Potential Impacts on U.S. Agriculture of the U.S. October 2005 WTO Proposal

FAPRI-UMC Report #16-05
December 15, 2005

Prepared by the Food and Agricultural Policy Research Institute

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Published by the Food and Agricultural Policy Research Institute (FAPRI), University of Missouri-Columbia, 101 Park DeVille Drive, Suite E, Columbia, MO 65203, December 2005.

http://www.fapri.missouri.edu

Material in this publication is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture.

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Summary

In response to a request by Senator Chambliss, the Food and Agricultural Policy Research Institute has analyzed possible impacts of the October 2005 U.S. proposal in the WTO agricultural negotiations.

In addition to a **Baseline** that continues current U.S. agricultural policies, we examined three alternative scenarios.

- **Unilateral No Compensation** scenario. The United States reduces grain, oilseed, and cotton loan rates and dairy price supports by 11% and target prices by 7% over a five year period. The U.S. sugar tariff-rate quota is increased by 7.5% of 1999-2001 average consumption levels, and sugar loan rates are reduced by 16%. To isolate impacts of U.S. policy changes, no policy changes in other countries are assumed in this scenario.

- **Multilateral No Compensation** scenario. The same changes in U.S. policy are implemented as in the Unilateral scenario, but other countries are required to make policy changes consistent with the October U.S. proposal. A global analysis of this scenario was conducted and the results are provided in a separate report issued by our colleagues at Iowa State University.

- **Multilateral with Compensation** scenario. Assumptions are the same as in the previous scenario, with one exception: instead of reducing target prices by 7%, target prices are set at baseline levels and direct payments are increased by 7% of the target price. Given current payment formulas, this has the same effect on counter-cyclical payments (CCPs) as a 7% reduction in target prices.

FAPRI's stochastic model is used to examine 500 possible outcomes of the scenarios for U.S. agricultural markets, given a series of assumptions about how the proposal would be implemented. Key results are summarized in Table 1.

- The assumed reductions in loan rates and support prices would sharply reduce the U.S. Aggregate Measure of Support (AMS). Product-specific AMS in 2012-2014 would be cut in half by the two **Multilateral** scenarios, from an average of $9.4 billion per year in the baseline to an average of $4.7 billion.

- The average level of AMS under the two **Multilateral** scenarios is well below the U.S. proposed AMS limit of $7.6 billion. However, the AMS varies with market prices. Even though the average levels are well below the proposed limit, in 4% to 5% of the annual stochastic outcomes, prices are low enough and payments large enough that the AMS exceeds the proposed limit. In 15.6% of the stochastic outcomes, the AMS limit is exceeded in some year between 2008 and 2014.

- Similarly, either of the **Multilateral** scenarios would result in a significant reduction in CCPs. Average CCP levels would fall well below the proposed limit

on blue box spending, but in approximately 5% of the stochastic outcomes each year, prices would be low enough to result in CCPs in excess of the limit.

- Net government outlays would be reduced sharply in the scenarios without compensation. The decline in government sending averages about $3.5 billion per year in the **Unilateral** scenario. With the increase in prices that results from reforms in other countries, U.S. farm program outlays are further reduced in the **Multilateral No Compensation** scenario.

- The **Multilateral with Compensation** scenario results in an increase in direct payments that offsets much of the savings in loan program benefits and CCPs. Net government outlays are still slightly below baseline levels on average, but direct payments exceed baseline levels by $3.4 billion per year. This increase is consistent with U.S. WTO obligations only if direct payments do not count toward AMS or blue box limits.

- Without considering impacts on foreign markets of the U.S. proposal, reducing target prices and loan rates would reduce crop producer returns plus payments, as indicated in the results for the **Unilateral** scenario.

- In the **Multilateral No Compensation** scenario, the increase in prices resulting from increased exports offsets at least some of the reduction in payments. Returns plus payments exceed baseline levels for rice producers, given a sharp increase in prices caused by increased U.S. exports. Of five major crops, only for cotton do returns plus payments remain well below baseline levels.

- In the **Multilateral with Compensation** scenario, the increase in direct payments further offsets reductions in CCPs and loan benefits. For rice, wheat, corn, and soybeans, average estimated returns plus payments exceed baseline levels. Only for cotton do average returns plus payments remain below baseline levels.

- The **Multilateral** scenarios result in a $2.0 billion increase in aggregate cash receipts from crop marketings, and a $4.2 billion increase in livestock receipts. Livestock receipts increase in response to higher prices for cattle, hogs, poultry, and milk, due to increased U.S. meat and dairy product exports.

- The increases in receipts are partially offset by reduced government payments and increased production costs in the two **Multilateral** scenarios.

- Net farm income falls by an average of $1.9 billion per year in the **Unilateral** scenario. In the **Multilateral No Compensation** scenario, increased crop and livestock cash receipts result in average net farm income $1.3 billion per year above baseline levels. The increased direct payments in the **Multilateral with Compensation** scenario result in net farm income that exceeds baseline levels by $3.4 billion per year.

Table 1. Summary of results

	Baseline	2012-14 Averages			Proportional 2012-14 Effects of:		
	Policies	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Com-pensation	No Com-pensation	With Com-pensation	No Com-pensation	No Com-pensation	With Com-pensation
Assumed changes in:							
Loan rates (except sugar)					-11%	-11%	-11%
Sugar loan rate					-16%	-16%	-16%
Milk support price					-11%	-11%	-11%
Target prices					-7%	-7%	0%
Direct payment rates					0%	0%	*
WTO indicators		(million dollars)					
Product-specific AMS	9,376	5,012	4,657	4,668	-46.5%	-50.3%	-50.2%
AMS limit	7,641	7,641	7,641	7,641	0.0%	0.0%	0.0%
Blue box support (CCPs)	3,094	1,814	1,522	1,536	-41.4%	-50.8%	-50.4%
Blue box limit	4,773	4,773	4,773	4,773	0.0%	0.0%	0.0%
% of outcomes exceeding:		(proportion)					
AMS limit	58.5%	6.3%	4.3%	4.5%	-89.2%	-92.7%	-92.3%
Blue Box limit	24.3%	7.6%	4.9%	5.0%	-68.8%	-79.7%	-79.5%
		(million dollars)					
Net CCC outlays	16,537	13,062	12,516	15,968	-21.0%	-24.3%	-3.4%
Crop returns plus payments	(dollars per base acre planted to the crop)						
Corn	423.97	408.65	418.32	433.95	-3.6%	-1.3%	2.4%
Soybeans	253.51	245.15	247.07	257.39	-3.3%	-2.5%	1.5%
Wheat	177.45	174.83	178.88	186.55	-1.5%	0.8%	5.1%
Upland cotton	581.90	545.07	545.18	571.15	-6.3%	-6.3%	-1.8%
Rice	767.94	744.79	811.57	841.24	-3.0%	5.7%	9.5%
Farm income		(million dollars)					
Crop receipts	125,125	125,196	127,131	127,114	0.1%	1.6%	1.6%
Livestock receipts	112,190	112,069	116,407	116,386	-0.1%	3.8%	3.7%
Government payments	16,655	13,429	12,902	16,352	-19.4%	-22.5%	-1.8%
Production costs	237,704	236,215	239,117	240,479	-0.6%	0.6%	1.2%
Net farm income	53,089	51,186	54,367	56,533	-3.6%	2.4%	6.5%

* Direct payment rates are increased by 7% of the target price for each commodity.

Baseline: Mean values from FAPRI early 2005 stochastic baseline, adjusted for elimination of Step 2 program

Unilateral No Compensation scenario: Reduces crop loan rates and milk price supports by 11%, sugar price supports by 16%, and target prices by 7%, increases U.S. sugar TRQ, with no policy changes in other countries

Multilateral No Compensation scenario: Same as above, except other countries change policies consistent with provisions of the October 2005 U.S. WTO proposal

Multilateral with Compensation scenario: Same as above, except target prices set at baseline levels and direct payment rates increased by 7% of the baseline target price

Introduction

Senator Saxby Chambliss, Chairman of the U.S. Senate Committee on Agriculture, Nutrition, and Forestry sent FAPRI a letter requesting analysis of the U.S. proposal in the WTO agricultural negotiations. This report and companion reports by colleagues at Iowa State University (CARD Working Paper 05-WP417) and Texas A&M University (AFPC Briefing Paper 05-7) are in response to the Chairman's request.

The assumptions used in the analysis primarily derive from a summary of the U.S. proposal released by the office of the U.S. Trade Representative (USTR) on October 10, 2005. This information was supplemented by conversations with USTR and other U.S. officials. FAPRI considers these assumptions reasonable given available information, but other interpretations of the U.S. proposal are certainly possible. The assumptions used in this analysis should not be considered official U.S. government policy.

This report compares U.S. results under a baseline and three alternative scenarios. Analysis is conducted with FAPRI's stochastic model of U.S. agricultural markets. Unless otherwise noted, reported results represent averages of 500 stochastic outcomes.

1) The **Baseline** assumes a continuation of current agricultural policies in the United States and other countries. FAPRI's stochastic baseline prepared in early 2005 serves as the baseline for this analysis with one adjustment: the cotton Step 2 program is eliminated as of August 1, 2006. See the next section of the report for an explanation of why this adjustment was judged appropriate.

