 9**).<sup>12</sup> Furthermore, the FAO's food price index indicates that food prices in the international marketplace have jumped nearly 18% during the first three months of 2008, driven largely by price rises in cereals (up 27%) and oils (up 26%). This rapid price rise is evidenced by the direction of major export prices for wheat, corn, and rice in **Figure 1**. FAO predicts that the cereal import bill for the world's poorest countries will rise by 56% in 2007/08, following a 37% increase in 2006/2007.<sup>13</sup>

<sup>12</sup> *World Food Situation*, Food Price Indices, FAO, April 2008, at [<http://www.fao.org/worldfoodsituation/FoodPricesIndex>].

<sup>13</sup> "Poorest countries' cereal bill continues to soar, governments try to limit impact," FAO Newsroom, FAO, April 11, 2008.

**Figure 9. U.N. FAO Agricultural Export Price Index: 1990 to 2008**

## U.S. Farm Prices Projected Record High for Several Crops

In light of the commodity price increases of the past several months, USDA is projecting record high season-average farm prices for wheat, corn, sorghum, barley, soybeans, and soybean products (soybean oil and soybean meal) for the current 2007/2008 crop year, while farm prices for rice are expected to be the highest since 1973 (**Table 2**). Prices for minor oilseeds (e.g., sunflower and rapeseed), oats, and hay crops also are projected to approach or surpass previous record highs.

USDA's farm price estimates are weighted by monthly marketings. Since a large portion of each crop is marketed within two to three months of harvest when seasonal prices are generally at their lowest level, the season average farm price (SAFP) is weighted downward by a large volume of lower-priced early marketings. Also, USDA reports farm prices on a monthly basis, not daily like the major commodity futures exchanges. As a result, the monthly farm prices reported by USDA do not exhibit the same degree of volatility as that of the futures prices reported in the news media. For examples, see the discussion in the next section on futures contract prices and compare the record futures contract prices for the major program crops as reported in **Table 3** with the farm prices reported in **Table 2**.

While the establishment of record highs for grain and oilseed program crops is noteworthy, the extent to which the 2007/2008 prices deviate from both the average prices of the preceding five-year period and the previous record SAFPs has evoked concern and even alarm from consumer and hunger advocates. For example, the 2007/2008 corn SAFP of \$4.30 per bushel is projected to be nearly 94% above the previous five-year average farm price of \$2.22 and about 33% above the previous record high \$3.24 achieved in 1995/1996. Most grains and oilseeds are projected at least 56% to 94% above the previous five-year average price. Soybean oil is projected 121% above its five-year average. Even cotton, a relatively abundant commodity, is projected 25% above its previous five-year average price.

**Table 2. U.S. Farm (or Wholesale) Prices: Projected versus the Previous Five-Year Average and Prior Record**

Crop	Units	Prior record		5-Year Avg. (5YA) Price <sup>b</sup>	Proj. 2007/08 <sup>c</sup>		Proj. 2007/08 to 2017/18 <sup>e</sup>	
		Price <sup>a</sup>	Crop Year		Price <sup>a</sup>	% of 5YA	Avg. Price	% of 5YA
All Wheat	\$/ bu.	\$4.55	95/96	\$3.56	\$6.65	187%	\$5.51	155%
Corn	\$/ bu.	\$3.24	95/96	\$2.22	\$4.30	194%	\$3.93	177%
Sorghum	\$/ bu.	\$3.29	06/07	\$2.18	\$4.15	191%	\$3.70	170%
Barley	\$/ bu.	\$2.89	95/96	\$2.60	\$4.05	156%	\$3.96	152%
Soybeans	\$/ bu.	\$7.83	83/84	\$6.03	\$10.25	170%	\$10.24	170%
Soy Oil	¢ /lb.	31.6¢	73/74	23.6¢	52.0¢	221%	54.6¢	232%
Soy Meal	\$/s.t.	\$270.7	96/97	\$193.61	\$325.0	168%	\$237.3	123%
Rice	\$/cwt	\$13.80	73/74	\$6.81	\$12.20	179%	\$11.54	169%
Upl. Cotton	¢ /lb.	76.5¢	95/96	46.0¢	57.3¢ <sup>d</sup>	125%	62.0¢	135%

**Notes:** s.t. = short ton; cwt = hundred pounds.

<sup>a</sup> Season average farm price received (SAFP) for all wheat, corn, sorghum, barely, soybeans, rice, and upland cotton, National Agricultural Statistics Service (NASS), USDA; season average annual wholesale prices for soybean oil and soybean meal, Decatur, Illinois, Agricultural Marketing Service (AMS), USDA.

<sup>b</sup> Simple average of SAFPs or wholesale prices for the 2002/03 to 2006/07 period.

<sup>c</sup> Mid-point of projected price range; *WASDE Report*, April 9, 2008, WAOB, USDA.

<sup>d</sup> Projection from *U.S. Baseline Briefing Book*, FAPRI-MU Report #03-08, March 2008.

<sup>e</sup> Avg. for the 10-year projection period, 2007/08 to 2017/18, FAPRI-MU Report #03-08, Mar 2008.

Recent (March 2008) long-run commodity price projections from the Food and Agricultural Policy Research Institute (FAPRI) suggest that, when commodity markets return to equilibrium, the long-run average price for major program crops will settle at levels that are 23% to 132% above the recent five-year average.

## Several Futures Prices Set All-Time Highs

Unlike cash markets which deal with the immediate transfer of goods, a futures exchange provides the facilities for buyers and sellers to trade commodity futures contracts — that is, contracts to buy (or sell) a specified volume of a commodity, subject to detailed quality conditions, at a fixed price for potential physical delivery (or acquisition) at some future date. Commodity futures exchanges are important barometers of commodity price movements — both the general level as well as the volatility — because they function as a central exchange for domestic and international market information. Market participants are able to respond with buy or sell orders within seconds upon receiving new information. As a result, futures contract prices react almost instantaneously to new information regarding commodity supply and demand expectations. This futures market activity (e.g., price, volume, open interest) is then reported electronically by the major exchanges through their

own news media, as well as through national and international news media.<sup>14</sup> As a result of this transparency, futures exchanges have served two critical roles — price discovery and risk management — in facilitating the marketing of agricultural commodities.

The market circumstances of the first few months in 2008 have clearly manifested themselves in the commodity futures exchanges, where prices for many commodities have hit historic all-time highs (**Table 3**). For example, at the Chicago Board of Trade (CBOT), prices for nearby futures contracts for corn, wheat, soybeans, soybean oil, and rice reached all-time highs in early March 2008.<sup>15</sup> Corn and rice contracts have remained particularly active, pushing to new contract highs on almost a daily basis during April (**Figures 10 and 11**). Finally, the July 2009 futures contract for corn set a new all-time high of \$6.584 per bushel on May 2, 2008.<sup>16</sup>

**Heightened Commodity Price Volatility Since 2005.** As commodity price levels have moved higher over the past two years in response to the gradual tightening of global supplies, they also have exhibited unprecedented volatility in the range of daily price movements, swinging rapidly up and down in response to the arrival of new market information. For example, according to a CBOT volatility index (of day-to-day price movements converted to an annual basis), corn and wheat futures contract price volatility have averaged 19.7% and 22.2% since 1980 (**Figure 12**).<sup>17</sup> However, in 2006 and 2007 both corn and wheat price movements have produced successive record annual volatility measures of 28.8% and 31.4% for corn, respectively, and 30.4% and 32.7% for wheat.<sup>18</sup>

Both the price level and volatility for most agricultural commodities have continued to rise in 2008. During March 2008, CBOT's monthly average price volatility (expressed on an annualized basis) for wheat was 73%, corn 41%, soybeans 54%, soybean oil 57%, soybean meal 65%, and rough rice 35%.

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<sup>14</sup> For more information on agricultural futures exchanges see pp. 7-10 of CRS Report RL33204, *Price Determination in Agricultural Commodity Markets: A Primer*.

<sup>15</sup> CBOT daily futures contract price quotes are available at [<http://www.cbot.com>].

<sup>16</sup> As of May 5, 2008.

<sup>17</sup> The price volatility index is a measurement of the day-day change in price. It is expressed as a percentage and computed as the annualized standard deviation of the percentage change in daily price.

<sup>18</sup> Chicago Mercantile Exchange (CME) Group, Datamine, Historical Volatility Measures, [<http://www.cmegroup.com/>].

**Table 3. Futures Contract Price Highs,  
Selected Commodities and Months,  
versus the Recent Five-Year Average Farm Price (AFP)**

Commodity	Futures Exchanges	Unit	Contract: Month / YR	Date	Intra-day High Price <sup>b</sup>	5-Year AFP <sup>d</sup>
Wheat: HRS	MGEX	bushels	March 08	2/25/08	\$25.00 <sup>c</sup>	\$3.70
			May 08	2/27/08	\$19.00	
			<i>Previous high</i>	May 96	5/10/96	
Wheat: HRW	KCBOT	bushels	March 08	2/27/08	\$13.70 <sup>c</sup>	\$3.54
			May 08	2/27/08	\$13.70	
			<i>Previous high</i>	May 96	4/26/96	
Wheat: SRW	CBOT	bushels	March 08	2/27/08	\$13.35	\$3.28
			May 08	2/27/08	\$13.50 <sup>c</sup>	
			<i>Previous high</i>	July 96	3/20/96	
Corn	CBOT	bushels	March 08	3/11/08	\$5.72	\$2.22
			May 08	4/9/08	\$6.16	
			July 09	5/2/08	\$6.584 <sup>c</sup>	
			<i>Previous high</i>	July 96	7/12/96	
Soybeans	CBOT	bushels	March 08	3/3/08	\$15.71	\$6.03
			May 08	3/3/08	\$15.86	
			July 08	3/3/08	\$15.95 <sup>c</sup>	
			<i>Previous high</i>	July 73	6/5/73	
Soybean oil	CBOT	pounds	March 08	3/3/08	\$0.708	\$0.236 <sup>e</sup>
			May 08	3/3/08	\$0.708	
			March 09	3/3/08	\$0.721 <sup>c</sup>	
			<i>Previous high</i>	October 74	10/1/74	
Soybean meal	CBOT	short	March 08	3/3/08	\$385.70	\$193.6 <sup>e</sup>
			May 08	3/3/08	\$392.90	
			July 08	3/3/08	\$393.00	
			<i>Previous high</i>	July 73	6/5/73	
Rice	CBOT	cwt	March 08	3/13/08	\$19.55	\$6.81
			May 08	4/23/08	\$24.46	
			July 08	4/23/08	\$24.85 <sup>c</sup>	
			<i>Previous high</i>	March 97	1/31/97	

**Source:** Futures contract prices are reported daily by the various futures exchanges and reprinted in the *Wall Street Journal*; farm prices are from NASS, USDA; and cash prices are from AMS, USDA.

<sup>a</sup> MGEX = Minneapolis Grain Exchange; KCBOT=Kansas City Board of Trade; and CBOT=Chicago Board of Trade; cwt = hundredweight (i.e., 100 lbs.).

<sup>b</sup> Record price for each contract month with the exception of the July soybean meal futures contract.

<sup>c</sup> Record price for any futures contract month for this commodity at this exchange as of May 5, 2008.

