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Staff Report

Impacts of Linking Wheat Countercyclical Payments to Prices for Classes of Wheat

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Summary

Senator Murray and Representatives McMorris Rodgers, Larsen, Simpson, Hastings and Sali requested the Food and Agricultural Policy Research Institute analyze draft legislation that would alter the calculation of countercyclical payments for wheat producers.

Under current law, producers with wheat base acreage are eligible for countercyclical payments when the season-average all-wheat price falls below the target price less the direct payment rate. Under the proposal, countercyclical payments would be made when the season-average price for a particular class of wheat falls below the target price less the direct payment rate.

The FAPRI model does not distinguish classes of wheat, so it is not possible for us to provide estimates of the supply, demand and price impacts. Any such effects should be modest. Countercyclical payments are tied to fixed base acreage rather than actual planted acreage, and thus are less likely to have large impacts on production decisions than are other programs where payments are tied more directly to current production levels.

Assuming that prices for particular classes of wheat behave in the future as they did over the 1985-2005 period, we estimate countercyclical payments to wheat producers. Results include the following:

- Under current law, baseline projections of wheat market prices are high enough that wheat countercyclical payments would rarely be triggered. Between 2008/09 and 2012/13, the FAPRI stochastic baseline suggests wheat countercyclical payments would be made in only 3 percent of the stochastic outcomes for any given year.

- Prices for particular classes of wheat can be very different from one another and from the average all-wheat price. The average price of all wheat between 2000/01 and 2005/06 was $3.20 per bushel. This compares to average prices over the same period of $3.13 per bushel for hard red winter wheat, $3.42 for hard red spring wheat, $2.91 for soft red winter wheat, $3.26 for white wheat, and $3.51 for durum wheat.

- Under the proposal and the current target price ($3.92 per bushel) and direct payment rate ($0.52 per bushel), countercyclical payments would be made when season-average prices for a particular class of wheat fall below $3.40 per bushel. This is more likely to occur for soft red winter wheat than it is for other classes of wheat.

- In the 500 stochastic baseline outcomes, the average wheat countercyclical payment rate between 2008/09 and 2012/13 is less than $0.01 per bushel. Under the proposal, average payment rates would be less than $0.01 per bushel for hard red winter, hard red spring, and durum wheat. The average payment rate would be slightly over $0.01 per bushel for white wheat and about $0.08 per bushel for soft red winter wheat.

- Budgetary outlays would increase under the proposal, primarily because of the increase in payments to soft red winter wheat producers. Estimated outlays over the FY 2008 – FY 2012 period increase by a total of $163 million relative to the baseline. For the FY 2008 – FY 2017 period, the increase is $425 million.

Impacts of a Proposal to Tie Wheat Countercyclical Payments to Prices for Classes of Wheat

Under current law, a countercyclical payment for wheat is made when the season-average price for all wheat is less than the target price ($3.92 per bushel) minus the direct payment rate ($0.52 per bushel). Season-average all-wheat prices have been at least $3.40 per bushel in every year since the 2002 farm bill created the countercyclical payment system, so no countercyclical payments have been earned on wheat base acreage.

Senator Murray and Representatives McMorris Rodgers, Larsen, Simpson, Hastings and Sali requested the Food and Agricultural Policy Research Institute to analyze draft legislation that would alter the calculation of countercyclical payments for wheat producers. The proposal would make countercyclical payments when the season-average price for a particular class of wheat falls below the wheat target price less the wheat direct payment rate.

Approach to the analysis

The point of comparison for the analysis is the FAPRI stochastic baseline prepared in January and February 2007, and based on information available in mid-January. The stochastic baseline consists of 500 sets of alternative agricultural market outcomes for the period from 2007 to 2016. These 500 alternative outcomes share a common assumption that provisions of the 2002 farm bill that are currently scheduled to expire in 2007 will instead be extended indefinitely, and that biofuel support measures will also be maintained. The outcomes differ from one another in assumptions about the weather, petroleum prices, and other factors that affect agricultural commodity supply and demand. More detail on the 2007 FAPRI stochastic baseline can be found in the "FAPRI U.S. Baseline Briefing Book" on the FAPRI website, www.fapri.missouri.edu.