2) The **Unilateral No Compensation** scenario assumes a series of U.S. policy changes that would satisfy the terms of the U.S. proposal. These include reductions in crop loan rates, target prices, and dairy support prices, as well as increases in tariff rate quotas (TRQs) for sugar and butter. In order to isolate the effects of domestic policy changes from those caused by policy response in other countries, this scenario assumes only the United States makes policy changes.

3) The **Multilateral No Compensation** scenario makes the same U.S. policy assumptions as the Unilateral scenario. The only difference is that other countries are also assumed to adjust policies to reduce internal supports, increase market access, and eliminate export subsidies as required by the U.S. proposal. Global impacts of this scenario are reported in a companion report by our FAPRI colleagues at Iowa State University.

4) The **Multilateral with Compensation** scenario makes the same U.S. and international assumptions as the Multilateral No Compensation scenario with one exception. Instead of reducing target prices to limit U.S. blue box spending, the same effect on blue box spending is achieved by setting target prices at baseline levels and increasing U.S. direct payment rates. This has the effect of significantly increasing U.S. farm program costs relative to the No Compensation scenarios, but still leaves spending below baseline levels.

U.S. Policy Assumptions

Requirements of the U.S. Proposal

1) A 60% reduction in the allowed level of current Aggregate Measure of Support (AMS) for the United States, from $19.1 billion to $7.6 billion. We assume the reductions are made in a linear fashion between 2008 and 2012. The EU AMS limit would be reduced by 83%.
2) A redefined blue box, limited to no more than 2.5% of the 1999-2001 average value of agricultural production ($4.77 billion in the case of the United States). We assume that counter-cyclical payments (CCPs) would fall in the redefined blue box.
3) Tariff reductions as described in the USTR release, with the highest tariffs being cut by 90% if the product is not classified as "sensitive."
4) For sensitive products, an increase in the TRQ. Based on consultations with USTR, we assume the increase relative to current levels is 7.5% of 1999-2001 domestic consumption. No more than 1% of tariff lines qualify for sensitive product designation.
5) The elimination of export subsidies by 2010.
6) Establishment of a new "peace clause" that would inhibit cases under the WTO subsidies code, provided other requirements of the proposal are met.

Baseline

The reference point for our analysis is the FAPRI January 2005 baseline, with one adjustment: the elimination of cotton Step 2 payments. WTO has ruled that the Step 2 program is inconsistent with U.S. commitments under the Uruguay Round Agreement on Agriculture. Also, the House and Senate have both included the elimination of Step 2 in their FY 2006 budget reconciliation bills. These two factors suggest it would be inappropriate to consider elimination of Step 2 to be a Doha Round effect, so the baseline for this analysis eliminates Step 2 payments at the end of the 2005/06 marketing year.

Changes to Reduce the AMS

There is no unique set of policy adjustments required for the U.S. to meet its proposed commitments. For purposes of this analysis, all grain, oilseed, and cotton loan rates and dairy support prices were reduced by the same percentage to achieve the required reduction in AMS.

To judge the appropriate level of reductions, FAPRI's stochastic model was used to calculate the proportion of 500 outcomes where the U.S.-proposed WTO limits would be exceeded. Loan rates and support prices were reduced until no more than 5% of the stochastic outcomes per year between 2012 and 2014 exceeded the WTO AMS limit. The required loan rate and milk support price reduction resulting from this procedure is 11%. Reductions were made in a linear fashion between marketing years 2007/08 and 2011/12 for crops and between calendar years 2008 and 2012 for dairy. Sugar loan rates

were reduced by 16% by 2011/12. The larger reduction was necessary to avoid public stock accumulation, given the large estimated increase in U.S. imports.

These changes in loan rates and support prices were applied to all three scenarios (see Table 2 for specific U.S. program provisions).

Changes to Stay within the Blue Box Cap

A similar procedure was used to determine how to make changes in the CCP program to comply with the redefined blue box limits. Target prices were reduced until the proportion of annual stochastic outcomes where CCPs exceeded the $4.77 billion cap dropped to 5%. The required reduction is 7%. The **Unilateral** and **Multilateral No Compensation** scenarios assume this 7% target price reduction. Reductions are made in a linear fashion between 2007/08 and 2011/12.

Several policy levers can be used to change CCP spending. In the **Multilateral with Compensation** scenario, target prices are restored to baseline levels and direct payment rates are increased by 7% of the baseline target price. CCP payments occur when the season-average farm price for a commodity falls below the target price minus the direct payment rate. Either reducing target prices by 7% or increasing direct payment rates by 7% of the baseline target price would have the same effect on CCPs, given a market price. The two alternatives have dramatically different implications for farm program outlays and farm income. While CCPs would be similar, direct payments would, of course, be much larger if direct payment rates were increased.

Direct Payments and the Green Box

The analysis assumes that direct payments can be classified in the green box. A WTO ruling in the case brought by Brazil against the U.S. cotton program brings this assumption into question. Implicitly, the analysis assumes either that the United States makes appropriate policy changes so direct payments qualify for the green box, or the Doha negotiations lead to green box rules that allow U.S. direct payments to qualify. EU single farm payments are also assumed to qualify for the green box.

Other U.S. Policy Changes

The sugar and butter TRQs are expanded by 7.5% of average 1999-2001 consumption levels, as required for sensitive products. U.S. tariffs on other products are also reduced as required by the U.S. proposal, and dairy export subsidies are eliminated.

Foreign Policy Changes

The **Unilateral** scenario assumes no changes in foreign agricultural policies, while the two **Multilateral** scenarios assume other countries modify their policies to conform to the U.S. proposal. A companion publication by our colleagues at Iowa State University describes the changes in foreign policies and resulting impacts on international markets.

Table 2. U.S. policy assumptions

	2006	2007	2008	2009	2010	2011	2012	2012 vs. Baseline Absolute	2012 vs. Baseline Percent
Baseline			(dollars per bushel, crop year)						
Corn loan rate	1.95	1.95	1.95	1.95	1.95	1.95	1.95		
Corn target price	2.63	2.63	2.63	2.63	2.63	2.63	2.63		
Corn direct payment rate	0.28	0.28	0.28	0.28	0.28	0.28	0.28		
Soybean loan rate	5.00	5.00	5.00	5.00	5.00	5.00	5.00		
Soybean target price	5.80	5.80	5.80	5.80	5.80	5.80	5.80		
Soybean direct payment rate	0.44	0.44	0.44	0.44	0.44	0.44	0.44		
Wheat loan rate	2.75	2.75	2.75	2.75	2.75	2.75	2.75		
Wheat target price	3.92	3.92	3.92	3.92	3.92	3.92	3.92		
Wheat direct payment rate	0.52	0.52	0.52	0.52	0.52	0.52	0.52		
			(cents per pound, crop year)						
Cotton loan rate	52.00	52.00	52.00	52.00	52.00	52.00	52.00		
Cotton target price	72.40	72.40	72.40	72.40	72.40	72.40	72.40		
Cotton direct payment rate	6.67	6.67	6.67	6.67	6.67	6.67	6.67		
			(dollars per hundredweight, crop year)						
Rice loan rate	6.50	6.50	6.50	6.50	6.50	6.50	6.50		
Rice target price	10.50	10.50	10.50	10.50	10.50	10.50	10.50		
Rice direct payment rate	2.35	2.35	2.35	2.35	2.35	2.35	2.35		
			(cents per pound, crop year)						
Raw sugar loan rate	18.00	18.00	18.00	18.00	18.00	18.00	18.00		
			(dollars per hundredweight, calendar year)						
Milk support price	9.90	9.90	9.90	9.90	9.90	9.90	9.90		
			(thousand short tons, crop year)						
Sugar non-NAFTA TRQ imports	1,229	1,229	1,229	1,229	1,229	1,229	1,229		
Unilateral and Multilateral No Compensation scenarios			(dollars per bushel, crop year)						
Corn loan rate	1.95	1.91	1.86	1.82	1.78	1.74	1.74	-0.21	-11.0%
Corn target price	2.63	2.59	2.56	2.52	2.48	2.45	2.45	-0.18	-7.0%
Corn direct payment rate	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.00	0.0%
Soybean loan rate	5.00	4.89	4.78	4.67	4.56	4.45	4.45	-0.55	-11.0%
Soybean target price	5.80	5.72	5.64	5.56	5.48	5.39	5.39	-0.41	-7.0%
Soybean direct payment rate	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.00	0.0%
Wheat loan rate	2.75	2.69	2.63	2.57	2.51	2.45	2.45	-0.30	-11.0%
Wheat target price	3.92	3.87	3.81	3.76	3.70	3.65	3.65	-0.27	-7.0%
Wheat direct payment rate	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.00	0.0%
			(cents per pound,crop year)						
Cotton loan rate	52.00	50.86	49.71	48.57	47.42	46.28	46.28	-5.72	-11.0%
Cotton target price	72.40	71.39	70.37	69.36	68.35	67.33	67.33	-5.07	-7.0%
Cotton direct payment rate	6.67	6.67	6.67	6.67	6.67	6.67	6.67	0.00	0.0%
			(dollars per hundredweight, crop year)						
Rice loan rate	6.50	6.36	6.21	6.07	5.93	5.79	5.79	-0.72	-11.0%
Rice target price	10.50	10.35	10.21	10.06	9.91	9.77	9.77	-0.73	-7.0%
Rice direct payment rate	2.35	2.35	2.35	2.35	2.35	2.35	2.35	0.00	0.0%
			(cents per pound, crop year)						
Raw sugar loan rate	18.00	17.42	16.85	16.27	15.70	15.12	15.12	-2.88	-16.0%
			(dollars per hundredweight, calendar year)						
Milk support price	9.90	9.90	9.68	9.46	9.25	9.03	8.81	-1.09	-11.0%
			(thousand short tons, crop year)						
Sugar non-NAFTA TRQ imports	1,229	1,380	1,531	1,682	1,833	1,984	1,984	755	61.5%