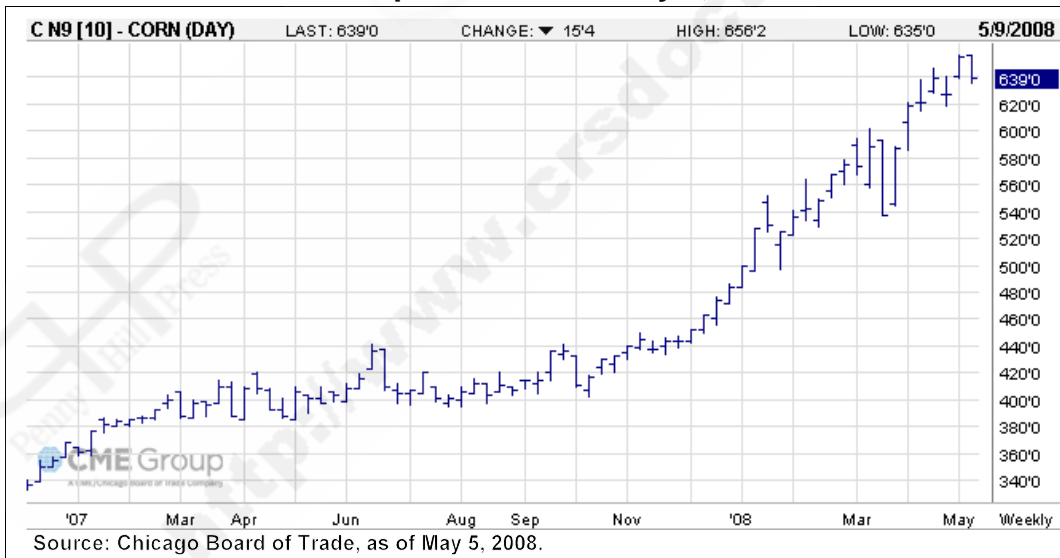
<sup>d</sup> Simple average of monthly farm prices received for the five-year period 2002/03 through 2006/07.

<sup>e</sup> Simple average of monthly cash prices; Decatur, Illinois.

**Figure 10. Rough Rice July 2008 Futures Contract Sets All-Time High of \$24.85 per 100 lbs. on April 23, 2008**

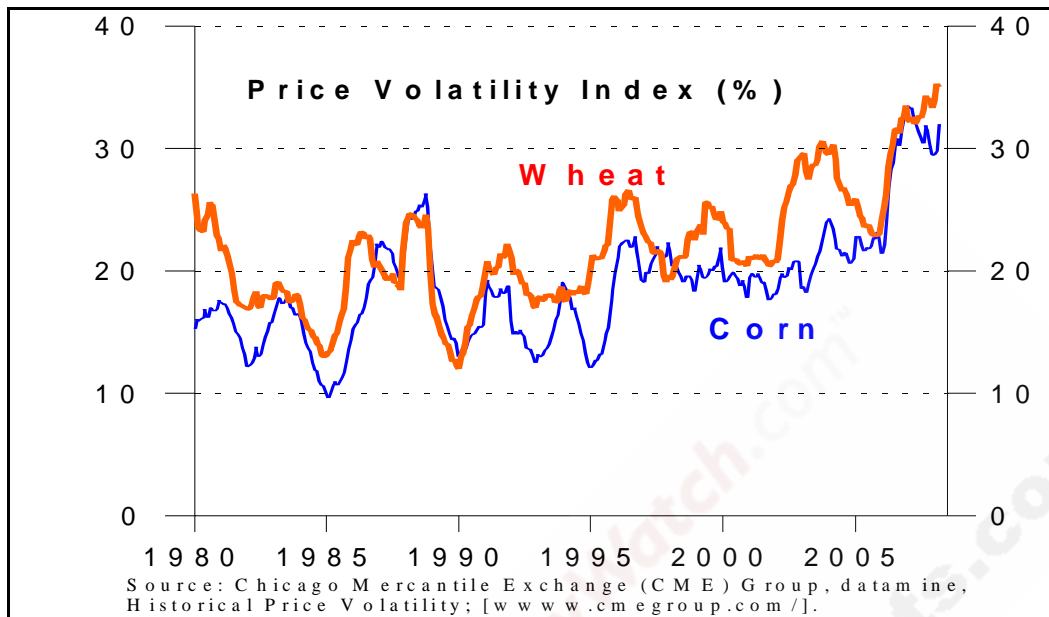


**Figure 11. Corn July 2009 Futures Contract Sets All-Time High of \$6.584 per bushel on May 2, 2008**



**Note:** Futures market price data is presented as weekly price ranges with the left tick representing the week's opening price and the right tick representing the week's final settlement price.

**Figure 12. Eleven-Month Moving Average of Price Volatility Index for Corn and Wheat Futures Prices Since 1980**



## Factors Behind the High Prices

Rising food prices, which are affecting millions of people, are rooted in what Josette Sheeran, Executive Director of the WFP, has described as a “perfect storm” of increasing demand for food from emerging economies, competition between biofuels and food production, high fuel prices, and increasing climatic shocks such as droughts and floods.<sup>19</sup> Further contributing to high commodity prices have been a series of international government policies to limit domestic export supplies that have heightened fears of shortage and a weak U.S. dollar that has made U.S. exports more competitive in international markets. The market effects of these factors have been particularly acute for agricultural commodities because of the inelastic nature of both supply and demand.<sup>20</sup>

## Widespread Weather-Related Crop Shortfalls

Global grain production declined in both 2005 and 2006 — primarily due to declining global productivity — cutting into existing stocks and reducing exportable supplies. A major tipping point occurred in 2007 when Australia — traditionally a major wheat and barley exporter — suffered a second consecutive year of sharply lower grain production due to drought. With stocks already low, Australia’s 2007 grain exports were dramatically curtailed for a second year. Meanwhile, grain crops

<sup>19</sup> Statement given at the “Inaugural Ceremony: 30th Anniversary Session of IFAD’s Governing Council,” by Josette Sheeran, Executive Director, WFP, February 13, 2008.

<sup>20</sup> For more information, see CRS Report RL33204, *Price Determination in Agricultural Commodity Markets: A Primer*, “Price-Inelastic Demand and Supply,” p. 23.

in the United States, Canada, European Union (EU), Eastern Europe, and some countries of the former Soviet Union were also reduced by weather conditions. In the EU, declining grain supplies forced livestock producers to import substantial volumes of wheat and other feed grains for feed rations. As a result, the EU switched from its traditional status as a major net exporter of grains into a net importer in 2007. The cumulation of these events severely drew down global grain supplies (**Table 1**).

## **Strong Economic Growth in Developing Countries**

A steadily increasing world population, boosted by robust growth in purchasing power, especially in developing countries such as China and India, has contributed to a permanent increase in global demand for more and different kinds of food.<sup>21</sup> As households improve their incomes and food purchasing power, they shift their demand away from traditional staples and toward higher-value foods like meat and dairy products.<sup>22</sup> This dietary shift is leading to increased demand for grains used to feed livestock.

## **Weak U.S. Dollar Lowers Cost of U.S. Exports**

When the U.S. dollar declines in value in international exchange markets relative to the currency of our export competitors (e.g., Canada, Australia, or the EU) or importing nations (e.g., Japan, Taiwan, etc.), it makes U.S. export products cheaper and, therefore, more competitive. Since January 2002, the U.S. dollar has lost over 44% of its value against the EU's euro and the Australian dollar, and nearly 37% against the Canadian dollar (**Figure 13**).<sup>23</sup>

A key result of the declining value of the U.S. dollar has been a dramatic surge in U.S. exports of agricultural products, particularly of bulk commodities. Record exports in the face of historically high commodity prices seems somewhat counterintuitive. However, the decline in the foreign exchange value of the U.S. dollar has been so dramatic that, in some cases, it has completely offset the rise in commodity prices, thereby making U.S. grains and oilseed very attractive.

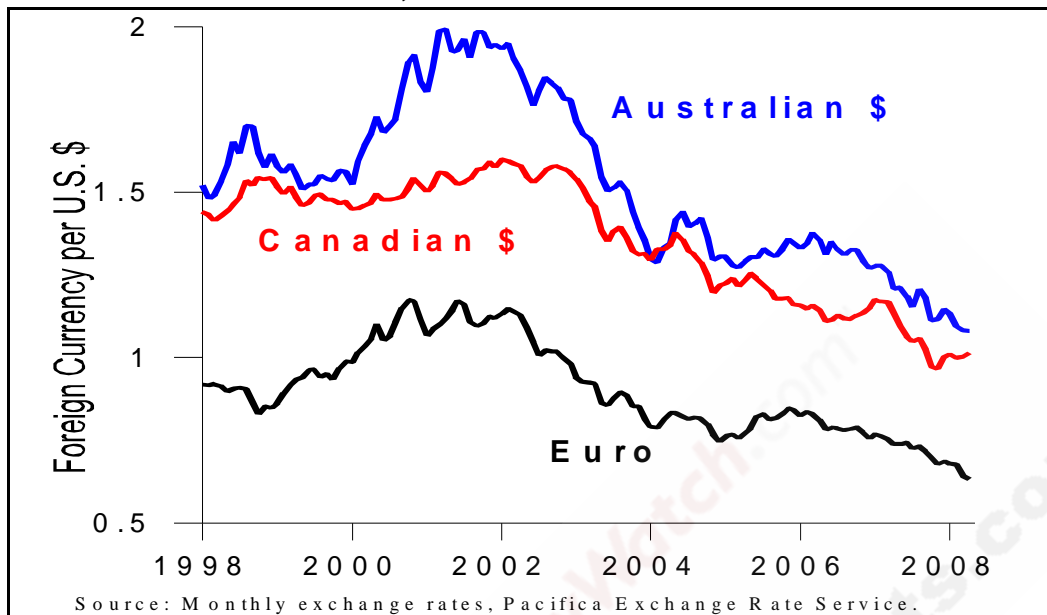
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<sup>21</sup> For more information on GDP and population growth in the developing world, see *USDA Agricultural Projections to 2017*, OCE-2008-1, USDA, pp. 12-13.

<sup>22</sup> *Rising Food Prices: What Should Be Done?*, Joachim von Braun, International Food Policy Research Institute Policy Brief, April 2008.

<sup>23</sup> For more information, see CRS Report RL31985, *Weak Dollar, Strong Dollar: Causes and Consequences* by Craig K. Elwell.

**Figure 13. The U.S. Dollar Has Steadily Weakened Against the Euro, the Canadian Dollar, and the Australian Dollar Since 2001**



Total U.S. agricultural exports in FY2008 are estimated at a record \$101 billion, including record bulk shipments of \$44.7 billion and 135.8 million tons.<sup>24</sup> In terms of year-to-year export volumes, U.S. corn exports are projected up nearly 18% to a record 2.5 billion bushels (63.5 million tons) in the 2007/2008 marketing year, wheat exports are projected up 40%, sorghum exports 82%, and rice exports 23%. These record shipments of grains and oilseeds have helped to draw down U.S. stocks and fuel higher commodity prices.

## Government Biofuels Policy

Concerns over high oil prices, energy security and climate change have prompted governments to take a more proactive stance towards encouraging the production and use of agriculture-based biofuels.<sup>25</sup> Several countries have set standards or targets for use of biofuels. The largest biofuels programs are in the United States, Brazil, and the EU. Brazil requires a minimum use of 20%-25% of sugar-cane-based ethanol (E20-E25) in its national gasoline supply, and has subsidized the establishment of a national distribution network that includes pumps for 100% ethanol in addition to the E20-E25 blend. In addition, Brazil requires that all diesel oil contain a 2% blend of biodiesel by 2008 rising to a 5% blend by 2013. The EU has established a goal of 5.75% of motor fuel use from biofuels by 2010, rising to 10% by 2020. The EU's program is primarily focused on vegetable-oil-based biodiesel production. As a result of its biofuels policy, EU farm policy

<sup>24</sup> *Outlook for U.S. Agricultural Trade*, AES-57, February 21, 2008, at [<http://usda.mannlib.cornell.edu/usda/current/AES/AES-02-21-2008.pdf>]. Bulk shipments include wheat, rice, feed grains, soybeans (and other oilseeds), cotton and lintens, and tobacco.