The FAPRI modeling system does not distinguish wheat by type. Thus, it is not possible for us to use the system to estimate the impact of the proposal on production and prices of the various classes of wheat. Instead, the scope of the analysis is restricted to an estimate of the impact of the proposal on wheat countercyclical payments, holding prices and production at baseline levels. As discussed later, we expect that any supply, demand, and price impacts of the proposal would be modest, so this simplification should not seriously affect the results.

The analysis requires price projections for each major class of wheat. Data for the 2000/01-2005/06 period reveals important patterns (Table 1). Six-year average prices for durum wheat, hard red spring and white wheat were above the all-wheat average. Six-year average prices for hard red winter and soft red winter wheat were below the all-wheat average. Price relationships differ from year to year. For example, white wheat prices were above the all-wheat price from 2001/02 to 2004/05, but were below the all-wheat average in 2000/01 and 2005/06. While durum wheat prices were above the all-wheat average price in every year, the premium ranged from $0.04 per bushel in 2000/01 to $0.57 per bushel in 2003/04.

To conduct the analysis, we used data for the 1985/86 to 2005/06 period to estimate the price of each class of wheat as a function of the all-wheat price and a trend. These simple equations captured much, but by no means all, of the annual variation in wheat-by-class prices. For example, the equation for white wheat explained about 90 percent of the observed variation in white wheat prices over the 1985-2005 period.

Table 1. US season-average wheat prices

	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2000-2005 Average
				(dollars per bushel)			
All wheat	2.62	2.78	3.56	3.40	3.40	3.42	3.20
Hard red winter	2.73	2.71	3.43	3.23	3.29	3.38	3.13
Hard red spring	2.94	2.88	3.83	3.63	3.51	3.70	3.42
Soft red winter	2.23	2.59	3.08	3.17	3.21	3.19	2.91
White wheat	2.57	3.11	3.68	3.54	3.52	3.13	3.26
Durum wheat	2.66	3.08	4.05	3.97	3.85	3.46	3.51

Source: USDA Economic Research Service, "Wheat Situation and Outlook Yearbook," May 2007.

To capture some of the "unexplained" factors affecting the price of each class of wheat, we use a technique used in generating our stochastic baseline.[1] We generate 500 sets of prices for the various classes of wheat, where the prices generally move together, but with some random variation. This method is chosen because it preserves historical relationships between classes based not only on average price relationships, but also as represented by deviations around those averages.

The countercyclical payment rate is then calculated for each class of wheat for each of the 500 outcomes. The payment rate is positive whenever the season-average price of a particular class of wheat is less than $3.40 per bushel (the $3.92 target price minus the $0.52 direct payment rate). The countercyclical payment rate can never be greater than the target price minus the direct payment rate, minus the loan rate.

To calculate total countercyclical payments on a crop year basis, the payment rates must be multiplied by base acreage, the countercyclical payment yield, and finally by the 0.85 factor set in law. As discussed later, an important implementation issue is how base acreage and program yields would be established for each class of wheat. For purposes of this analysis, we assume that the share of each class of wheat in the total quantity eligible for countercyclical payments is equal to the share of that class of wheat in total 1998-2001 wheat production.

Fiscal year government cost estimates assume that all wheat countercyclical payments are made in the fiscal year following the calendar year in which the crop is harvested. For example, all 2008/09 wheat countercyclical payments are assumed to be made during fiscal year 2009 (between October 1, 2008 and September 30, 2009).

[1] For each class of wheat, prices are estimated as a function of the all wheat price and a trend. SIMETAR is used to generate 500 correlated random draws assuming an empirical distribution of the error terms from the price equations. For a given stochastic outcome, the price of a particular class of wheat is set equal to the all wheat price multiplied by the estimated coefficient, plus the estimated trend and intercept, plus the value of the error term for the particular draw.