Table 2. U.S. policy assumptions, continued

	2006	2007	2008	2009	2010	2011	2012	2012 vs. Baseline Absolute	2012 vs. Baseline Percent
Multilateral with Compensation scenario			(dollars per bushel, crop year)						
Corn loan rate	1.95	1.91	1.86	1.82	1.78	1.74	1.74	-0.21	-11.0%
Corn target price	2.63	2.63	2.63	2.63	2.63	2.63	2.63	0.00	0.0%
Corn direct payment rate	0.28	0.32	0.35	0.39	0.43	0.46	0.46	0.18	65.8%
Soybean loan rate	5.00	4.89	4.78	4.67	4.56	4.45	4.45	-0.55	-11.0%
Soybean target price	5.80	5.80	5.80	5.80	5.80	5.80	5.80	0.00	0.0%
Soybean direct payment rate	0.44	0.52	0.60	0.68	0.76	0.85	0.85	0.41	92.3%
Wheat loan rate	2.75	2.69	2.63	2.57	2.51	2.45	2.45	-0.30	-11.0%
Wheat target price	3.92	3.92	3.92	3.92	3.92	3.92	3.92	0.00	0.0%
Wheat direct payment rate	0.52	0.57	0.63	0.68	0.74	0.79	0.79	0.27	52.8%
			(cents per pound, crop year)						
Cotton loan rate	52.00	50.86	49.71	48.57	47.42	46.28	46.28	-5.72	-11.0%
Cotton target price	72.40	72.40	72.40	72.40	72.40	72.40	72.40	0.00	0.0%
Cotton direct payment rate	6.67	7.68	8.70	9.71	10.72	11.74	11.74	5.07	76.0%
			(dollars per hundredweight, crop year)						
Rice loan rate	6.50	6.36	6.21	6.07	5.93	5.79	5.79	-0.72	-11.0%
Rice target price	10.50	10.50	10.50	10.50	10.50	10.50	10.50	0.00	0.0%
Rice direct payment rate	2.35	2.50	2.64	2.79	2.94	3.09	3.09	0.74	31.3%
			(cents per pound, crop year)						
Raw sugar loan rate	18.00	17.42	16.85	16.27	15.70	15.12	15.12	-2.88	-16.0%
			(dollars per hundredweight, calendar year)						
Milk support price	9.90	9.90	9.68	9.46	9.25	9.03	8.81	-1.09	-11.0%
			(thousand short tons, crop year)						
Sugar non-NAFTA TRQ imports	1,229	1,380	1,531	1,682	1,833	1,984	1,984	755	61.5%

U.S. Domestic Support Calculations

FAPRI has recently added to its models a set of equations to calculate the U.S. AMS and other WTO domestic support measures under alternative accounting rules (see FAPRI Policy Working Paper #1-05 at www.fapri.missouri.edu).

Under the U.S. proposal, the U.S. current AMS would be comprised primarily of marketing loan benefits for grains, oilseeds, and cotton, plus the imputed value to producers of the sugar and dairy price support programs. Marketing loan benefits are tied to loan rates and indicators of market prices; at sufficiently high prices, marketing loan benefits may be zero, but they can be quite large when prices fall below loan rates. In stochastic analysis, the range of possible outcomes for marketing loan benefits is wide.

In contrast, under current accounting practices, the AMS for dairy and sugar is simply U.S. production multiplied by the difference between the U.S. support price and a fixed reference price based on world prices in the 1980s. Only changes in production or the support price can change the AMS for sugar and dairy. Note that with current policies in place, the AMS for dairy totals about $5 billion per year between 2012 and 2014, and the sugar AMS totals $1.3 billion per year (Table 3).

The 500 outcomes in FAPRI's stochastic baseline result an average current AMS of $9.4 billion per year between 2012 and 2014. That only exceeds the proposed limit by less than $2 billion, but the averages do not tell the full story. In order to ensure that in 95% of stochastic outcomes for any given year the United States does not exceed the proposed $7.6 billion limit, the average AMS must be considerably less than the limit. Given all the assumptions of this analysis, the average value of the product-specific AMS is about $4.7 billion in the two **Multilateral** scenarios, about half the baseline level.

While the proportion of outcomes where product-specific support exceeds the limit in any given year is 5% or less, there are more outcomes where the limit is exceeded at some point. *Given all the assumptions of the analysis, product-specific support exceeds the AMS limit in some year between 2008 and 2014 in 15.6% of the stochastic outcomes.*

A similar story holds in the case of the blue box limit. Baseline CCPs average $3.1 billion per year from 2012-2014, but in 24% of the stochastic outcomes for each year, baseline CCPs exceed the proposed $4.8 billion cap. In order to keep U.S. CCPs below $4.8 billion in 95% of the stochastic outcomes each year, policy parameters are set so that average CCP spending is about $1.5 billion—less than one-third of the cap.

These results do not consider the possible effects of nonproduct-specific support on the AMS calculations. Crop insurance is the largest component remaining in the nonproduct-specific amber box category. Under 2001 U.S. accounting practices, crop insurance expenditures could cause U.S. nonproduct-specific support to exceed the proposed *de minimis* limit of 2.5% of the value of production. These estimates assume that some change is made either in the crop insurance program or in the way it is reported.

Table 3. U.S. domestic support calculations

	Baseline	Absolute 2012-14 LEVEL			Proportional 2012-14 Effects of:		
	Policies	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Com-pensation	No Com-pensation	With Com-pensation	No Com-pensation	No Com-pensation	With Com-pensation
Current total AMS		(million dollars)					
Barley	40	13	9	9	-66.4%	-78.5%	-77.3%
Corn	989	291	136	139	-70.6%	-86.3%	-86.0%
Cotton (upland)	735	389	339	340	-47.1%	-53.9%	-53.7%
Dairy	5,030	2,955	2,989	2,989	-41.2%	-40.6%	-40.6%
Minor oilseeds	14	6	4	5	-60.2%	-69.2%	-68.1%
Oats	7	2	1	1	-67.3%	-81.1%	-79.4%
Peanuts	27	11	10	10	-59.6%	-62.9%	-62.5%
Rice	230	156	60	60	-31.9%	-73.9%	-73.9%
Sorghum	49	14	9	9	-70.5%	-81.9%	-80.8%
Soybeans	814	278	216	221	-65.9%	-73.5%	-72.9%
Sugar	1,299	783	783	783	-39.7%	-39.7%	-39.7%
Wheat	43	12	1	1	-70.8%	-96.9%	-96.7%
All other	100	100	100	100	0.0%	0.0%	0.0%
Product-specific total	9,376	5,012	4,657	4,668	-46.5%	-50.3%	-50.2%
AMS limit	7,641	7,641	7,641	7,641	0.0%	0.0%	0.0%
Blue box (CCPs)	3,094	1,814	1,522	1,536	-41.4%	-50.8%	-50.4%
Blue box limit	4,773	4,773	4,773	4,773	0.0%	0.0%	0.0%
Proportion of outcomes where:							
Product-specific exceeds AMS limit	58.5%	6.3%	4.3%	4.5%	-89.2%	-92.7%	-92.3%
CCPs exceed blue box limit	24.3%	7.6%	4.9%	5.0%	-68.8%	-79.7%	-79.5%

Baseline: Mean values from FAPRI early 2005 stochastic baseline, adjusted for elimination of Step 2 program

Unilateral No Compensation scenario: Reduces crop loan rates and milk price supports by 11%, sugar price supports by 16%, and target prices by 7%, increases U.S. sugar TRQ, with no policy changes in other countries

Multilateral No Compensation scenario: Same as above, except other countries change policies consistent with provisions of the October 2005 U.S. WTO proposal

Multilateral with Compensation scenario: Same as above, except target prices set at baseline levels and direct payment rates increased by 7% of the baseline target price

U.S. Crop Acreage

Reductions in target prices and loan rates lead to reductions in the area planted to major field crops if there is no offsetting increase in returns from the market. In the **Unilateral** scenario, the total amount of cropland planted to 10 major field crops declines by about 820,000 acres (0.3%) between 2012 and 2014 (Table 4).

The largest absolute and proportional declines in acreage in the Unilateral scenario occur for upland cotton. Given the projected prices in FAPRI's baseline from early 2005, cotton is more dependent on marketing loan benefits and CCPs than other crops. Reducing those payments, therefore, has a much larger impact on acreage for cotton than on acreage for other crops.