<sup>25</sup> For more information, see CRS Report RL32712, *Agriculture-Based Renewable Energy Production*.

incentives have generally favored the expansion of rapeseed production at the expense of wheat, barley, and other grain crops. Thailand, India, and China also have established biofuel mandates that hinge on the expansion of agriculture-based biofuels. However, these three countries have at least temporarily suspended their biofuels programs in light of the current high commodity prices and global food crisis.

**U.S. Biofuels Mandate.** In the United States, the Energy Independence and Security Act of 2007 (EISA; P.L. 110-140) extended and substantially expanded the existing Renewable Fuel Standards (RFS).<sup>26</sup> The RFS is a usage requirement mandating that an increasing volume of biofuels be blended with conventional fuels. Under EISA, the RFS mandates the use of at least 9 billion gallons of biofuel in U.S. fuel supplies in 2009, but grows quickly to 20.5 billion gallons by 2015 and to 36 billion gallons by 2022. The U.S. biofuels sector is also supported by a tax credit (TC) of \$0.51 for every gallon of ethanol blended in the U.S. fuel supply (\$1.00 per gallon of virgin-oil-based biodiesel), and an import tariff of \$0.54 per gallon of imported ethanol.<sup>27</sup> In addition, several federally-subsidized grant and loan programs assist biofuels research and infrastructure development.

Current U.S. biofuel production is almost entirely corn-based ethanol — nearly 6.5 billion gallons of corn-ethanol were produced in 2007, compared with an estimated 450 million gallons of biodiesel. The RFS for corn-based ethanol is capped at 15 billion gallons in 2015. However, additional mandates for biodiesel and for cellulosic and other non-corn ethanol continue to expand to a total RFS of 36 billion gallons by 2022. This mandate places tremendous pressures on U.S. and global crop production systems. This crop year (2007/2008), USDA estimates that about 24% of the U.S. corn crop will be used to produce ethanol; however, this share is projected to grow to 33% next year. This rapid, “permanent” increase in corn demand has directly sparked substantially higher corn prices to bid available supplies away from other uses — primarily livestock feed. Higher corn prices, in turn, have forced soybean, wheat, and other grain prices higher in a bidding war for available crop land.

This bidding war is being played out in global markets as traditional corn users search for alternative feed grain supplies. According to the World Bank, increased biofuel production has been one of the principal causes of the dramatic rise in food prices — almost all of the increase in global corn production from 2004 to 2007 (the period when grain prices rose sharply) went for biofuels production in the United States.<sup>28</sup>

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<sup>26</sup> For more information, see CRS Report RL32712, *Agriculture-Based Renewable Fuels*, and CRS Report RL34265, *Selected Issues Related to an Expansion of the Renewable Fuel Standard (RFS)*.

<sup>27</sup> An exception to the tariff exists under the Caribbean Basin Initiative; see CRS Report RS21930, *Ethanol Imports and the Caribbean Basin Initiative*.

<sup>28</sup> “Rising Food Prices: Policy Options and World Bank Response,” World Bank, undated mimeo, at [<http://www.worldbank.org/>].

**Economic Analysis of U.S. Biofuels Mandate.** A recent study by the Food and Agricultural Policy Research Institute (FAPRI) attempts to measure the pure and joint price effects of the U.S. biofuels RFS and the tax credits (TC) (**Table 4**).<sup>29</sup> FAPRI's study suggests that implementation of EISA's RFS (in the absence of the TC) will raise corn price by about 19% once the new long-run equilibrium has been established. The FAPRI study also estimates that the ethanol tax credit (TC) of \$0.51 per gallon (in the absence of the RFS) supports corn prices by a slightly smaller 11%. Because of interactions between the two subsidies, it is estimated that joint implementation of both the RFS and TC supports corn prices by about 20%.

Strong effects were also observed by FAPRI for other commodities, particularly soybean oil whose wholesale price is projected 73% higher under the joint RFS-TC scenario (**Table 4**). A substantial portion of corn price effects are likely transmitted to the soybean market via competition for land, primarily in the Corn Belt where soybeans and corn are both widely grown. The biofuels price effects would also transmit to regions outside of the Corn Belt (where wheat, cotton, and other major grain and oilseeds are produced) as farmers reconfigure their planting decisions and opt for greater soybean and corn production to maximize returns.

A similar study by the Center for Agricultural Research and Development (CARD) found that, jointly, the RFS and TC supported the price of corn by a slightly smaller 16%.<sup>30</sup> Both of these studies found the results to be highly dependent on the price of petroleum (or gasoline). Higher petroleum prices substitute for government incentives and diminish the relative impact of such incentives on corn prices. Neither study evaluated the effect of the U.S. import tariff of \$0.54 per gallon on imported ethanol from Brazil, although the CARD study pointed out that the corn price impacts would be greater if the tariff on Brazilian ethanol were eliminated. Nor did either study include the effects of the various grants and subsidized loans that have been made available to the U.S. biofuels sector for research and infrastructure development.

The CARD study also investigated the potential combined impact of the biofuels mandate with a major drought in the Corn Belt. The study replicated the 1988 drought when corn yields fell almost 25% below trend levels. Study results suggest that weather-reduced corn supplies confronted by a biofuels blending mandate would place severe pressures on the U.S. and global corn market — with the mandate in place, corn prices would increase to an eye-popping \$8.62 per bushel compared with \$7.28 without the mandate. Thus, the study projects that corn prices would be over 18% higher with the mandate in place if a severe 1988-like drought occurred.

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<sup>29</sup> “The Energy Independence and Security Act of 2007: Preliminary Evaluation of Selected Provisions,” FAPRI-MU #01-08, Jan. 2008.

<sup>30</sup> “The Outlook for Corn Prices in the 2008 Marketing Year,” *Iowa Ag Review*, Spring 2008, Vol. 14, No. 2, pp. 4-5; and “Ethanol, Mandates, and Drought: Insights from a Stochastic Equilibrium Model of the U.S. Corn Market,” by Lihong Lu McPhail and Bruce A. Babcock, Working Paper 08-WP 464, CARD, Iowa State University, March 2008.

**Table 4. FAPRI Projections of U.S. Biofuel Policy Impacts**

Units		Scenario: Projections and % Change							
		No RFS No TC		No RFS TC		RFS No TC		RFS TC	
<b>Production</b>									
Ethanol	Bil. gal.	8.11	11.7	44%	14.1	74%	14.5	79%	
Biodiesel	Bil. gal.	0.23	0.51	122%	0.96	317%	0.96	317%	
<b>Price</b>									
Corn	\$/bu.	2.81	3.11	11%	3.33	19%	3.37	20%	
Soybeans	\$/bu.	6.15	6.64	8%	7.21	17%	7.25	18%	
Wheat	\$/bu.	4.03	4.19	4%	4.31	7%	4.33	7%	
Soy Meal	\$/s.t.	179.99	166.23	-8%	138.29	-23%	137.98	-23%	
Soy Oil	\$/lb.	26.89	34.34	28%	46.29	72%	46.64	73%	

**Source:** “The Energy Independence and Security Act of 2007: Preliminary Evaluation of Selected Provisions,” FAPRI-MU #01-08, Jan. 2008.

**Note:** The numbers presented in this table are the averages of the scenario projections for the 2011 to 2016 period, thus, they are an estimate of the long-run equilibrium values. The “No RFS; TC extended” scenario represents FAPRI’s December 2007 baseline projections.

## Foreign Government Policies to Limit Exports

Foreign government policy responses to the high commodity prices have, for the most part, had the perverse effect of reinforcing higher prices thereby contributing to, rather than alleviating, the current market supply-and-demand conditions.

Since late 2007, several traditional wheat and rice exporting countries — in an effort to ensure domestic food availability and temper rising internal inflation — have instituted policies designed to limit exports of domestic supplies. These policies, albeit implemented to dampen internal prices for domestic consumers, have had exactly the opposite effect on international market prices, pushing them higher than supply and demand conditions would otherwise dictate by limiting access to available supplies by international buyers. On April 24, 2008, the WFP claimed that more than 40 food-exporting countries had placed some kind of restriction or outright ban on many crop exports in an attempt to stabilize prices within their borders.<sup>31</sup>

For example, in the international rice market, the traditional exporters including Vietnam, India, China, and Egypt, (the world’s second-, fourth-, sixth-, and eighth-leading rice exporters last year), along with minor exporter Cambodia, have all set in place policies to limit exports. The combined effect of these bans is to remove over a third of available export supplies from world markets and to drive

<sup>31</sup> Nathaniel Gronewold, “Food prices hampering U.N. agency’s ability to head off ‘new face of hunger,’” *E&E News PM*, April 24, 2008, at [<http://www.eenews.net>].

international rice prices sharply higher. Similar action in the international wheat market includes both Ukraine and Argentina which, in the spring of 2007, initiated wheat export restrictions in efforts to control food price inflation. Pakistan placed taxes on wheat exports. By late February 2008, Kazakhstan officials set in place policies to slow their country's wheat export pace (via higher custom duties), also due to declining supplies.<sup>32</sup> By mid-April, Kazakhstan had converted its export slowdown into an outright ban.

Argentina's government policy of banning wheat and beef exports, slowing corn exports through procedural barriers at customs, and heavily taxing exports of soybeans<sup>33</sup> (both to limit exports and to raise government revenues) is particularly noteworthy for three reasons. First, the export controls resulted in a nationwide farmers' strike whereby producers refused to bring to market any agricultural products. Second, although the strike (after lasting three weeks) was temporarily suspended for 30 days starting on April 3, 2008,<sup>34</sup> in an agreement between farmers and government that essentially left the export controls in place, the uncertainty surrounding Argentina as a reliable export supplier resulted in a substantial amount of purchase contracts being diverted to U.S. suppliers. Thus, already huge U.S. export numbers were further bolstered by the shift in demand from Argentinean to U.S. commodities. Third, Argentina's strict export controls have had a major impact on that country's agricultural prospects, at least in the short run, as most market analysts are now predicting a significant decline in Argentina's planted area for wheat (and possibly corn and soybeans) in 2008.<sup>35</sup>

Alternately, on the demand side, several countries that either depend on imports to meet an important share of their domestic food needs, or have large groups of nutritionally vulnerable people, began to remove long-standing barriers to imports.<sup>36</sup> For example, in late March 2008, India authorized duty-free imports of rice. Several other Asian, African, Latin American, and Caribbean nations have also lowered or eliminated tariffs on a range of imported foodstuffs. In addition, many countries froze internal commodity prices at below market levels and issued temporary income subsidies to help consumers meet their food needs. While these consumer-oriented actions may be laudable, they have had the effect of increasing international demand at the same time that international supplies are being restricted.

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<sup>32</sup> "Wheat Jumps on Supply Concerns," Stevenson Jacobs, *Washingtonpost.com*, Feb. 25, 2008.

<sup>33</sup> "Argentina suspends wheat exports indefinitely," *Commodity Online*, April 22, 2008.

<sup>34</sup> "Farmers' Strike in Argentina Is Suspended for Negotiations," by Vinod Sreeharsha and Alexei Barrionuevo, *New York Times*, April 3, 2008.