Results

The average price for all wheat is consistently above $4.00 per bushel in the FAPRI 2007 baseline, in part because strong demand for corn to produce ethanol buoys prices for all grains (Table 2). Projected average prices for the various classes of wheat are well above the averages of recent years. For all classes of wheat, the average projected prices are above the level ($3.40 per bushel) that would trigger countercyclical payments under the proposal.

Table 2. Projected US season-average wheat prices

	2008/09	2009/10	2010/11	2011/12	2012/13	2008-2012 Average
			(dollars per bushel)			
All wheat	4.06	4.11	4.14	4.16	4.19	4.13
Hard red winter	4.03	4.07	4.11	4.13	4.15	4.10
Hard red spring	4.25	4.30	4.34	4.37	4.40	4.33
Soft red winter	3.60	3.61	3.63	3.62	3.62	3.61
White wheat	3.98	4.01	4.03	4.04	4.05	4.02
Durum wheat	4.71	4.76	4.81	4.84	4.86	4.80

Actual market prices will differ from the projected averages. In years with above-average yields, for example, prices are likely to be lower. In some of the 500 stochastic outcomes, prices are low enough to trigger countercyclical payments. In approximately 3 percent of the stochastic outcomes for any given year between 2008/09 and 2012/13, all wheat prices are low enough to trigger countercyclical payments under current policies (Table 3).

Under the proposal, countercyclical payments occur much more frequently for some classes of wheat than for others. There are almost no stochastic outcomes with hard red spring prices low enough to trigger countercyclical payments under the proposal, but soft red winter wheat base area would receive countercyclical payments in 31percent of stochastic outcomes in any given year between 2008/09 and 2012/13. In general, countercyclical payments occur more frequently for the classes of wheat with lower average prices. The variability of class prices also matters. Average durum wheat prices exceed those for every other class, but durum wheat prices are more variable than prices of hard red spring wheat. This explains the greater proportion of outcomes that result in countercyclical payments for durum wheat than for hard red spring wheat.

Table 3. Proportion of stochastic outcomes with prices low enough to trigger countercyclical payments

	2008/09	2009/10	2010/11	2011/12	2012/13	2008-2012 Average
All wheat	5%	3%	3%	3%	2%	3%
Hard red winter	8%	6%	7%	5%	4%	6%
Hard red spring	0%	1%	1%	0%	0%	0%
Soft red winter	31%	31%	30%	31%	29%	31%
White wheat	9%	8%	7%	7%	7%	8%
Durum wheat	2%	2%	2%	2%	1%	2%

Averaging across the 500 stochastic outcomes, the average wheat countercyclical payment rate is less than $0.01 per bushel in the baseline (Table 4). Under the proposal, average payment rates are less than $0.01 per bushel for hard red spring wheat, durum wheat, and hard red winter wheat. The average payment rate for white wheat is slightly over $0.01 per bushel, and the average payment rate for soft red winter wheat is approximately $0.08 per bushel over the 2008/09-2012/13 period.

Table 4. Average countercyclical payment rates

	2008/09	2009/10	2010/11	2011/12	2012/13	2008-2012 Average
			(dollars per bushel)			
All wheat	0.005	0.004	0.003	0.003	0.002	0.004
Hard red winter	0.013	0.011	0.010	0.008	0.004	0.009
Hard red spring	0.000	0.001	0.000	0.000	0.000	0.000
Soft red winter	0.081	0.077	0.071	0.078	0.081	0.078
White wheat	0.017	0.013	0.012	0.014	0.010	0.013
Durum wheat	0.004	0.004	0.004	0.004	0.002	0.004

These estimates assume that the proposal would have no effect on wheat production or, hence, on prices. Because the proposal would increase countercyclical payments for some wheat producers under some circumstances, it is likely to have a small positive effect on wheat production, and thus a small negative effect on wheat prices.[2] Any such effects are likely to be