Across 500 alternative outcomes for commodity markets, acreage also declines slightly for several other crops in the Unilateral scenario. Wheat and hay are the only crops with increased acreage in the scenario. Given baseline wheat prices, wheat is less dependent on marketing loan benefits and CCPs than other crops. The Unilateral scenario, therefore, reduces returns to other crops more than it reduces returns to wheat, so producers shift area from other crops to wheat. A similar story holds for hay, which does not receive marketing loan benefits or CCPs.

In the **Multilateral No Compensation** scenario, acreage exceeds baseline levels for corn, wheat, and rice, with by far the largest proportional increases for rice. The increase in grain, and especially rice, prices more than offsets the impacts of reduced payments, and farmers shift acreage from other crops into wheat, corn, and rice.

Cotton acreage is actually lower than in the unilateral scenario, as the increase in grain prices draws land away from cotton production. Soybean acreage also declines slightly, as the increase in soybean prices is smaller than the increase in prices of corn and other competing crops.

The **Multilateral with Compensation** scenario yields very similar results to the no compensation scenario. The increase in direct payments in the scenario marginally increases acreage for every crop (except hay) relative to the no-compensation scenario.

Note that the overall changes in area devoted to crop production are quite small in all of these scenarios. Total 10-crop area declines by 0.3% in the Unilateral scenario and increases by 0.1% in the Multilateral with Compensation scenario. In FAPRI's model, the total area devoted to crop production is not very responsive to changes in market prices and payments. Payments less tied to production and prices (e.g., direct payments) have smaller impacts on total area devoted to crop production than do market returns and payments directly tied to current production and prices (e.g., marketing loan benefits).

The proportional changes for individual crops are much larger than the changes in total crop area, as producers switch crops based on changes in relative returns.

Table 4. U.S. crop acreage planted

		Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
	Baseline	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Com-pensation	No Com-pensation	With Com-pensation	No Com-pensation	No Com-pensation	With Com-pensation
		(million acres)					
Corn	84.02	-0.23	0.30	0.33	-0.3%	0.4%	0.4%
Soybeans	72.71	-0.08	-0.41	-0.34	-0.1%	-0.6%	-0.5%
Wheat	57.51	0.13	0.32	0.54	0.2%	0.6%	0.9%
Sorghum	7.80	-0.05	-0.07	-0.02	-0.7%	-0.9%	-0.3%
Barley	4.12	-0.04	-0.02	0.00	-1.0%	-0.5%	0.1%
Oats	3.98	-0.02	0.01	0.03	-0.5%	0.1%	0.9%
Rice	3.37	-0.04	0.18	0.19	-1.3%	5.4%	5.5%
Peanuts	1.45	-0.01	-0.02	-0.01	-0.9%	-1.0%	-1.0%
Sunflowers	1.96	0.00	-0.01	0.00	-0.1%	-0.3%	0.2%
Upland cotton	12.93	-0.45	-0.54	-0.52	-3.5%	-4.2%	-4.0%
10 major crops	249.85	-0.82	-0.25	0.21	-0.3%	-0.1%	0.1%
Hay area harvested	63.05	0.07	0.13	0.09	0.1%	0.2%	0.1%
10 major crops plus hay	312.91	-0.75	-0.12	0.29	-0.2%	0.0%	0.1%

Baseline: Mean values from FAPRI early 2005 stochastic baseline, adjusted for elimination of Step 2 program

Unilateral No Compensation scenario: Reduces crop loan rates and milk price supports by 11%, sugar price supports by 16%, and target prices by 7%, increases U.S. sugar TRQ, with no policy changes in other countries

Multilateral No Compensation scenario: Same as above, except other countries change policies consistent with provisions of the October 2005 U.S. WTO proposal

Multilateral with Compensation scenario: Same as above, except target prices set at baseline levels and direct payment rates increased by 7% of the baseline target price

U.S. Crop Prices

Crop prices change in response to changes in U.S. production, export demand, and feed demand from the livestock sector (Table 5).

In the **Unilateral** scenario, price changes are uniformly small. Only peanut, rice, and cotton prices exceed baseline levels by more than 1% between 2012/13 and 2014/15, and no average price change exceeds 2.5%. The slight reduction in production for most crops corresponds with an increase in market prices for all crops other than hay. Even wheat prices increase marginally on average, given the cross-effects from other crops.

In the **Multilateral No Compensation scenario,** the increase in export demand for most commodities results in a further increase in market prices. By far the largest price increase occurs for rice. The estimated increase in Japanese and Korean rice imports causes a large increase in demand for short and medium-grain rice. The analysis conducted using FAPRI's global model indicates that short and medium-grain rice prices would increase by 28%, with a more modest 9% increase in long-grain rice prices. The stochastic model used for the analysis reported here does not distinguish types of rice, but suggests a 19% average increase in rice prices between 2012/13 and 2014/15.[1]

Prices also increase by 2% to 4% for wheat, corn, and other coarse grains. Average corn prices increase by almost 4% from baseline levels, as both export demand and feed demand increase. Soybean prices increase by an average of 1.5%, in part because of increased demand for soybean oil, and in part because of reductions in soybean supplies as acreage shifts from soybean to grain production.

Upland cotton prices increase by slightly less than 2% from baseline levels, primarily because of the reduction in U.S. production.

Most of these estimates of average price impacts are relatively close to the estimates of price changes in the global deterministic analysis. The similarities are by construction, as the stochastic U.S. model was calibrated to the results of the global deterministic analysis for a particular set of assumptions. The stochastic averages reported here sometimes differ somewhat from the point estimates in the global analysis, primarily because farm programs have impacts on production and prices that differ systematically depending on starting market conditions.

The **Multilateral with Compensation** scenario yields almost the same prices as the no compensation scenario. Prices are marginally lower, given marginally increased production.

[1] The estimated 19% average rice price increase from the stochastic analysis exceeds the estimated 14% increase in the global FAPRI analysis. Part of the difference is explained by model differences, but part of it is explained by a smaller average increase in rice production in the stochastic analysis than in the deterministic global analysis. This occurs because, in many of the stochastic outcomes, even a large increase in rice prices from low baseline levels merely means producers get more of their income from the market and less from the loan program, with little net effect on supply-inducing returns.

Table 5. U.S. crop prices

		Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
	Baseline	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Com-pensation	No Com-pensation	With Com-pensation	No Com-pensation	No Com-pensation	With Com-pensation
		(dollars per bushel)					
Corn	2.31	0.01	0.09	0.09	0.4%	3.9%	3.7%
Soybeans	5.41	0.02	0.08	0.07	0.3%	1.5%	1.3%
Wheat	3.59	0.00	0.10	0.09	0.1%	2.9%	2.6%
Sorghum	2.17	0.01	0.07	0.06	0.4%	3.2%	3.0%
Barley	2.56	0.02	0.07	0.07	0.6%	2.9%	2.6%
Oats	1.60	0.01	0.07	0.06	0.4%	4.3%	3.7%
		(dollars per cwt)					
Rice	7.94	0.10	1.50	1.50	1.2%	18.9%	18.9%
		(cents per pound)					
Upland cotton	50.81	0.65	0.93	0.90	1.3%	1.8%	1.8%
Peanuts	19.81	0.48	0.55	0.53	2.4%	2.8%	2.7%
Sunflowerseed	11.80	0.05	0.25	0.22	0.4%	2.1%	1.9%
Soybean oil	23.39	0.12	0.62	0.57	0.5%	2.6%	2.4%
		(dollars per ton)					
Soybean meal	175.72	0.27	1.57	1.36	0.2%	0.9%	0.8%
Hay	96.47	-0.29	1.15	1.29	-0.3%	1.2%	1.3%

Baseline: Mean values from FAPRI early 2005 stochastic baseline, adjusted for elimination of Step 2 program

Unilateral No Compensation scenario: Reduces crop loan rates and milk price supports by 11%, sugar price supports by 16%, and target prices by 7%, increases U.S. sugar TRQ, with no policy changes in other countries

Multilateral No Compensation scenario: Same as above, except other countries change policies consistent with provisions of the October 2005 U.S. WTO proposal

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U.S. Crop Exports

In the **Unilateral** scenario, reduced U.S. production and increased prices translate into a decline in exports for most crops (Table 6). The largest proportional reductions in exports occur for cotton and rice, the two commodities with the largest proportional reductions in production because of the reduction in government payments.

Because the model used for this analysis does not include a detailed representation of world markets, it is not equipped to estimate the impacts of changes in foreign agricultural and trade policies on U.S. exports. To capture these effects in the **Multilateral No Compensation** scenario, the model was calibrated to the impacts estimated in FAPRI's global deterministic analysis of the U.S. proposal.

The largest proportional increase in U.S. exports occurs for rice. Given terms of the U.S. proposal, even though Japan and South Korea can shield their rice markets from large tariff reductions by declaring rice a "sensitive" product, the trade-off is a sharp increase in the rice TRQ and thus in rice imports.

Corn exports increase in response to reduced production and increased consumption of corn in the European Union. Wheat exports increase because of reduced competition from Canada and Russia and increased imports by Japan and China. Cotton exports decline because of reduced U.S. production and an absence of significant changes in foreign cotton markets.

Soybean exports decline slightly in response to reduced U.S. production and an increase in the share of soybeans crushed domestically because of larger crushing margins. Soybean oil exports increase because of reduced tariffs in some importing countries, while soybean meal exports decline in response to reduced livestock production in Europe and Japan.