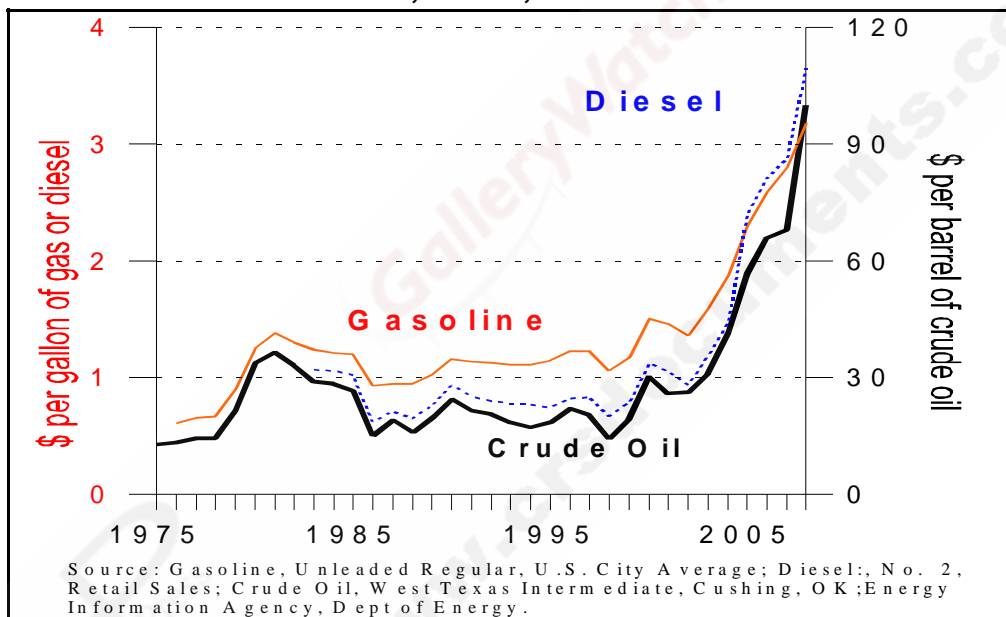
<sup>35</sup> "Argentine Soybean Output May Slip; Protests May Pause," by Heather Walsh and Eliana Raszewski, *Bloomberg News*, March 19, 2008.

<sup>36</sup> *Crop Prospects and Food Situation*, No. 2, April 2008, FAO, U.N., at [<http://www.fao.org/worldfoodsituation>].

## High Energy Costs

Petroleum prices have doubled since January 2007 when the monthly spot market price for West Texas Intermediate (WTI) at Cushing, Oklahoma, averaged \$53.70 per barrel (**Figure 14**). On April 22, 2008, the price for WTI exceeded a record \$119 per barrel and have since surpassed \$120. Since gasoline, diesel fuel, and other energy products are either directly or indirectly derived from petroleum, high petroleum price have increased operating costs all along the marketing chain for agricultural inputs and outputs, thus inflating prices everywhere. Energy-driven higher marketing costs accumulate at the retail outlet where they translate directly into higher consumer food prices.

**Figure 14. Energy Costs: Annual Average Prices Since 1975 for Gasoline, Diesel, and Crude Oil**



High petroleum prices and strong demand for ocean shipping drove ocean rates for shipping bulk commodities to record levels in 2007, nearly doubling the previous record set in 2004, and adding to the imported cost of internationally traded products.<sup>37</sup> WFP executive director Sheeran has suggested that high oil prices may be the single most important factor in driving up food costs because, in addition to its effect on raising energy costs throughout the marketing chain, it has boosted the popularity of biofuels.<sup>38</sup>

<sup>37</sup> *Grain Transportation Report*, Agricultural Marketing Service, USDA, April 17, 2008.

<sup>38</sup> Nathaniel Gronewold, "Food prices hampering U.N. agency's ability to head off 'new face of hunger'," *E&E News PM*, April 24, 2008, at [<http://www.eenews.net>].

## Macroeconomic Linkages Reinforce Price Rises

Several economists have stated that U.S. fiscal policies intended to stave off economic recession have contributed indirectly to the U.S. and global “food crises” by resulting in a weaker U.S. dollar. Between September 2007 and April 2008, the U.S. Federal Reserve’s Open Market Committee cut a key interest rate (the federal funds rate) by 3.25 percentage points to 2%, primarily due the escalating financial crisis related to the rise in defaults on subprime mortgages and the overall weak U.S. economy.<sup>39</sup> Lower U.S. interest rates contribute to a decline in the value of the dollar relative to other currencies which, in turn, contributes to higher U.S. commodity exports and higher oil prices.

Since oil is priced in U.S. dollars in international markets, a weakening dollar is generally perceived as contributing to higher oil prices via two mechanisms. First, oil exporters must raise the dollar price per barrel to retain the same level of purchase power against appreciating non-U.S. currencies. Second, oil importers — whose currencies have generally strengthened against the dollar — drive the dollar price of oil higher when they bid the same price per barrel in their own currency. Since the United States is the world’s largest oil importer, surging oil import costs pressure the U.S. trade deficit and ripple through the U.S. economy further slowing economic activity. The weakening U.S. economy has impacted capital and stock market prices. As a result, the bullish commodity markets have become an attractive market for mutual funds and investors seeking more profitable investment opportunities. This “speculative” investment money — valued in the hundreds of billions of dollars — has been accused of reinforcing rising prices.<sup>40</sup> Some analysts suggest that agricultural commodity markets are now playing a role traditionally reserved for gold and other precious metals — a safe haven for investors.<sup>41</sup>

## Implications of High Commodity Prices

### U.S. Farm Income Record High

The past six years are the six highest farm income years on record, but the past two years have seen significant gains from previous records.<sup>42</sup> According to USDA’s Economic Research Service (ERS), national net cash income — a key indicator of U.S. farm well-being — is expected to rise to a record \$96.6 billion in 2008, over 10% above the previous year’s record (\$87.6 billion) and 26% above the four-year

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<sup>39</sup> “Open Market Operations,” Federal Open Market Committee, U.S. Federal Reserve Board, at [<http://www.federalreserve.gov/fomc/fundsrate.htm>]; see also CRS Report 98-856, *Federal Reserve Interest Rate Changes: 2000-2008*, by Marc Labonte and Gail E. Makinen.

<sup>40</sup> “Some blame speculators for worsening global food crisis,” RB, *Greenwire*, April 24, 2008.

<sup>41</sup> Nathaniel Gronewold, “Commodity ‘feedback loop’ fueling price surge,” *Greenwire*, March 11, 2008, at [<http://www.eenews.net/Greenwire/>].

<sup>42</sup> For more information, see CRS Report RS21970, *The U.S. Farm Economy*, by Randy Schnepf.

average of \$76.5 billion for 2003 through 2006, all on the strength of higher commodity prices. Farm revenue gains are expected to easily outpace rising input expenses (up 34% versus 29%, respectively, from the 2000-2006 period average), leaving many farm communities flush with cash.

## Lower Government Farm Program Outlays

In February, USDA forecast government direct payments at \$13.4 billion in 2008, up slightly from \$12.0 billion in 2007 but well below the four-year (2003-2006) average of \$17.4 billion.<sup>43</sup> Government direct payments peaked at \$24.4 billion in 2005. Higher projected market prices are expected to limit payments under the two major price-triggered programs — counter-cyclical payments (CCP), and marketing loan benefits (loan deficiency payments, marketing loan gains, and certificate exchange gains).<sup>44</sup> Fixed direct payments, whose payment rates are fixed in legislation and are not affected by the level of program crop prices, are estimated up slightly at \$5.3 billion.

USDA's farm income and government program outlay forecasts, which were released in February 2008, were based on prices that persisted in late 2007. However, commodity prices have increased unexpectedly since then. In March, FAPRI released more current estimates of government direct payments for 2008/2009 at \$5.8 billion, down slightly from a revised forecast of \$6.0 billion in 2007/2008.<sup>45</sup> Under FAPRI's projections, price contingent outlays on CCP and LDP are about \$0.5 billion, while fixed direct payments of \$5.2 billion comprise the majority of government subsidy expenditures.

## Crop Insurance Premiums Costs Surge in 2008

Commodity prices are a key ingredient in the formula for calculating crop insurance premiums.<sup>46</sup> Higher, more volatile prices lead to higher insurance premiums, but they also provide the opportunity for producers to lock in unusually high per-acre returns. Both volatility and absolute prices levels are substantially higher in 2008 than in 2007 for all major program crops.

For example, the base price for corn was \$4.06 per bushel in 2007 compared with \$5.25 in 2008 — an increase of \$1.19 or 29%.<sup>47</sup> The higher price level plus this

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<sup>43</sup> Ibid. Note, these farm income and government outlay projections were made in early February 2008, and are likely to be revised downward due to significant price rises since then. The next USDA farm income update is scheduled for August 28, 2008.

<sup>44</sup> For more information on commodity programs, see CRS Report RL33271, *Farm Commodity Programs: Direct Payments, Counter-Cyclical Payments, and Marketing Loans*.

<sup>45</sup> "Selected direct government payments," *U.S. Baseline Briefing Book*, FAPRI-MU Report #03-08, FAPRI, March 2008, p. 59.

<sup>46</sup> Gary Schnitkey, "Crop Insurance Decisions: Why Not the Same as Last Year?" *Illinois AgriNews*, Dept of Agriculture and Consumer Economics, University of Illinois, Feb. 2008.

<sup>47</sup> The base price for corn is equal to the average price during the first half of February, of (continued...)

year's higher volatility (**Figure 12**) translate into higher crop insurance premiums. Premiums vary by crop and location, as well as the farm's production history. However, a higher base price also means that the per acre returns being insured are substantially higher in 2008, especially since most crop insurance policies sold are revenue products that allow farmers to insure a target level of revenue rather than just yields.<sup>48</sup> Many farmers on traditionally high-yielding farms in the Corn Belt will be able to guarantee corn revenues in the \$500 per acre range for a 75% coverage level. Guarantees over \$600 are possible with higher coverage levels. Similar high insurance premiums and revenue guarantees will be available for most major program crops in most major producing areas.

Unlike government commodity program outlays, which decline when prices rise, government support for federal crop insurance rises with higher prices. This is because the federal government subsidizes the premiums by an average of 50% to 60% of the total premium, depending on the coverage level. In addition, the government reimburses the insurance companies for a share of their administrative and operating expenses incurred in delivering the crop insurance policies. The reimbursement share of administrative and operating expenses is based on a percentage of total premiums; thus, it also rises with rising crop prices. FAPRI projects net federal outlays (including premium subsidies, excess indemnity payments, and administrative and delivery costs) at \$4.71 billion in 2008 and at \$7.1 billion in 2009.<sup>49</sup> These net outlays compare with an estimated \$3.6 billion in 2007.

## Sharply Higher Feed Costs

In February, ERS projected U.S. livestock feed costs for 2008 at a record \$45 billion, up nearly \$7 billion or over 18% from the previous year's record.<sup>50</sup> Meanwhile, USDA projects that wholesale prices for nearly all livestock product categories (with the exception of poultry and eggs) will decline in 2008.<sup>51</sup> Rising feed costs (primarily grains and protein meals) have cut into profit margins of all livestock sectors (beef, dairy, pork, and poultry) and, in the case of hogs have rendered many operations unprofitable. For example, on April 28, 2008, Tyson Food — a major producer, distributor, and marketer chicken, beef, and pork products — reported its first loss in six quarters and said that its corn and soybean costs would

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<sup>47</sup> (...continued)

the harvest-time (i.e., December) futures contract at the Chicago Board of Trade.

<sup>48</sup> For more information on crop insurance programs, see CRS Report RL34207, *Crop Insurance and Disaster Assistance: 2007 Farm Bill Issues*, by Ralph Chite.

<sup>49</sup> "Crop Insurance," *U.S. Baseline Briefing Book*, FAPRI-MU Report #03-08, FAPRI, March 2008, p. 59.