[2] The FAPRI model does include a modest production effect from countercyclical payments that is derived from research on decoupling conducted at FAPRI and elsewhere. In the model, each dollar of market returns or loan deficiency payments has a significantly larger production effect than a dollar of countercyclical payments, and countercyclical payments have a greater effect than direct payments.

very small, however, for two reasons. First, the change in countercyclical payment rates is small relative to the average returns to wheat production. Second, countercyclical payments are tied to base acreage rather than to current wheat production. Because the payments are partially decoupled from production decisions, they are likely to have smaller impacts on production than a similar amount of payments tied more closely to production (such as loan deficiency payments).

An important implementation issue associated with the proposal is how base acreage and payment yields would be established for each class of wheat. Under the 2002 farm bill, producers were given the option of updating base acreage and program yields based on actual production between 1998 and 2001. The analysis assumes that the total number of bushels eligible for countercyclical payments would remain unchanged from baseline levels. For each class of wheat, the number of eligible bushels is assumed to be proportional to 1998-2001 production for that class of wheat. How this would be implemented at the farm level is unclear, and alternative implementation rules could have important implications for total payment levels at the farm and national levels.

In the baseline, wheat countercyclical payments average only $8 million per year between 2008/09 and 2012/13 (Table 5). Under the proposal, total payments increase six-fold, even though there is no assumed change in target prices or direct payment rates. Most of the increase in spending goes to producers with soft red winter wheat base acreage. In contrast, payments to producers with hard red spring or durum wheat base acreage average less than $1 million per year.

Table 5. Average countercyclical payments

	2008/09	2009/10	2010/11	2011/12	2012/13	2008-2012 Average
			(million dollars)			
Baseline	13	9	8	8	5	8
Under the proposal						
Hard red winter	13	11	10	8	4	9
Hard red spring	0	0	0	0	0	0
Soft red winter	37	35	33	36	37	35
White wheat	5	4	3	4	3	4
Durum wheat	0	0	0	0	0	0
Total for all classes	55	50	47	48	44	49

The budgetary impact of the proposal is to increase government spending on wheat countercyclical payments by a total of $163 million relative to the baseline over the FY 2008 – FY 2012 period (Table 6). Assuming the policy change is first implemented for the 2008 crop year, the first fiscal year where there would be a budgetary impact would be FY 2009. Over the FY 2008 – FY 2017 period, the net increase in wheat countercyclical payments is $425 million.

Table 6. Government outlays on wheat countercyclical payments

	Baseline	Proposal	Difference
	(million dollars)		
FY 2008	5	5	0
FY 2009	13	55	42
FY 2010	9	50	41
FY 2011	8	47	39
FY 2012	8	48	40
FY 2013	5	44	40
FY 2014	13	59	46
FY 2015	11	70	59
FY 2016	5	65	60
FY 2017	6	63	57
FY 2008 - FY 2012	43	205	163
FY 2008 - FY 2017	83	507	425

All of the estimates reported here are based on the 2007 FAPRI stochastic baseline, which assumes an extension of the ethanol tax credit when it is due to expire at the end of 2010. Under Congressional budgetary rules, the official "scoring" baseline maintained by the Congressional Budget Office assumes that the ethanol tax credit and other tax provisions expire as scheduled under current law. FAPRI has estimated a scenario (also reported in the "FAPRI U.S. Baseline Briefing Book") which assumes the tax credit expires. The scenario results in lower prices for corn, wheat, and other grains in 2010/11 and subsequent years.

If we had evaluated the proposal against a baseline that allowed the ethanol tax credit to expire, the lower prices would have resulted in larger wheat countercyclical payments. The estimated budgetary impact under this alternative approach would be $207 million over the FY 2008 – FY 2012 period, and $614 million over the FY 2008 – FY 2017 period.