Where the average changes in exports in this report differ from those in the global deterministic analysis, the differences are often because the average changes in U.S. production and prices are slightly different than the changes estimated in the global analysis. The companion report by FAPRI-Iowa State (CARD Working Paper 05-WP417) provides more detail on world market developments and the root causes of changes in U.S. trade resulting from the U.S. proposal.

The crop export effects in the **Multilateral with Compensation** scenario are almost the same as in the no compensation scenario. Exports are marginally greater than in the no compensation scenario, give marginally lower prices.

Table 6. U.S. crop exports

		Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
	Baseline	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Com-pensation	No Com-pensation	With Com-pensation	No Com-pensation	No Com-pensation	With Com-pensation
		(million bushels)					
Corn	2,707	-24	38	42	-0.9%	1.4%	1.5%
Soybeans	929	-2	-15	-13	-0.2%	-1.6%	-1.4%
Wheat	1,015	2	15	22	0.2%	1.5%	2.1%
Sorghum	204	-1	-3	-3	-0.7%	-1.5%	-1.3%
		(million hundredweight)					
Rice	126.80	-2.82	15.23	15.38	-2.2%	12.0%	12.1%
		(million bales)					
Upland cotton	14.00	-0.58	-0.67	-0.65	-4.1%	-4.8%	-4.6%
		(thousand tons)					
Soybean meal	6,164	-29	-813	-806	-0.5%	-13.2%	-13.1%
		(million pounds)					
Soybean oil	1,721	-16	73	76	-1.0%	4.2%	4.4%

Baseline: Mean values from FAPRI early 2005 stochastic baseline, adjusted for elimination of Step 2 program

Unilateral No Compensation scenario: Reduces crop loan rates and milk price supports by 11%, sugar price supports by 16%, and target prices by 7%, increases U.S. sugar TRQ, with no policy changes in other countries

Multilateral No Compensation scenario: Same as above, except other countries change policies consistent with provisions of the October 2005 U.S. WTO proposal

Multilateral with Compensation scenario: Same as above, except target prices set at baseline levels and direct payment rates increased by 7% of the baseline target price

U.S. Crop Returns and Payments

Crop producer income is affected both by changes in commodity prices and by changes in government payments. Table 7 reports national average returns and payments per acre, and should be interpreted with care. The components are computed as follows:

1) Market gross returns are simply the national average yield multiplied by the national average farm price.
2) Loan program benefits are the product of the national average yield and the average loan deficiency payment or marketing loan gain per unit.
3) The sum of market gross returns and loan program benefits is a measure of returns to producers that are tied to current production levels.
4) CCPs are reported on a per-base-acre basis, and are the result of the following formula: (Target price minus direct payment rate minus max[farm price, loan rate]) multiplied by the national average CCP program yield, multiplied by 0.85.
5) Direct payments per base acre are equal to the direct payment rate multiplied by the national average direct payment yield, multiplied by 0.85.
6) "Gross returns with payments" is the sum of the components, assuming a producer has one base acre of the commodity for each acre harvested.
7) "Net returns with payments" simply subtracts variable production expenses from the gross returns with payments.

The assumption that producers have one base acre of the commodity in question for each acre harvested does not hold in practice. National base acreage is often much larger (wheat, corn, cotton, rice) than actual planted or harvested acreage, and sometimes much smaller (soybeans). Differences are often even larger at the farm level.

In the **Unilateral** scenario, reduced marketing loan benefits and CCPs significantly reduce producer returns with payments, as small increases in market prices are inadequate to compensate for often large reductions in payments.

In the **Multilateral No Compensation** scenario, larger price increases than in the Unilateral scenario improve the income picture. A large increase in rice prices is adequate to offset a significant reduction in payments. The wheat price increase is smaller, but so is the reduction in payments, and the national average return with payments increases slightly.

For corn and soybeans, higher prices than in the Unilateral scenario mitigate the effects of reduced payments, but on average, producer returns with payments still fall short of baseline levels. The largest shortfalls relative to the baseline occur for cotton.

In the **Multilateral with Compensation** scenario, the increase in direct payments increases the income of producers with base acreage relative to the other scenarios. Only for cotton does the average sum of market returns and payments per base acre remain slightly below baseline levels. Results assume payment limitation rules are relaxed so that producers are eligible to receive the increase in direct payments.

Table 7. U.S. crop returns and payments

		Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
	Baseline	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Com-pensation	No Com-pensation	With Com-pensation	No Com-pensation	No Com-pensation	With Com-pensation
Corn		(dollars per acre)					
Market gross returns	373.18	1.58	14.46	13.94	0.4%	3.9%	3.7%
Loan program benefits	12.63	-9.56	-10.82	-10.78	-75.7%	-85.7%	-85.4%
Market + loan gross returns	385.81	-7.98	3.64	3.16	-2.1%	0.9%	0.8%
		(dollars per corn base acre)					
Counter-cyclical payment	13.80	-7.35	-9.29	-9.22	-53.3%	-67.3%	-66.8%
Direct payment	24.37	0.00	0.00	16.02	0.0%	0.0%	65.8%
		(dollars per base acre planted to corn)					
Gross returns with payments	423.97	-15.33	-5.65	9.97	-3.6%	-1.3%	2.4%
Net returns with payments	241.70	-15.31	-5.65	9.97	-6.3%	-2.3%	4.1%
Soybeans		(dollars per acre)					
Market gross returns	226.17	0.82	3.42	2.99	0.4%	1.5%	1.3%
Loan program benefits	11.48	-7.93	-8.33	-8.26	-69.0%	-72.6%	-71.9%
Market + loan gross returns	237.65	-7.10	-4.91	-5.27	-3.0%	-2.1%	-2.2%
		(dollars per soybean base acre)					
Counter-cyclical payment	4.34	-1.26	-1.53	-1.49	-29.1%	-35.3%	-34.2%
Direct payment	11.52	0.00	0.00	10.63	0.0%	0.0%	92.3%
		(dollars per base acre planted to soybeans)					
Gross returns with payments	253.51	-8.37	-6.45	3.88	-3.3%	-2.5%	1.5%
Net returns with payments	144.02	-8.36	-6.45	3.88	-5.8%	-4.5%	2.7%
Wheat		(dollars per acre)					
Market gross returns	158.56	0.14	4.54	4.14	0.1%	2.9%	2.6%
Loan program benefits	0.92	-0.83	-0.88	-0.88	-90.2%	-95.8%	-95.4%
Market + loan gross returns	159.48	-0.69	3.66	3.27	-0.4%	2.3%	2.0%
		(dollars per wheat base acre)					
Counter-cyclical payment	2.73	-1.94	-2.24	-2.21	-71.1%	-82.1%	-81.2%
Direct payment	15.25	0.00	0.00	8.05	0.0%	0.0%	52.8%
		(dollars per base acre planted to wheat)					
Gross returns with payments	177.45	-2.63	1.43	9.10	-1.5%	0.8%	5.1%
Net returns with payments	92.69	-2.62	1.43	9.10	-2.8%	1.5%	9.8%
Upland Cotton		(dollars per acre)					
Market gross returns	437.43	4.89	7.05	6.82	1.1%	1.6%	1.6%
Loan program benefits	47.18	-24.90	-25.87	-25.79	-52.8%	-54.8%	-54.7%
Market + loan gross returns	484.60	-20.02	-18.82	-18.97	-4.1%	-3.9%	-3.9%
		(dollars per cotton base acre)					
Counter-cyclical payment	63.07	-16.82	-17.90	-17.78	-26.7%	-28.4%	-28.2%
Direct payment	34.23	0.00	0.00	26.01	0.0%	0.0%	76.0%
		(dollars per base acre planted to cotton)					
Gross returns with payments	581.90	-36.83	-36.72	-10.74	-6.3%	-6.3%	-1.8%
Net returns with payments	198.71	-36.82	-36.72	-10.74	-18.5%	-18.5%	-5.4%