<sup>50</sup> "Farm Income and Costs: 2008 Farm Sector Income Forecast" briefing room, ERS, USDA updated March 7, 2008; at [<http://www.ers.usda.gov/Briefing/FarmIncome/>].

<sup>51</sup> *World Agricultural Supply and Demand Estimates*, World Agricultural Outlook Board, USDA, April 9, 2008.

increase by \$600 million in 2008.<sup>52</sup> Texas Governor Rick Perry — whose state is the U.S. leader in beef production and ranks in the top 10 for production of poultry, eggs, and dairy — has stated that rising corn prices have been particularly harmful to Texas livestock producers. According to Governor Perry, every one-cent rise in corn prices costs his state's livestock sector over \$6 million.<sup>53</sup>

The U.S. livestock sector will have to work through many issues related to the changing nature of feed supplies as feedstock demand from biofuels production lowers grain supplies and replaces them in part with higher protein supplies. Feed supply logistics and feed ration composition are likely to remain unsettled for several years if the biofuels industry continues to expand.

## Futures Market Dilemma

Because of their transparency and their traditionally strong relationship with cash markets, futures contract prices are often the primary basis for price determination in many wholesale and cash markets, as well as for managing the risk associated with the ownership (current or anticipated) of a large volume of an agricultural commodity that is actively traded on a futures exchange. However, the rapid, volatile escalation in agricultural futures prices that has evolved since 2005 appears to be diminishing the effectiveness of the futures market as a device for both price discovery and risk management. The financial demands associated with routine hedging operations (primarily in the form of increased margin requirements) have risen in tandem with commodity prices, thereby placing severe strains on market participants. In addition, increasing evidence of lack of convergence between cash and futures contract prices for some commodities in some markets (observed primarily for corn, soybeans, and wheat contracts at the CBOT) is increasing the risk of futures-price-based forward contracts for the grain buyers that offer them.

These developments are of particular concern to traditional commercial interests — such as grain and oilseed elevators, food processors, grain merchandisers, and other participants in the marketing chain for agricultural products — who are likely to see their costs of operations rise with any decline in the efficiency of the futures market. Agricultural producers are equally concerned because, as grain and oilseed buyers refrain from offering forward contracts, producers are increasingly unable to take advantage of the current high prices. Forward contracting has traditionally been one of the primary risk management strategies employed by U.S. producers.<sup>54</sup> It is not clear to what extent, if any, high commodity prices have had on the perceived lack of convergence.

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<sup>52</sup> Steven Mueson, “A Costly Link Between Food and Fuel,” *Washington Post*, April 30, 2008.

<sup>53</sup> Letter to EPA Administrator Stephen Johnson, by Texas Governor Perry, April 25, 2008, at [<http://www.governor.state.tx.us/>].

<sup>54</sup> For more information on farm risk management strategies, see “Risk Management Strategies” at the ERS Farm Risk Management Briefing Room, at [<http://www.ers.usda.gov/Briefing/RiskManagement/Strategies.htm>].

The Commodity Futures Trading Commission (CFTC) — the government agency responsible for oversight and regulation of U.S. futures exchanges — has said that an examination of futures trading data has yet to show any visible evidence that hedging operations are declining as a result of the rising financial obligations associated with hedging.<sup>55</sup> In addition, economists have studied the emerging lack of convergence between cash and futures prices and have yet to identify any significant causal factor.<sup>56</sup> Despite any current lack of evidence, some agricultural interests affected by these issues have accused the growing pool of speculative money that has been invested in agricultural futures markets in recent years of artificially increasing prices and their volatility, and sharply raising the costs of standard hedging operations. As a result, these parties have called for greater federal regulation and monitoring over speculative participation in futures markets, as well as for more stringent trading limits on speculative funds. As a general rule, this type of speculative investment in futures markets is considered to add necessary liquidity to commodity markets.

Several other issues related to the efficient functioning of futures markets that have emerged in recent years — for example, electronic trading and the standard practice of raising limits on the daily movement of contract prices when prices settle at their limits — have been accused (rightly or wrongly) of aggravating the dilemma surrounding the rising cost and declining viability of routine hedging operations in agricultural futures markets. On April 22, 2008, the CFTC held a special public “Round Table” to publicly discuss the issues confronting commodity futures exchanges and to hear from market participants.<sup>57</sup> While no policy positions were recommended or adopted from the session, the Round Table represents an awareness of the importance of the efficient functioning of agricultural futures markets to the U.S. agricultural sector and a willingness to heighten monitoring by the CFTC of these emerging issues.

## **Expanded, More Intensive Agricultural Production**

Since most of the increase in demand is considered permanent, commodity prices will likely return to lower levels only through an expansion in aggregate supply (from either domestic or foreign sources) that outpaces demand growth. This, in turn, may be accomplished by increases in either yields or cultivated area. The strong market price signals received by the world’s farmers during the past six months are expected to engender a response in both planted area and yield per unit of planted area.

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<sup>55</sup> “Overview of Agricultural Futures Markets For Congressional Staff,” by John Fenton, Deputy Director for Market Surveillance, Div. of Market Oversight, CFTC, April 2, 2008.

<sup>56</sup> For example, see “The Performance of Chicago Board of Trade Corn, Soybean, and Wheat Futures Contracts After Recent Changes in Speculative Limits,” by Scott H. Irwin, Philip Garcia, and Darrel L. Good, Dept. of Ag and Consumer Economics, Univ. of ILL, Urbana-Champaign, IL, May 2007, at [<http://www.farmdoc.uiuc.edu/irwin/research/CBOTFuturesPerformance.pdf>].

<sup>57</sup> For more information, visit the CFTC website at [<http://www.cftc.gov>].

**Agricultural Productivity.** Yield increases generally accumulate slowly over time via more intensive use of fertilizers, pesticides, improved seeds, and adoption of better farming practices (which themselves are generally the product of investments in research, extension, and infrastructure). The availability and cost of fertilizers and chemicals can be a limiting factor on short-term yield gains. Furthermore, adoption of more intensive cultivation practices may contribute to potentially harmful environmental consequences such as possible water quality degradation from fertilizer and chemical runoff, and increased soil erosion.

**Expanded Cropped Area.** Area increases for a given crop can occur more quickly than yield increases by shifting land use among different crops, by altering rotational tillage-fallow cultivation practices, or by bringing marginal, less-productive soils into cultivation. Land-use shifts imply winners and losers among crops, while altering rotational patterns and farming marginal lands all imply potentially harmful environmental consequences such as reduced wildlife habitat, lower soil fertility, increased erosion, possible water quality degradation from nutrient and sediment loads in rural waterways, and lost carbon sequestration. Most analysts agree that the current high commodity prices are likely to entice some marginal land back into production in 2008.<sup>58</sup>

In 2007, about 321 million acres were planted to the principal crops in the United States, of which 315 million acres were for the major program crops.<sup>59</sup> In addition, 62 million acres of hay were harvested in 2007. In 2008, USDA estimates that about 4 million additional acres will be planted to principal crops (up 1.2%), while program crop area will expand by 6.2 million acres (up 2%). Thus, more than a 2-million-acre shift from minor crops to program crops is anticipated. In addition, nearly 1 million acres is expected to shift from hay to program crop area.

## Converting Conservation Acres to Production

In the United States, the Conservation Reserve Program (CRP) represents the most visible bank of potential crop land available for re-entry into agricultural production.<sup>60</sup> The CRP provides payments to farmers to take highly erodible or environmentally sensitive cropland out of production for ten years or more to conserve soil and water resources. In February 2008, national enrollment in the CRP was 34.6 million acres. Each year, a portion of enrolled CRP acres is eligible for renewal or removal depending on the owner's preferences which, in turn, are likely influenced by market conditions. Farmers also have the option of paying a penalty for early withdrawal, but the penalty (which includes full repayment of all benefits received) is generally prohibitive except in the case of recently enrolled land which

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<sup>58</sup> "Crops winning out over conservation for some landowners," James MacPherson, Associated Press, *WashingtonPost.com*, April 30, 2008.

<sup>59</sup> *Acreage*, National Agricultural Statistics Service (NASS), USDA, June 29, 2007. Major program crops include corn, sorghum, oats, barley, winter wheat, rye, durum wheat, other spring wheat, rice, soybeans, peanuts, sunflower, cotton, dry edible beans, potatoes, sugarbeets, canola, proso millet, hay, tobacco, and sugarcane.

<sup>60</sup> For more information on the CRP, see CRS Report RS21613, *Conservation Reserve Program: Status and Current Issues*, by Tadlock Cowan.

has yet to accumulate many benefits. In March 2007, then-Secretary of Agriculture Mike Johanns announced that there would be no penalty-free release of acreage from the CRP in 2007. USDA estimates that, in 2007, about 130,000 acres of CRP that were under contract were withdrawn early and were subject to penalty. Secretary Schafer has reiterated the no-penalty-free-release-of-CRP position for FY2008, but has said that USDA will make a decision concerning FY2009 in August or September 2008.

CRP is perceived as providing multiple environmental services — for example, critical wildlife habitat, wind and soil erosion control, wetlands protection, forestry restoration, carbon sequestration, and water quality gains via filter strips and buffer acreage. As a result, the public interest in seeing lower crop prices via expanded cropland must be weighed against the public interest in maintaining the substantial environmental benefits of land in CRP.<sup>61</sup>

Between September 2007 and February 2008, 2.1 million acres opted out of the CRP as their contracts expired. Another 27.8 million acres under CRP contracts will expire by 2010. Contracts for approximately 23 million (83%) of these acres have been renewed or extended. High commodity prices, however, may discourage future re-enrollments and contract extensions. Environmental and wildlife organizations are major advocates for maintenance and/or expansion of current CRP levels. Livestock groups, the milling and baking industry, and other food processors favor reducing or eliminating early-out penalties for CRP to maximize the amount of land that is cropped.<sup>62</sup> The Alliance for Agriculture Growth and Competitiveness (AAGC) — a group representing the beef, poultry, pork, and grain and feed industries — has been lobbying USDA since 2005 to allow landowners to pull out of CRP contracts without penalty.<sup>63</sup> According to the Center for Agricultural Research and Development (CARD), if CRP policy is unchanged, then as much as 2 million acres of CRP land per year will be brought back into crop production over the next 10 years.

**CRP Policy Options.** USDA's March *Planting Intentions* report estimates about a 2% increase in program crop planted acreage in 2008 in response to the high commodity prices. Given that USDA's projected year-to-year farm price increases for 2007/2008 range from 20% to 60% for the major program crops, economists at CARD suggest that such a low area response, if realized, implies that U.S. farmers' ability to respond to high commodity prices is constrained by a lack of viable cropland.<sup>64</sup> As a result of this land constraint, CARD suggest that USDA consider "re-optimizing" CRP through a combination of penalty elimination and aggressive

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<sup>61</sup> "Options for the Conservation Reserve Program," by Bruce A. Babcock and Chad Hart, *Iowa Ag Review*, Spring 2008, Vol. 14, No. 2, pp. 6-7.

<sup>62</sup> *Ibid.*

<sup>63</sup> For example, see the AAGC mission statement and its letter of policy recommendations for USDA at [[http://www.cmcmarkets.org/files/18\\_mission\\_&\\_prin.pdf](http://www.cmcmarkets.org/files/18_mission_&_prin.pdf)] and [[http://www.nopa.org/content/newsroom/2005/aug/081205\\_lettertochuckconnor\\_CRP.pdf](http://www.nopa.org/content/newsroom/2005/aug/081205_lettertochuckconnor_CRP.pdf)].

<sup>64</sup> "Options for the Conservation Reserve Program," by Bruce A. Babcock and Chad Hart, *Iowa Ag Review*, Spring 2008, Vol. 14, No. 2, pp. 6-7.

rebidding of its entire CRP holdings. By eliminating penalties on CRP contracts that expire in the next three years, more productive land could return to production earlier, while the freed up CRP payment funds could be used to offer further protection to the more environmentally sensitive land that offers the greatest environmental benefits. Similarly, CARD suggests that USDA, by rebidding its entire CRP land portfolio, could ensure that the most vulnerable land is retained while allowing less vulnerable land to return to production.

## Rising Food Price Inflation Impacts Consumer Budgets

The rise in agricultural prices, combined with high energy costs, have contributed to higher food inflation in the United States and around the world. In general, higher food price inflation impacts consumers' dietary choices as relative prices vary across foods that compete for food expenditure dollars.<sup>65</sup> The overall impact to consumers from higher food prices depends on the proportion of income that is spent on food — households that spend a much greater proportion of their income on food have less flexibility to adjust expenditures in other budget areas to accommodate increasing food costs.

International comparisons of household budgetary expenditures indicate that rich industrial nations spend 6% to 20% of their annual budgets on food compared with 20% to 30% for middle income countries, and 30% to nearly 80% for low income countries.<sup>66</sup> These differences suggests that food price increases represent a potentially far more serious hardship for households in low income countries, particularly those nations that depend on imports for an increasing share of their domestic food needs.

**U.S. Food Price Inflation.** In the United States, food prices increased by 4.2% during 2007, the highest one-year rise since 1989. USDA predicts that food price inflation for 2008 will be in the range of 4% to 5%.<sup>67</sup> During the first three months of 2008, the U.S. Bureau of Labor Statistics (BLS) reports that food prices have climbed by 1.3% for an annual rate of 5.2%.<sup>68</sup> **Figure 15** displays the monthly rate of change in the BLS food price index compared with its more stable 11-month moving average. Since 2005, the general trend has been upward and in June 2007, the 11-month moving average reached its highest point (0.43%) since June 1990.

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<sup>65</sup> *Changing Structure of Global Food Consumption and Trade*, Anita Regmi, Editor, WRS-01-1, ERS, USDA, May 2001.

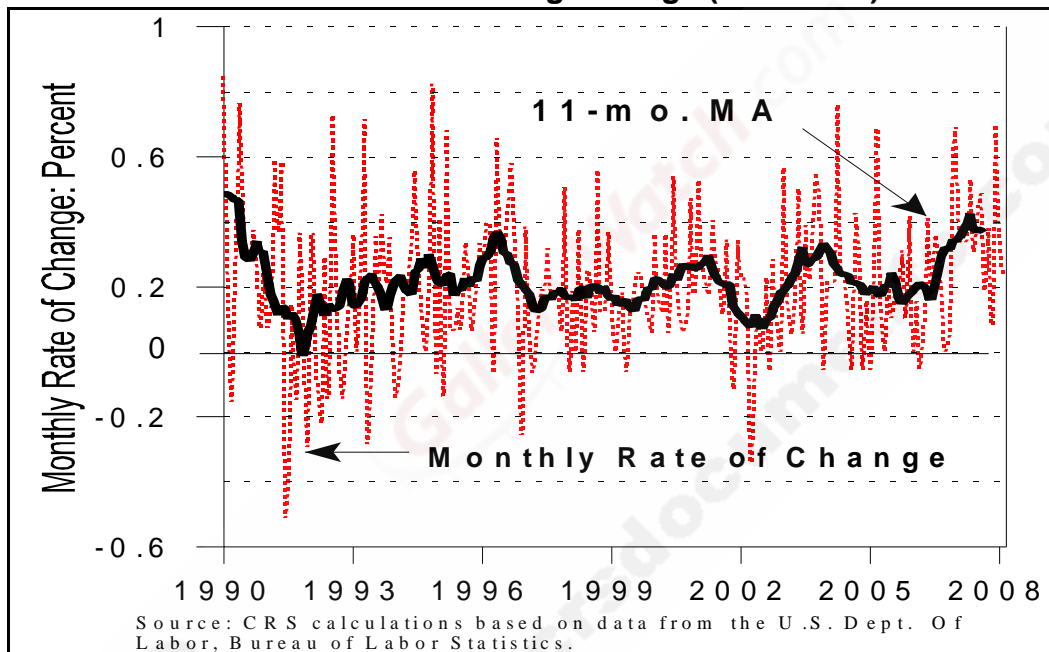
<sup>66</sup> "Table 97 — Expenditures on Food, by Selected Countries, 2002," Briefing Room: Food CPI, Prices and Expenditures, ERS, USDA, at [<http://www.ers.usda.gov/Briefing/CPIFoodAndExpenditures/>].

<sup>67</sup> "Food Price Outlook, 2008," Briefing Room: Food CPI, Prices, and Expenditures, ERS, USDA, March 21, 2008. See also CRS Report RS22859, *Food Price Inflation: What are the Issues?* by Tom Capehart and Joe Richardson.

<sup>68</sup> "Table 1. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category and commodity and service group," U.S. Dept. of Labor, BLS; as observed on April 22, 2008.

Despite the sharp increases in commodity prices in 2007, most economists agree that energy costs, particularly fuel prices, have played a larger role in food price inflation than have commodity prices.<sup>69</sup> In general, retail food prices are much less volatile than farm-level prices and tend to rise by a fraction of the change in farm prices. This is because the actual farm product represents only a small share of the eventual retail price (20% on average), whereas transportation, processing, packaging, advertising, handling, and other costs — all vulnerable to higher fuel prices — comprise the majority of the final sales price.<sup>70</sup>

**Figure 15. Food Price Index: Month-to-Month Change versus 11-Month Moving Average (11-mo MA)**



Because food expenditures represent a relatively small share of consumer spending for most U.S. households, food price increases are absorbed relatively easily in the short run. On average, in 2006 U.S. households spend about 6% of their total disposable personal income on food consumed at home and another 4% on food consumed away from home for a total food outlay of about 10.5%.<sup>71</sup> However, even in a wealthy nation such as the United States, household income variations suggest that the impact of food price inflation can vary widely and can result in painful

<sup>69</sup> For example, see “The Relative Impact of Corn and Energy Prices in the Grocery Aisle,” John M. Urbanchuk, Director, LECG LLC, June 14, 2007.

<sup>70</sup> “Price Spreads from Farm to Consumer,” Briefing Room: Food Marketing System in the U.S., ERS, USDA, at [<http://www.ers.usda.gov/Data/FarmToConsumer/marketingbill.htm>].

<sup>71</sup> Statement by Joseph Glauber, Chief Economist of USDA, at a Hearing entitled “How Are High Food Prices Impacting American Families?” before the Joint Economic Committee U.S. Congress, May 1, 2008, p.15, at [<http://www.jec.senate.gov/>].

spending choices at the household level. In 2006, U.S. families with less than \$20,000 in income spent over 20% of their after-tax income on food.<sup>72</sup>

The United States has several food assistance programs that are designed to assist households in meeting their minimum food needs.<sup>73</sup> The two largest programs, Food Stamps and child nutrition programs, operate as entitlement programs that make specified payments to all qualifying beneficiaries. However, in the case of Food Stamps the burden is upon the eligible individuals to seek out the benefits. In general, rising food prices result in higher federal spending on Food Stamps and child nutrition programs because participation expands and because the benefits under most federal food assistance programs are indexed to some type of consumer food basket. In 2007, \$33.2 billion was spent on the Food Stamp program while the average food stamp recipient received \$95.63 per month in benefits and the average participating household received \$214.69 per month.

**International Price Rises Dim Food Security Prospects.** Due to market and trade linkages, high commodity prices ripple through international markets where impacts vary widely based on a country's grain import dependence and its financial ability to respond to higher commodity prices. For example, both Japan and Mauritania are dependent on imports for a substantial portion of domestic food needs; however, Japan has the financial means to better accommodate rising food import prices.

Import-dependent developing country markets are put at greater food security risk due to the higher cost of imported commodities. Lower-income households in many foreign markets where food imports are an important share of national consumption, and where food expenses represent a larger portion of the household budget, may be affected quite severely by higher food prices.<sup>74</sup> Humanitarian groups have expressed concern for the potential difficulties that higher grain prices imply for developing countries that are net food importers.<sup>75</sup> According to the U.N.'s Food and Agricultural Organization (FAO), the grain import bill for Low-Income Food-Deficit Countries (LIFDCs) — those nations identified as the most vulnerable to international food price changes — is forecast to increase by 56% in 2007/2008 following a 37% rise the previous year.<sup>76</sup> For low-income food-deficit countries in

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<sup>72</sup> Ibid.

<sup>73</sup> For more information on U.S. food assistance programs, see "Federal Spending for Domestic Assistance Programs," in CRS Report RS22859, *Food Price Inflation: What are the Issues?* by Tom Capehart and Joe Richardson.

<sup>74</sup> Shahla Shapouri and Stacey Rosen, "Energy Price Implications for Food Security in Developing Countries," *Food Security Assessment, 2006*, GFA-18, ERS, USDA.

<sup>75</sup> International Monetary Fund, *World Economic Outlook: Globalization and Inequality*. October 2007. Washington.

<sup>76</sup> "Poorest Countries' cereal bill continues to soar, governments try to limit impact," FAO Newsroom, FAO, U.N., April 11, 2008. For detailed information on international food supply and demand projections see *Crop Prospects and Food Situation*, No. 2, April 2008, FAO, U.N., at [<http://www.fao.org/worldfoodsituation>].

Africa, the cereal bill is projected to increase by 74% due to the sharp rise in international cereal prices, freight rates, and oil prices.

The cost of food imports is compounded by bulk ocean freight rates which were record high in 2007.<sup>77</sup> Ocean freight rates are expected to retreat slightly in 2008 as the supply of ships expands, however, the continual rise of crude oil prices to new highs in early 2008 suggest that shipping costs are unlikely to experience a significant decline, and could possibly rise with higher fuel costs.

The political consequences of food shortages can be severe. Since January 2008, the emerging food crisis has sparked reports of hoarding and theft.<sup>78</sup> Civil unrest over food prices have been reported around the globe including Egypt, Indonesia, the Philippines, and much of Africa (Burkina Faso, Cameroon, Ivory Coast, Mauritania, Mozambique, Senegal, and South Africa).<sup>79</sup> In Haiti, two days of food-price rioting toppled the prime minister.<sup>80</sup>

### **Shortages, High Prices Hurt International Food Aid Prospects**

Higher commodity and food prices reduce the international community's ability to provide food aid to other countries without additional appropriations. This is because most international food aid activities (the United States included) are fixed in value by annual appropriations; thus, the amount of commodities that can be purchased declines with rising food prices.

In 2007, the U.N.'s World Food Program (WFP) — the world's leading source for international food aid — estimated it would need \$2.9 billion to cover its 2008 approved project needs which included feeding 73 million people in 78 countries. However, on March 20, the WFP made an emergency appeal for an additional US\$500 million to twenty heads of government to offset the increased price of food commodities which had since raised its operating needs to \$3.4 billion. Then, barely a month later on April 22, 2008, Josette Sheeran, the executive director of WFP, announced that the WFP needs \$755 million in additional funding to meet its current operating needs due to continued rises in commodity prices since mid-March.<sup>81</sup> One of the difficulties facing the WFP, according to Sheeran, is that rice suppliers that had signed earlier grain delivery contracts with the U.N. when prices were lower are now

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<sup>77</sup> *Grain Transportation Report* Agricultural Marketing Service, USDA, April 10, 2008.

<sup>78</sup> For an example, see "Rice dealers hoard lucrative crop, intensifying shortage," by RB, *Greenwire*, April 18, 2008.