Table 7. U.S. crop returns and payments, continued

		Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
	Baseline	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Com-pensation	No Com-pensation	With Com-pensation	No Com-pensation	No Com-pensation	With Com-pensation
Rice		(dollars per acre)					
Market gross returns	583.23	7.08	110.52	110.05	1.2%	18.9%	18.9%
Loan program benefits	62.99	-21.91	-46.82	-46.79	-34.8%	-74.3%	-74.3%
Market + loan gross returns	646.23	-14.83	63.70	63.26	-2.3%	9.9%	9.8%
		(dollars per rice base acre)					
Counter-cyclical payment	25.59	-8.32	-20.07	-20.03	-32.5%	-78.4%	-78.3%
Direct payment	96.13	0.00	0.00	30.06	0.0%	0.0%	31.3%
		(dollars per base acre planted to rice)					
Gross returns with payments	767.94	-23.15	43.63	73.30	-3.0%	5.7%	9.5%
Net returns with payments	376.76	-23.13	43.63	73.30	-6.1%	11.6%	19.5%
Sorghum		(dollars per acre)					
Market gross returns	143.95	0.68	4.66	4.27	0.5%	3.2%	3.0%
Loan program benefits	7.92	-5.49	-6.23	-6.16	-69.3%	-78.7%	-77.8%
Market + loan gross returns	151.86	-4.81	-1.57	-1.88	-3.2%	-1.0%	-1.2%
		(dollars per sorghum base acre)					
Counter-cyclical payment	5.51	-2.66	-3.31	-3.25	-48.2%	-60.1%	-59.0%
Direct payment	16.81	0.00	0.00	8.64	0.0%	0.0%	51.4%
		(dollars per base acre planted to sorghum)					
Gross returns with payments	174.19	-7.47	-4.88	3.51	-4.3%	-2.8%	2.0%
Net returns with payments	58.78	-7.46	-4.88	3.51	-12.7%	-8.3%	6.0%
Barley		(dollars per acre)					
Market gross returns	169.56	1.07	4.88	4.40	0.6%	2.9%	2.6%
Loan program benefits	5.69	-4.55	-4.98	-4.93	-79.9%	-87.6%	-86.8%
Market + loan gross returns	175.24	-3.47	-0.11	-0.54	-2.0%	-0.1%	-0.3%
		(dollars per barley base acre)					
Counter-cyclical payment	1.88	-1.22	-1.47	-1.44	-65.0%	-78.3%	-76.8%
Direct payment	11.42	0.00	0.00	7.46	0.0%	0.0%	65.3%
		(dollars per base acre planted to barley)					
Gross returns with payments	188.55	-4.69	-1.58	5.48	-2.5%	-0.8%	2.9%
Net returns with payments	86.09	-4.69	-1.58	5.48	-5.4%	-1.8%	6.4%
Oats		(dollars per acre)					
Market gross returns	102.85	0.43	4.44	3.87	0.4%	4.3%	3.8%
Loan program benefits	4.25	-2.91	-3.40	-3.33	-68.4%	-79.9%	-78.3%
Market + loan gross returns	107.11	-2.48	1.04	0.54	-2.3%	1.0%	0.5%
		(dollars per oats base acre)					
Counter-cyclical payment	0.70	-0.28	-0.43	-0.40	-40.2%	-60.4%	-57.6%
Direct payment	0.99	0.00	0.00	4.16	0.0%	0.0%	420.0%
		(dollars per base acre planted to oats)					
Gross returns with payments	108.80	-2.77	0.62	4.29	-2.5%	0.6%	3.9%
Net returns with payments	40.22	-2.76	0.62	4.29	-6.9%	1.5%	10.7%

Table 7. U.S. crop returns and payments, continued

		Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
	Baseline	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Com-pensation	No Com-pensation	With Com-pensation	No Com-pensation	No Com-pensation	With Com-pensation
Peanuts		(dollars per acre)					
Market gross returns	610.70	14.90	17.30	16.55	2.4%	2.8%	2.7%
Loan program benefits	40.72	-25.37	-25.89	-25.72	-62.3%	-63.6%	-63.2%
Market + loan gross returns	651.42	-10.47	-8.59	-9.18	-1.6%	-1.3%	-1.4%
		(dollars per peanut base acre)					
Counter-cyclical payment	73.47	-31.44	-32.35	-32.02	-42.8%	-44.0%	-43.6%
Direct payment	45.73	0.00	0.00	44.01	0.0%	0.0%	96.3%
		(dollars per base acre planted to peanuts)					
Gross returns with payments	770.62	-41.91	-40.93	2.81	-5.4%	-5.3%	0.4%
Net returns with payments	341.38	-41.91	-40.93	2.81	-12.3%	-12.0%	0.8%
Sunflowerseed		(dollars per acre)					
Market gross returns	152.96	0.65	3.27	2.90	0.4%	2.1%	1.9%
Loan program benefits	5.20	-3.22	-3.56	-3.51	-62.0%	-68.4%	-67.5%
Market + loan gross returns	158.15	-2.57	-0.29	-0.61	-1.6%	-0.2%	-0.4%
		(dollars per sunflower base acre)					
Counter-cyclical payment	0.00	0.14	0.12	0.12	n.a.	n.a.	n.a.
Direct payment	7.37	0.00	0.00	6.52	0.0%	0.0%	88.4%
		(dollars per base acre planted to sunflowers)					
Gross returns with payments	165.53	-2.43	-0.17	6.03	-1.5%	-0.1%	3.6%
Net returns with payments	93.04	-2.43	-0.17	6.03	-2.6%	-0.2%	6.5%

Baseline: Mean values from FAPRI early 2005 stochastic baseline, adjusted for elimination of Step 2 program

Unilateral No Compensation scenario: Reduces crop loan rates and milk price supports by 11%, sugar price supports by 16%, and target prices by 7%, increases U.S. sugar TRQ, with no policy changes in other countries

Multilateral No Compensation scenario: Same as above, except other countries change policies consistent with provisions of the October 2005 U.S. WTO proposal

Multilateral with Compensation scenario: Same as above, except target prices set at baseline levels and direct payment rates increased by 7% of the baseline target price

U.S. Dairy and Livestock Sector Results

The reduction in dairy price supports results in a small average reduction in milk production and prices in the **Unilateral** scenario (Table 8). In only a fraction of the stochastic outcomes does the price support program play an important role in determining milk prices, so the average impact of reducing supports is modest. Note that the estimated $185 million per year average reduction in dairy market receipts corresponds with a $2 billion reduction in the AMS for dairy.

In the **Multilateral** scenarios, reduced competition from the European Union results in a significant increase in world dairy product prices, making the U.S. competitive in world dairy markets even without the availability of the Dairy Export Incentive Program subsidies prohibited under the U.S. proposal. Average milk prices exceed baseline levels by 1.4%. The impacts of increased exports of most dairy products and reduced imports of cheese more than offset the impact of increased butter imports under an expanded TRQ.

For livestock and poultry, the **Unilateral** scenario has only small impacts on supply, use, and prices (Table 9). A slight increase in feed prices eventually translates into slightly less production and higher prices for livestock and poultry.

The **Multilateral** scenarios have much larger impacts on livestock and poultry markets than the Unilateral scenario. Lower Japanese tariffs translate into increased export demand for U.S. beef and pork. Average fed steer prices increase by more than 3% relative to baseline levels between 2012 and 2014, and the increase in barrow and gilt prices exceeds 4%. With a smaller proportional increase in exports, average broiler prices increase by a modest 2%.

As discussed previously, the U.S. stochastic model does not include detailed representation of international markets. To incorporate the effects of changes in policies in other countries resulting from implementation of the U.S. proposal, the stochastic model was calibrated to the results of the analysis conducted with FAPRI's global deterministic modeling system.

Table 8. U.S. dairy sector results

	Baseline	Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
		Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Compensation	No Compensation	With Compensation	No Compensation	No Compensation	With Compensation
		(billion pounds)					
Production	188.18	-0.56	1.55	1.55	-0.3%	0.8%	0.8%
		(dollars per hundredweight)					
All milk price	13.27	-0.06	0.19	0.19	-0.5%	1.4%	1.4%
		(million dollars)					
Dairy cash receipts	24,920	-185	572	572	-0.7%	2.3%	2.3%

Table 9. U.S. livestock sector results

	Baseline	Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
		Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Compensation	No Compensation	With Compensation	No Compensation	No Compensation	With Compensation
		(million pounds)					
Beef production	29,873	-2	300	300	0.0%	1.0%	1.0%
Pork production	22,530	-11	514	517	0.0%	2.3%	2.3%
Broiler production	42,489	-43	298	312	-0.1%	0.7%	0.7%
Turkey production	6,175	-1	38	38	0.0%	0.6%	0.6%
Beef exports	2,753	-2	650	650	-0.1%	23.6%	23.6%
Pork exports	2,819	-7	719	721	-0.3%	25.5%	25.6%
Broiler exports	6,364	-10	486	490	-0.2%	7.6%	7.7%
		(dollars per hundredweight)					
Cattle price, Nebraska steers	70.93	0.04	2.41	2.40	0.1%	3.4%	3.4%
Cattle price, OK City feeders	80.61	-0.05	3.64	3.66	-0.1%	4.5%	4.5%
Hog price, 51-52% lean	46.27	0.08	2.00	1.98	0.2%	4.3%	4.3%
Broiler price, 12-city	61.17	0.12	1.21	1.17	0.2%	2.0%	1.9%
Turkey east wholesale price	65.88	0.08	0.90	0.87	0.1%	1.4%	1.3%

Baseline: Mean values from FAPRI early 2005 stochastic baseline, adjusted for elimination of Step 2 program

Unilateral No Compensation scenario: Reduces crop loan rates and milk price supports by 11%, sugar price supports by 16%, and target prices by 7%, increases U.S. sugar TRQ, with no policy changes in other countries

Multilateral No Compensation scenario: Same as above, except other countries change policies consistent with provisions of the October 2005 U.S. WTO proposal

Multilateral with Compensation scenario: Same as above, except target prices set at baseline levels and direct payment rates increased by 7% of the baseline target price

U.S. Government Farm Program Outlays

Reducing target prices and loan rates and dairy price supports has a significant negative effect on farm program outlays in the **Unilateral** scenario (Table 10). Net Commodity Credit Corporation (CCC) outlays decline relative to baseline levels by an average of $3.5 billion per year between fiscal years 2012 and 2014. The largest absolute reductions occur for the commodities with the greatest levels of baseline outlays: corn, upland cotton, and soybeans.