<sup>79</sup> "Food price anger sparks protests," *Reuters News*, April 21, 2008.

<sup>80</sup> U.N. food agency facing worst crisis, director says," Nathaniel Gronewold, *E&E News PM*, April 22, 2008, at [<http://www.eenews.net>].

<sup>81</sup> "Food Crisis Is Depicted As 'Silent Tsunami'," by Kevin Sullivan, *Washington Post*, April 23, 2008.

finding it more profitable to pay a 5% penalty to break the contract, and then sell their rice at the current higher market price.<sup>82</sup>

International food aid is the United States' major response to reducing global hunger.<sup>83</sup> In 2006, the United States provided \$2.1 billion of such assistance, which paid for the delivery and distribution of more than 3 million tons of U.S. agricultural commodities. The United States provided food aid to 65 countries in 2006, more than half of them in sub-Saharan Africa. The U.S. Agency for International Development (USAID) indicated that rising food and fuel prices would result in a significant reduction in emergency food aid in 2008. According to press reports in March 2008, USAID expects a \$200 million shortfall in funding to meet emergency food aid needs. For FY2008, Congress appropriated \$1.2 billion for P.L. 480 food aid, the same as FY2007.<sup>84</sup> For FY2009, the President's budget again requested \$1.2 billion. However, in six out of ten years since 1999, supplemental funding for P.L. 480 Title II food aid has been appropriated.

Since February, President Bush has been under increasing pressure from international hunger advocacy groups, as well as the U.S. milling and baking industry and other food industry groups, to open grain supplies held in the Bill Emerson Humanitarian Trust (BEHT) — which was estimated to hold \$177 million in cash and about 33 million bushels of wheat in early 2008 — as a short-term means of dampening grain prices while augmenting international supplies. On April 14, 2008, President Bush directed the Secretary of Agriculture to access grain supplies from the BEHT valued at \$200 million to meet emergency food aid needs abroad.<sup>85</sup>

## Farm Commodity Market Outlook

### Positive Short-Run Outlook, Especially for Food Crops

For some crops (particularly for wheat and rice), the price increases are likely to be relatively short-term in nature and are due to weather-related crop shortfalls in major producer and consumer countries, a weak U.S. dollar which has helped spark large increases in U.S. exports, a bidding war among major U.S. crops for land in the months leading up to spring planting in 2008, and the often perverse price effects resulting from international policy responses by several major exporting and importing nations to protect their domestic markets.

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<sup>82</sup> Food prices hampering U.N. agency's ability to head off 'new face of hunger', Nathaniel Gronewold, *E&E News PM*, April 24, 2008, at [<http://www.eenews.net>].

<sup>83</sup> For more information, see CRS Report RL33553, *Agricultural Export and Food Aid Programs* by Charles Hanrahan.

<sup>84</sup> P.L. 480 is the principal U.S. food aid program. It is administered by USAID.

<sup>85</sup> White House News Release, Office of the Press Secretary, April 14, 2008. For more information on the Bill Emerson Humanitarian Trust, see CRS Report RS21234, *The Bill Emerson Humanitarian Trust: Background and Current Issues*, by Charles Hanrahan.

Substantial recovery is expected to occur by late 2008, especially in wheat and rice markets, as global supplies rebuild. FAO forecasts that world cereal production will expand 2.6% to a record 2.164 billion tons in 2008.<sup>86</sup> Most of the increase is expected to come from wheat with rice and coarse grains showing modest gains. If realized, FAO predicts that the expanded production will help to ease the current tight global cereal supply situation. However, any recovery remains weather-dependent and commodity prices are likely to remain highly volatile until the 2008 harvests are “in the bin.” More immediate price moderation can be achieved if government policies to limit or ban exports of available grain and oilseed supplies are repealed. Such export-prohibiting policies distort international market prices in the short-run by limiting access to export supplies, while dampening long-run productivity gains by artificially curtailing demand and thereby discouraging investments in domestic agriculture.

Biofuel feedstock demand has bid up the price of corn, soybeans, and other crops that compete for acres, especially in the United States. Both USDA’s and FAPRI’s outlook projections for 2008 include expanded acreage in the United States and worldwide, as high prices bring marginal land back into crop production. In the U.S., expectations for increased double cropping of winter wheat and soybeans in the Delta and Southeast, along with a return to crop production of a substantial portion of pasture land as well as nearly 2 million acres of former CRP, are expected to boost planted area for corn, soybeans, and wheat by nearly 7 million acres to 224.6 million acres.

Similar area expansion is expected to occur worldwide in response to strong price incentives and, in some countries, to government policy. For example, *StatsCanada* recently forecast Canadian wheat plantings to be up over 16% in 2008.<sup>87</sup> In the EU, in September 2007 agriculture ministers suspended a 10% set-aside requirement that paid farmers to idle nearly 3.8 million hectares (9.4 million acres) of cropland annually. Mariann Fischer Boel, EU Agriculture Commissioner, expects the additional land re-entering crop production to bolster EU grain output by up to 17 million tons in 2008.<sup>88</sup>

Despite projections for record world grain production in 2008, only marginal global stock building is projected to occur. Relatively low stocks are expected to persist through 2008 as global production will be hard pressed to keep up with continued growth in demand (even with a return to normal weather and yields). This will leave commodity markets particularly vulnerable to news of poor harvests or demand shocks, and will very likely mean continued high price volatility.

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<sup>86</sup> *Crop Prospects and Food Situation*, No. 2, Global Information and Early Warning System on Food and Agriculture (GIEWS), FAO, U.N., April 2008.

<sup>87</sup> “Field and specialty crops: Seeded area,” *Statistics Canada*, April 21, 2008.

<sup>88</sup> “Set aside suspended by European Union,” by Bruno Waterfield and Charles Clover, ©Telegraph Media Group Limited 2008, September 26, 2007; [<http://www.telegraph.co.uk>].

## Long-Term Outlook Hinges on Productivity Gains

Projections for a steady rise in global population, accompanied by sustained income growth in the world's developing economies, are expected to sustain growth in demand for livestock products and the feedstuffs — e.g., coarse grains and protein meals — needed to produce those products. In addition, the outlook for increased demand for agricultural feedstocks to meet large increases in government biofuel-usage policies, particularly in the United States and the European Union (EU), suggest that demand will increase strongly over the coming decade for corn (the primary feedstock for U.S. ethanol production), and vegetable oils (the primary feedstock for biodiesel production in the United States and the EU).

As a result, even with a return to normal crop growing conditions and successful harvests, commodity prices are expected to remain at significantly higher levels than experienced during the 1998-2006 period. FAPRI's long-term 10-year projections suggest that prices for major U.S. program crops and products — corn, barley, sorghum, soybeans, soybean oil, soybean meal, wheat, and rice — will remain well above average prices of the recent five-year period 2002/2003 to 2006/2007 (**Table 2**).

A sustained period of agricultural output growth that surpasses the projected rise in demand is needed to produce a return to abundant supplies and moderate prices. Increased agricultural production implies some combination of increased land dedicated crop production and/or increased output per acre of planted land. For most countries, only marginal expansion of cropped area is possible and often this involves less-productive, more environmentally sensitive land. Agricultural productivity gains, on the other hand, require sustained long-term investment in agricultural research, extension, and marketing infrastructure. How commodity markets actually evolve will depend greatly on the policy choices that the U.S. and international community make concerning agricultural productivity and renewable energy.

## U.S. and International Policy Response

Because the current U.S. and global commodity market dynamic affects so many aspects of agricultural markets including short-term consumer needs, as well as issues related to intermediate and longer-term agricultural productivity, the nature of the U.S. and international response will necessarily vary by targeted beneficiary as well as the relevant time period. It is unlikely that any single policy response will be able to address all issues simultaneously. This section briefly reviews some of the more salient policy responses being suggested or implemented by major players in the U.S. and international agricultural arena.

## U.S. Industry Groups Decry Rising Costs of Grain as an Input

Interests from livestock and poultry sectors, food processors and retailers, and hunger advocacy groups, have advocated for changes in current U.S. agricultural and food policy. Many interests from within these sectors have advocated for the reversal

of U.S. biofuels policy, while some have also advocated for a reduction in crop land retirement under the CRP program.

The U.S. milling and baking industry, led by the American Bakers Association (ABA), held a march in Washington, D.C. in March, 2008, to highlight their concerns about the short grain supplies and sharp price rises in U.S. commodity markets. As part of their campaign, the ABA put forward a three-point congressional action plan.<sup>89</sup>

- First, the ABA claims that as much as one-third of CRP land could be returned to agricultural production without environmental harm. They urge Congress to accept House Agriculture Committee Chairman, Colin Peterson's proposal to decrease the CRP by 7 million acres; they encourage Congress and the USDA to support early out-of-contract provisions within the CRP; and they request that USDA and the Administration undertake an evaluation to identify viable cropland within the CRP to facilitate its return to production.
- Second, the ABA recommends that EPA use its waiver authority to waive the RFS annual requirements, and to drop all tariffs on imported ethanol.<sup>90</sup>
- Third, the ABA recommends that Congress and USDA consider the needs of the domestic food industry ahead of export markets whenever U.S. wheat stocks drop below a three-month-usage supply.

In April 2008, a spokesperson for the U.S. Grocery Manufacturers Association called on Congress, the EPA, and states to freeze and rollback the biofuels mandates due to their effect on food prices.<sup>91</sup> In addition to interests from the food processing and grocery retail sectors, the U.S. livestock sector has expressed long-standing concerns about diverting feed crops away from commercial animal feeders and into biofuels production. The National Cattlemen's Beef Association (NCBA) explicitly opposes the national biofuels RFS.<sup>92</sup> NCBA members have called for a market-based approach for the production and usage of ethanol produced from livestock feedstuffs, and the NCBA supports sun-setting the existing biofuels tax credits and the ethanol import tariff as scheduled and not allowing for renewal in their current form. In April, a major international agriculture research group, the International Food Policy Research Institute (IFPRI), announced that a moratorium on global grain- and

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<sup>89</sup> For more information see the American Bakers Association, Press Releases, at [<http://www.americanbakers.org/>].

<sup>90</sup> For more information, see CRS Report RS22870, *Waiver Authority Under the Renewable Fuel Standard (RFS)*, by Brent Yacobucci.

<sup>91</sup> Transcript from interview with Scott Faber, vice president of government affairs, Grocery Manufacturer Association, *E&ENews OnPoint*, April 9, 2008, at [<http://www.eenews.net/>].

<sup>92</sup> "Renewable Fuels and Ethanol Production," policy news, NCBA, at [<http://www.beefusa.org/goveRenewableFuelsandEthanolProduction.aspx>].

oilseed-based biofuels would help ease corn prices by up to 20% and wheat prices by 10% in the next few years.<sup>93</sup>

On April 25, 2008, Texas Governor Rick Perry, in a letter to Stephen Johnson, Administrator of the Environmental Protection Agency (EPA) — the federal agency responsible for administering the RFS — to request that EPA waive 50% of the RFS' ethanol requirements to alleviate their impact on corn prices.<sup>94</sup> Section 211(o) of the Federal Clean Air Act (as amended by EISA of 2007) provides the EPA Administrator, in consultation with the Secretary of Agriculture and the Secretary of Energy, with the authority to suspend for one year all or part of the RFS. EPA has 90 days to respond to Governor Perry's petition for a waiver. The National Chicken Council's President, George Watts, publicly commended Governor Perry's action stating that ethanol has been a factor behind rising food costs.<sup>95</sup>

On May 2, 2008, 23 Republican senators sent a letter to EPA administrator Johnson to inquire about the status of regulations for states applying for an ethanol mandate waiver and urged that EPA take into consideration food inflation concerns related to the biofuels mandate.<sup>96</sup> However, not all quarters agree with the blame being targeted on the biofuels sector. The Renewable Fuels Association, the National Corn Growers Association, and other interest groups that have benefitted from U.S. biofuels policy suggest that high oil prices, global production shortfalls, and foreign export controls are the main culprits and that it is unfair and incorrect to place the entire blame on the biofuels sector.<sup>97</sup>

## U.S. Congressional Action

On April 29, 2008, Congressman Jeff Flake introduced a bill, H.R. 5911, that would repeal the RFS biofuels usage mandate, as well as the biofuels tax credit incentive and the ethanol import tariff — all to take effect immediately upon enactment of the bill. Senator Kay Bailey Hutchinson has also announced her intentions to introduce legislation that would freeze the RFS at its current level rather than allowing it to increase through 2022.<sup>98</sup>

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<sup>93</sup> “Biofuels halt would ease food prices — ag group,” Missy Ryan, *Guardian*, April 29, 2008.