The reduction in wheat outlays is relatively modest. This occurs because average wheat prices are well above the levels that would trigger marketing loan expenditures under normal conditions, and even CCPs occur infrequently in the stochastic baseline.

As indicated in Table 11, the reduced marketing loan benefits account for most of the reduction in government payments. The sum of changes in marketing loan benefits and CCPs is less than the overall change in net CCC outlays. Costs of the dairy and sugar price support programs and other CCC costs not resulting in payments to producers also decline slightly from baseline levels.

Results of the **Multilateral No Compensation** scenario are similar to the Unilateral scenario, except the cost reductions are slightly larger for most commodities. While U.S. policy assumptions are the same as in the Unilateral scenario, higher commodity prices because of increased export demand translate into reduced marketing loan and CCP expenditures. Net reductions relative to the baseline average $4.0 billion per year from 2012-2014.

In the **Multilateral with Compensation** scenario, a $3.4 billion per year increase in direct payments has a slightly larger impact on net CCC outlays relative to the no compensation scenario. Overall, average net CCC outlays remain lower than the baseline by almost $600 million per year.

Outlay impacts differ across commodities. The increase in direct payments still leaves corn, rice, soybean, cotton, and peanut expenditures below baseline levels. No policy changes were made for sugar or dairy relative to the no compensation scenario so spending for those commodities also remains below baseline levels. For wheat and several other commodities, however, the increase in direct payments more than offsets reductions in marketing loan and CCP expenditures, and spending exceeds baseline levels.

Note that the level of direct payments and the formula used in the scenario are somewhat arbitrary. By increasing direct payments by 7% of baseline target prices, given current payment formulas, the net effect on CCPs was essentially identical to the result of simply reducing target prices by 7 percent. The main point of the analysis is that, provided direct payments are classified as green box payments, it is possible to offset some or all of the impacts of reduced amber and blue box support by increasing direct payments without increasing overall government expenditures above baseline levels.

Table 10. U.S. net Commodity Credit Corporation outlays

		Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
	Baseline	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Compensation	No Compensation	With Compensation	No Compensation	No Compensation	With Compensation
		(million dollars, fiscal year)					
Feed grains							
Corn	4,417	-1,446	-1,718	-317	-32.7%	-38.9%	-7.2%
Sorghum	333	-73	-86	18	-21.9%	-26.0%	5.4%
Barley	140	-38	-43	13	-26.9%	-30.8%	8.9%
Oats	13	-6	-8	6	-48.3%	-58.7%	42.8%
Food grains							
Wheat	1,508	-214	-243	366	-14.2%	-16.1%	24.3%
Rice	801	-128	-270	-135	-16.0%	-33.7%	-16.8%
Oilseeds							
Soybeans	1,698	-666	-699	-131	-39.2%	-41.2%	-7.7%
Peanuts	230	-80	-82	-17	-34.9%	-35.8%	-7.5%
Other oilseeds	34	-8	-9	9	-24.6%	-27.0%	26.5%
Other commodities							
Upland cotton	2,615	-672	-718	-236	-25.7%	-27.5%	-9.0%
Sugar	35	-15	-15	-15	-44.0%	-44.0%	-44.0%
Dairy	167	-129	-130	-130	-76.9%	-77.6%	-77.6%
Other net costs	4,545	0	0	0	0.0%	0.0%	0.0%
Net CCC outlays	16,537	-3,475	-4,021	-569	-21.0%	-24.3%	-3.4%

Table 11. U.S. selected government payments

		Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
	Baseline	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Compensation	No Compensation	With Compensation	No Compensation	No Compensation	With Compensation
		(million dollars, crop year)					
Direct payments	5,304	0	0	3,422	0.0%	0.0%	64.5%
Marketing loan benefits	2,882	-1,886	-2,126	-2,114	-65.4%	-73.8%	-73.3%
Counter-cyclical payments	3,094	-1,280	-1,573	-1,558	-41.4%	-50.8%	-50.4%
Total	11,281	-3,166	-3,698	-250	-28.1%	-32.8%	-2.2%

Baseline: Mean values from FAPRI early 2005 stochastic baseline, adjusted for elimination of Step 2 program

Unilateral No Compensation scenario: Reduces crop loan rates and milk price supports by 11%, sugar price supports by 16%, and target prices by 7%, increases U.S. sugar TRQ, with no policy changes in other countries

Multilateral No Compensation scenario: Same as above, except other countries change policies consistent with provisions of the October 2005 U.S. WTO proposal

Multilateral with Compensation scenario: Same as above, except target prices set at baseline levels and direct payment rates increased by 7% of the baseline target price

U.S. Net Farm Income and Farm Real Estate Values

In the **Unilateral** scenario reduced government payments are not offset by a change in cash receipts (Table 12). Crop receipts increase marginally, as an increase in prices for most crops outweighs the reduction in sugar prices and receipts. Livestock receipts decline, because of the drop in dairy receipts due to the reduction in support prices.

With reduced returns to producers, the model estimates that net rental payments to non-operator landlords would decline significantly. In addition, reduced acreage of cotton and rice, in particular, translate into some modest reductions in other production costs. Overall, an average $3.2 billion per year reduction in government payments causes net farm income to decline by an average of $1.9 billion per year from 2012 to 2014.

In the **Multilateral No Compensation** scenario, cash receipts are more than $6 billion per year higher than in the Unilateral scenario. Crop cash receipts increase by $2 billion per year above baseline levels, due to higher prices for rice, corn, wheat and most crops other than sugar. Livestock receipts increase by $4.2 billion per year. Cattle receipts increase the most in absolute terms, but receipts also increase for hogs, poultry, and milk.

The increase in overall cash receipts from marketings exceeds the reduction in government payments by $2.5 billion per year. Rental payments are higher than in the Unilateral scenario, but remain below baseline levels as crop receipts plus payments still fall short of baseline levels, even though livestock sector profitability increases. Other production expenses increase relative to baseline, as increased production and higher grain prices result in increased expenditures on feed, purchased livestock, and other inputs. The net impact is to increase net farm income by $1.3 billion per year from baseline levels.

Note that the estimates do not include any possible impacts of the U.S. proposal on receipts from fruits, vegetables, nursery crops, and other products not treated separately in the FAPRI model. These effects could be important for particular products, and it is important to note that "other crops" not included separately in the FAPRI model account for about half of U.S. crop cash receipts from marketings.

In the **Multilateral with Compensation** scenario, market receipts are almost as high as in the No Compensation scenario, but government payments are more than $3.4 billion higher. The resulting increase in receipts plus payments by the crop sector leaves rental payments above baseline levels, but has only a modest impact on other production costs. Net farm income exceeds baseline levels by $3.4 billion per year from 2012 to 2014.

Farm real estate values in the FAPRI model change in response to many of the same factors that affect rental expenses, so a similar pattern emerges (Table 13). Farm real estate values fall relative to the baseline in the **Unilateral** and **Multilateral No Compensation** scenarios, but exceed baseline values in the **Multilateral with Compensation** scenario. Factors other than net market returns and payments affect land values, but profitability continues to play an important role.

Table 12. U.S. net farm income

		Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
	Baseline	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Compensation	No Compensation	With Compensation	No Compensation	No Compensation	With Compensation
	(million dollars, calendar year)						
Crop cash receipts	125,125	71	2,006	1,989	0.1%	1.6%	1.6%
Livestock cash receipts	112,190	-122	4,216	4,195	-0.1%	3.8%	3.7%
Government payments	16,655	-3,226	-3,754	-303	-19.4%	-22.5%	-1.8%
Sum of above	253,971	-3,277	2,469	5,881	-1.3%	1.0%	2.3%
Net rent to non-operators	13,215	-1,095	-488	705	-8.3%	-3.7%	5.3%
Other production expenses	224,490	-395	1,901	2,069	-0.2%	0.8%	0.9%
Total production expenses	237,704	-1,489	1,413	2,774	-0.6%	0.6%	1.2%
All other net income	36,823	-115	222	337	-0.3%	0.6%	0.9%
Net farm income	53,089	-1,903	1,278	3,444	-3.6%	2.4%	6.5%

Baseline: Mean values from FAPRI early 2005 stochastic baseline, adjusted for elimination of Step 2 program

Unilateral No Compensation scenario: Reduces crop loan rates and milk price supports by 11%, sugar price supports by 16%, and target prices by 7%, increases U.S. sugar TRQ, with no policy changes in other countries

Multilateral No Compensation scenario: Same as above, except other countries change policies consistent with provisions of the October 2005 U.S. WTO proposal

Multilateral with Compensation scenario: Same as above, except target prices set at baseline levels and direct payment rates increased by 7% of the baseline target price

Table 13. U.S. farm real estate values

		Absolute 2012-14 Effects of:			Proportional 2012-14 Effects of:		
	Baseline	Unilateral	Multilateral Changes		Unilateral	Multilateral Changes	
	2012-14 Average	No Compensation	No Compensation	With Compensation	No Compensation	No Compensation	With Compensation
	(dollars per acre)						
National average	1,797	-51.73	-25.13	30.12	-2.9%	-1.4%	1.7%

Baseline: Mean values from FAPRI early 2005 stochastic baseline, adjusted for elimination of Step 2 program

Unilateral No Compensation scenario: Reduces crop loan rates and milk price supports by 11%, sugar price supports by 16%, and target prices by 7%, increases U.S. sugar TRQ, with no policy changes in other countries

Multilateral No Compensation scenario: Same as above, except other countries change policies consistent with provisions of the October 2005 U.S. WTO proposal

Multilateral with Compensation scenario: Same as above, except target prices set at baseline levels and direct payment rates increased by 7% of the baseline target price

Appendix A: Impacts of Eliminating the Cotton Step 2 Program

As indicated in the introduction and the section describing U.S. policy assumptions, the baseline used for this analysis is the FAPRI January 2005 baseline, adjusted for the elimination of the cotton Step 2 program.