<sup>94</sup> “Letter to EPA Administrator Stephen Johnson,” by Texas Governor Perry, April 25, 2008, at [<http://www.governor.state.tx.us/>].

<sup>95</sup> “National Chicken Council Commends Texas Governor for Filing First Request for Waiver of National Renewable Fuel Standard,” NCC Press Release, April 25, 2008.

<sup>96</sup> “Sens. Hutchinson, McCain Urge Ethanol Mandate Relief from EPA,” news release, Sen. Hutchinson's office, May 2, 2008, at [<http://hutchinson.senate.gov/pr050208b.html>].

<sup>97</sup> For example, see the articles “Flat out Wrong About Food Prices,” and “RFA Opposes Waiver Request by Texas Governor,” at the RFA website at [<http://www.ethanolrfa.org/>]; or “Recipe for a Food and Fuel Smear Campaign,” Rick Tolman, Chief Executive Officer, National Corn Growers Association, at [<http://www.ncga.com/>].

<sup>98</sup> “Citing food costs, Texas Governor seeks waiver of fuel mandate,” Ben Geman, *Greenwire*, April 28, 2008, [<http://www.eenews.net/>].

Two additional legislative proposals currently being negotiated in Congress could contribute directly or indirectly to the U.S. response to the current global food crisis. These are a renewal of U.S. farm legislation, and a possible emergency supplemental appropriations bill.

The U.S. farm bill legislative process has been ongoing for nearly a year with considerable uncertainty surrounding a final outcome as of May 1, 2008. However, the eventual outcome has important implications for the level and timing of funding for several areas related to the U.S.' ability to respond to domestic and international food concerns. For example, these include U.S. domestic nutrition programs, U.S. foreign food aid and agricultural assistance, the on-going debate over food versus fuel, agricultural land use incentives, and agricultural productivity issues. Different versions of new farm legislation (H.R. 2419) have been passed by both the House and the Senate. Both the House and Senate farm bills seek many of the same types of changes to existing legislation and programs, but there are numerous differences, particularly in the nutrition and energy titles. These differences will have to be worked out in conference.<sup>99</sup> However, the Administration has objected to new restrictions on its management of emergency food aid funding that is being proposed within farm legislation.<sup>100</sup> The President asserts that much of U.S. emergency assistance in the bill actually is earmarked for non-emergency situations, and that the bill prohibits use of U.S. funds to purchase foods in regions near a food emergency.<sup>101</sup>

Congress is presently considering supplemental appropriations for the Iraq war which could include some as-yet-undetermined funding for emergency response to the international food crisis.<sup>102</sup> President Bush has requested \$350 million in additional food aid as part of this emergency supplemental bill.

On May 1, 2008, President Bush announced a new, additional funding request of \$770 million for emergency response to the international food crisis in FY2009.<sup>103</sup> This funding is separate from the \$350 million that he proposed for the current FY2008. According to White House officials, the \$770 million would include about \$395 million for direct food assistance; \$150 million for agricultural development; and \$225 million for local crop purchases, vouchers, and other special programs.

## Immediate International Food Crises Response

On April 29, 2008, U.N. Secretary-General Ban Ki-moon announced that he will lead a task force to coordinate the efforts of the U.N. system in addressing the global crisis arising from the surge in food prices. The Task Force on the Global Food

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<sup>99</sup> See CRS Report RL33934, *Farm Bill Legislative Action in the 110th Congress*.

<sup>100</sup> "De-railing the Farm Bill," *Washington Trade Daily*, Vol. 17, No. 87, April 30, 2008.

<sup>101</sup> See CRS Report RL34145, *International Food Aid and the 2007 Farm Bill*.

<sup>102</sup> For more information see CRS Report RL34451, *Second FY2008 Supplemental Appropriations for Military Operations, International Affairs, and Other Purposes*

<sup>103</sup> "Bush Seeks \$770 Million More in World Food Aid," Dan Eggen, *Washington Post*, May 2, 2008.

Crisis will bring together the heads of U.N. agencies, funds and programs, and the World Bank and International Monetary Fund, as well as experts within the UN and leading authorities from the international community.

The two principal agencies within the United Nations (U.N.) responsible for international agricultural development and food aid are the Food and Agricultural Organization (FAO) and the World Food Program (WFP). WFP is the U.N.'s front-line agency in the fight against global hunger via emergency operations in response to natural and man-made disasters, relief and rehabilitation projects, development projects where food aid is used for social and economic development, and special operations involving logistics to speed up the movement of food aid.<sup>104</sup> In contrast, FAO has a longer-term focus. FAO is mandated to raise levels of nutrition, improve agricultural productivity, better the lives of rural populations and contribute to the growth of the world economy. FAO accomplishes this through in-country agricultural research and extension support, information dissemination, international workshops and conferences, etc. in order to help developing countries modernize and improve their agriculture, forestry and fisheries practices and ensure good nutrition for all.<sup>105</sup>

On December 17, 2007, the U.N.'s FAO launched its Initiative on Soaring Food Prices (ISFP) as a focal point for technical and policy assistance to those countries identified as the hardest hit by the sharp increase in food prices — referred to as Low-Income Food-Deficit Countries (LIFDCs).<sup>106</sup> The international community is seeking to coordinate on-going work by the World Bank, the International Fund for Agriculture Development (IFAD), WFP, Regional Development Banks (e.g., the Asian Development Bank and the African Development Bank), and private foundations to integrate new projects and interventions. First, the WFP, FAO, and IFAD are scheduled to present their strategies for coping with the food-price crisis at a U.N. executive board meeting in Geneva.<sup>107</sup> Then, the WFP and other international agencies will hear directly from governments on what they believe policy responses need to be at a gathering at U.N. headquarters in New York. These policy meetings are a prelude to the FAO's "Summit on Food Security" in Rome scheduled for June 3-5, 2008. It is expected that the Rome summit will provide a forum for coordinating the global response to the current food crises. The list of current proposals by the U.N. and its agencies includes:<sup>108</sup>

- Establishment of a U.N. task force on food crisis.
- WFP request for \$755 million of emergency food aid (above normal program funds) to world's poorest.

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<sup>104</sup> For more information on the WFP, see [<http://www.wfp.org/>].

<sup>105</sup> For more information on the FAO, see [<http://www.fao.org/>].

<sup>106</sup> "Information Note," FAO's Initiative on Soaring Food Prices, FAO, U.N., at [<http://www.fao.org/newsroom/common/ecg/1000826/en/ISFP.pdf>].

<sup>107</sup> Food prices hampering U.N. agency's ability to head off 'new face of hunger'," Nathaniel Gronewold, *E&E News PM*, April 24, 2008, at [<http://www.eenews.net>].

<sup>108</sup> "U.N. taskforce to tackle global food crisis," Harvey Morris, *Financial Times*, April 30, 2008.

- Emergency \$1.7 billion initiative to provide poor food importers with seed and fertilizer.
- The World Bank is to explore a rapid financing facility for poor countries.
- The International Monetary Fund (IMF) proposes aid to countries facing balance of payments gaps.
- The U.N. calls for the lifting of food export restrictions.

## Long-Term Agricultural Productivity Response

While the international donor community is responding to short-term food needs, other interest groups are encouraging both greater investment in international agricultural productivity and the phasing out or elimination of government policies that distort market signals and diminish agricultural producer's incentives to respond to price signals. For each country, the appropriate policy response depends on the specific policy goal.<sup>109</sup> Many suggestions are being offered by market watchers, but several recurring themes are present:

- Reverse protective country-level policies of export bans and/or limitations that have exacerbated the problem.
- Reduce or eliminate subsidies that divert agricultural land from food and feed production to the production of feedstocks for biofuels.
- Remove or phase out domestic policies that keep market prices low in favor of consumers, but at the expense of sustained investment in the agricultural sector.
- Remove barriers that have constrained the production and use of genetically-modified crops.

In April, the International Food Policy Research Institute (IFPRI) — a major international agriculture research agency that operates as part of the Consultative Group on International Agricultural Research (CGIAR) — issued a 2-page policy brief that enumerated several policy recommendations for dealing with high international commodity prices and their harmful effect on groups vulnerable to food insecurity. First, IFPRI calls for short-run reinforcement and expansion of social protection and nutrition programs targeted to vulnerable groups. Second, IFPRI calls for elimination of biofuel subsidies and mandates. Third, IFPRI recommends the elimination of trade barriers to reduce market distortions and thereby allow correct price signals to reach agricultural producers. Finally, IFPRI encourages long-term investment in agricultural research and extension, rural infrastructure, and market access for small farmers.<sup>110</sup>

The World Bank (WB) also has released a list of policy recommendations in response to the emerging global food crisis. The WB's recommendation focus on those policy options designed to improve household food security. The WB recently

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<sup>109</sup> For example, see "Food Price Hikes Threaten Political Crises," by John Baize, *World Perspectives, Inc.*, April 9, 2008.

<sup>110</sup> "Rising Food Prices: What Should Be Done?" Joachim von Braun, IFPRI Policy Brief, April 2008, at [<http://www.ifpri.org/themes/foodprices/foodprices.asp>].

released a policy option paper as a partial guide for government policy designed to respond to the current high commodity prices in international markets.<sup>111</sup> As such, the WB prioritizes policy options by their effectiveness at reaching target groups, the equity of distribution of program benefits, and the degree of market distortions introduced. The WB lists country-level policy options under three broad classes: Targeted Safety Net Programs; Measures to Lower Domestic Food Prices; and Measures to Stimulate Medium-term Food Grain Production

## **Possible World Trade Organization (WTO) Implications**

In an attempt to deal with its own food-import dependency while responding to the global food crisis and the proliferation of export restrictions, Japanese officials have announced that Japan will be offering a formal proposal in the WTO's Doha Round of multilateral trade negotiations calling for stronger disciplines on exporting members.<sup>112</sup>

Doha agriculture negotiations chair, Crawford Falconer, has proposed eliminating all existing export restrictions by the end of the first year of the implementation of any new agreement.<sup>113</sup> In addition, he has proposed that any new export restrictions and prohibitions be allowed only for a period of 12 months, extendable up to a maximum of 18 months, in consultations with affected importers.

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<sup>111</sup> "Rising Food Prices: Policy Options and World Bank Response," Background note for the Development Committee, prepared by PREM, ARD, and DEC drawing from across the Bank; undated mimeo, at [<http://www.worldbank.org/>].

<sup>112</sup> "A Proposal on Food Export Restrictions," *World Trade Daily*, Vol. 17, No. 87, April 30, 2008.

<sup>113</sup> "Revised Draft Modalities for Agriculture," TN/AG/W/4/Rev.1, WTO, Feb. 8, 2008.