The Step 2 program provides payments to users of U.S. cotton. A WTO ruling in a case brought against the U.S. cotton program by Brazil said the Step 2 program was inconsistent with U.S. obligations and should be eliminated. The Bush Administration proposed the program be eliminated, and both Houses of Congress have included elimination of Step 2 in budget reconciliation bills approved in recent months. While final conference action on the budget reconciliation bill has not occurred, it seems reasonable to expect that Congress will act to eliminate the program. It also seems reasonable to ascribe the elimination of Step 2 to U.S. obligations under the Uruguay Round Agreement on Agriculture, rather than to a prospective Doha agreement.

The impacts of removing the Step 2 program are shown in Table A.1., which is reproduced from a recent FAPRI report examining impacts of provisions of the House and Senate reconciliation bills (FAPRI-UMC Report #15-05, at www.fapri.missouri.edu).

Without Step 2 payments U.S. cotton is more expensive to U.S. and foreign millers, even with the reduction in U.S. producer prices, so the result is a modest reduction in domestic mill use and a significantly larger reduction in exports. The reduction in demand for U.S. cotton results in a reduction in U.S. producer prices, which closes part of the gap between world and domestic cotton prices. Lower producer prices translate into a reduction in U.S. cotton acreage and production.

Between 2006 and 2010, the net effect of the elimination of Step 2 is to reduce U.S. producer prices for cotton by approximately 1.3 cents per pound (2.7%), while increasing world prices as measured by the A-Index by about 0.4 cents per pound (0.7%).

Table A.1. Impacts of eliminating the cotton Step 2 program in 2006/07

Crop year	06/07	07/08	08/09	09/10	10/11	11/12	12/13	2006-10 Average
Area				(million acres)				
Planted area	0.00	-0.28	-0.26	-0.23	-0.23	-0.25	-0.28	-0.20
Harvested area	0.00	-0.25	-0.24	-0.21	-0.21	-0.22	-0.25	-0.18
				(million bales)				
Supply	0.00	-0.17	-0.19	-0.16	-0.15	-0.16	-0.18	-0.14
Beginning stocks	0.00	0.20	0.16	0.15	0.16	0.18	0.21	0.14
Production	0.00	-0.37	-0.35	-0.32	-0.31	-0.34	-0.39	-0.27
Imports	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Domestic use								
Mill use	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.03	-0.02
Exports	-0.19	-0.31	-0.32	-0.30	-0.31	-0.35	-0.37	-0.29
Total use	-0.20	-0.33	-0.34	-0.33	-0.34	-0.37	-0.40	-0.31
Ending stocks	0.20	0.16	0.15	0.16	0.18	0.21	0.22	0.17
Prices				(cents)				
Farm price/lb.	-1.27	-1.17	-1.15	-1.26	-1.45	-1.66	-1.75	-1.26
Market price/lb.	-1.73	-1.59	-1.57	-1.71	-1.98	-2.25	-2.37	-1.72
Step 2 payment/lb.	-2.37	-2.40	-2.27	-2.36	-2.69	-3.06	-3.24	-2.42
Price paid by U.S. mills/lb.	0.63	0.81	0.71	0.65	0.71	0.81	0.86	0.70
Cotlook A Index/lb.	0.41	0.50	0.38	0.31	0.34	0.40	0.43	0.39
Adjusted world price/lb.	0.41	0.50	0.38	0.31	0.34	0.40	0.43	0.39

Source: FAPRI estimates of impacts of provisions of the House and Senate reconciliation bills, as reported in FAPRI-UMC Report #15-05.

Appendix B. U.S. Sugar Sector Results

The FAPRI U.S. stochastic model currently does not include a component for the sugar sector, so there are no stochastic results for sugar comparable to those reported for other crop and livestock products. FAPRI does maintain a deterministic model of the U.S. sugar sector, and this model was used to generate estimated impacts of the U.S. proposal as part of FAPRI's global analysis. For purposes of this report, those deterministic estimates were used as the sugar sector estimates for all three scenarios.

Table B.1 summarizes the deterministic results. The baseline was prepared in January 2005, so it does not reflect 2005 developments, including the passage of the Central American Free Trade Agreement-Dominican Republic (CAFTA-DR) and the effects of hurricane damage in Louisiana and Florida. CAFTA-DR will, all else equal, result in higher U.S. imports than in this baseline. This year's hurricane damage has resulted in significant reductions in U.S. sugar supplies in the short run, but it is not clear that it will have a major effect on the long-run outlook.

In the U.S. proposal scenario, it is assumed that the United States designates sugar to be a sensitive product. The analysis assumes that the TRQ of sensitive products must be increased by 7.5% of the 1999-2001 average level of domestic consumption. In the case of U.S. sugar, this translates into an import increase of 755,000 short tons. In addition to the increase in imports, the analysis also assumes a 16% reduction in raw cane sugar and refined beet sugar loan rates. This is larger than the assumed 11% reduction in loan rates for other crops, because applying the smaller percentage reduction would have resulted in an accumulation of CCC stocks that was judged unsustainable. A 16% reduction leaves CCC stocks above baseline levels in some years and below baseline levels in others, including the 2012/13-2014/15 period shown in Table B.1.

The increase in imports and reduction in loan rates result in lower U.S. sugar prices. These lower prices cause reductions in U.S. production and increases in U.S. consumption of sugar. The production decline is fairly modest, averaging only 2.3% between 2012/13 and 2014/15. This occurs because allotments were in place in the baseline, and the allotments were assumed to constrain production. With the estimated increase in U.S. sugar imports, it is assumed the allotment program would be eliminated (one reading of current law is that allotments cannot be operated when imports exceed a trigger level). All else equal, the elimination of allotments would result in increased sugar production, but the effect of lower sugar prices more than offsets this effect, leaving sugar production slightly below baseline levels. The estimated decline in yields for sugar cane results from a reduction in area in Hawaii, the highest-yielding state.

Reduced prices for sugar also have important effects on the market for sweeteners. Reduced sugar prices have a direct effect in increasing sugar consumption, but they also have indirect effects. The reduction in sugar prices translates into a modest reduction in prices for high-fructose corn syrup (HFCS), and increases in corn exports and feed demand result in higher corn prices. The result is a slight reduction in HFCS production and consumption, which also contributes to increased consumption of sugar.

Table B.1. U.S. sugar sector results

	Baseline	Multilateral, No Compensation Scenario		
	2012-14	2012-14	Change from Baseline	
	Average	Average	Absolute	Proportional
Sugar beets				
Harv. area (1,000 a.)	1,221	1,191	-30	-2.5%
Yield (tons/a.)	23.16	23.15	-0.01	0.0%
Production (1,000 tons)	28,268	27,564	-704	-2.5%
Sugarcane				
Harv. area (1,000 a.)	848	841	-7	-0.8%
Yield (tons/a.)	37.16	36.65	-0.51	-1.4%
Production (1,000 tons)	31,513	30,837	-676	-2.1%
Raw sugar				
Supply	12,783	13,448	666	5.2%
Beginning stocks	2,189	2,332	143	6.6%
Production	8,623	8,422	-201	-2.3%
Beet sugar	4,708	4,591	-117	-2.5%
Cane sugar	3,915	3,831	-84	-2.1%
Imports	1,971	2,695	724	36.7%
Tariff-rate quota	1,562	2,286	724	46.3%
Duty-free NAFTA	333	301	-32	-9.6%
Other TRQ	1,229	1,984	755	61.5%
Other program	350	350	0	0.0%
High-tier and other	59	59	0	0.0%
Disappearance	10,557	11,133	576	5.5%
Domestic deliveries	10,345	10,909	565	5.5%
Exports	212	224	11	5.3%
Statistical discrepancy	0	0	0	n.a.
Ending stocks	2,226	2,316	90	4.0%
CCC	356	306	-49	-13.9%
Other	1,870	2,009	139	7.4%
Prices				
N.Y. spot raw sugar	20.49	17.96	-2.52	-12.3%
Refined beet sugar	23.05	19.54	-3.50	-15.2%
Cane loan rate	18.00	15.12	-2.88	-16.0%
Beet loan rate	22.90	19.24	-3.66	-16.0%

Baseline: FAPRI January 2005 deterministic baseline

Multilateral No Compensation scenario: Reduces grain, oilseed and cotton loan rates and milk price supports by 11%, sugar loan rates by 16%, and target prices by 7%, increases U.S. sugar TRQ, and makes changes in other countries' policies consistent with provisions of the October 2005 U.S. WTO proposal