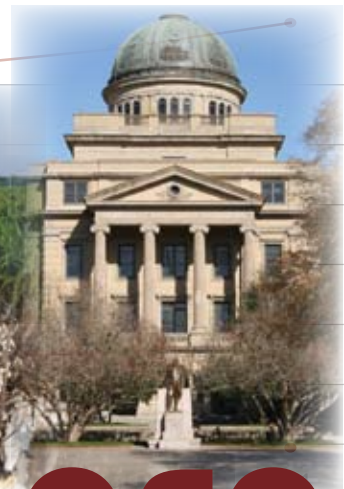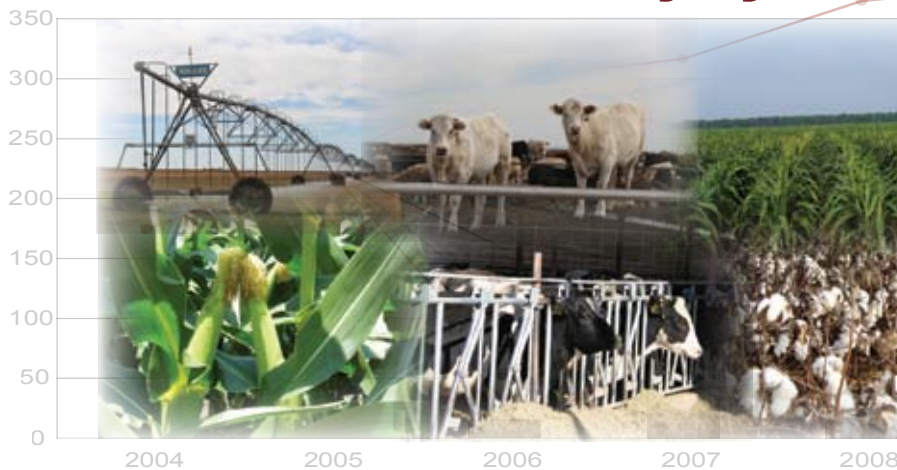# Comparison of the Counter Cyclical Payment Program to a Proposed Counter Cyclical Revenue Program

AFPC Briefing Paper 07-3

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Comparison of the Counter Cyclical Payment Program to a Proposed Counter Cyclical Revenue Program

AFPC Briefing Paper 07-3

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The Secretary of Agriculture recently provided Congress with a report entitled "2007 Farm Bill Proposals" prepared by USDA. The report contains a large number of proposed changes to the 2002 Farm Bill, which could directly impact the incomes of crop producers. One such proposal calls for replacing the counter cyclical payment (CCP) program with a counter cyclical revenue (CCR) program.

The CCR would be triggered when national actual revenue for a crop fell below a set value. Using a revenue based program, payments would be paid when yields and/or prices were low, in contrast to the CCP which is triggered only by low prices. The current target prices, direct payment rates, CCP payment yields and base acres for eligible crops are summarized in Table 1.

The purpose of this report is to compare the CCR to the CCP in terms of their probable payments over the 2008-2016 period.

The CCR for each crop is based on the crop's national target revenue:

NTR = [2007 Target Price – 2007 DP Rate] * 2002-2006 Olympic National Average Yield

The Olympic national average yield for 2002-2006 would be calculated dropping the low and high yields. The national average yield in this formula would remain fixed for the life of the bill. The Olympic national average yields for the eligible crops are presented in Table 2 along with the national target revenues.

The national actual revenue for each crop will be calculated each year based on the actual yield and price and the current loan rate as:

NAR = National Average Yield * Max [Season Average Market Price or Loan Rate]

The Administration's proposal calls for implementing a formula to calculate the loan rate based on historical season average prices as:

Loan Rate = MIN [(Olympic Average Price for Previous 5 Years * 0.85) or Max Loan Rate]

The maximum loan rates in the proposal are: $2.58 wheat, $1.89 corn, $1.89 sorghum, $1.70 barley, $1.21 oats, $0.5192 upland cotton, $6.50 rice, $4.92 soybeans, and $350 peanuts.

A CCR payment is triggered when the national actual revenue is less than the national target revenue (or NAR < NTR). The national CCR payment rate per acre is calculated as:

NPR = (NTR – NAR) / National CCP Payment Yields

and the payment to a producer would equal

CCR Payment = NPR * CCP Payment Yield * Base Acres * 0.85

Producers' base acres and CCP payment yields would be fixed at their 2002 Farm Bill levels throughout the 2007 program.

For this analysis, the proposed CCR payment for each crop is compared to the total CCP payment for each crop. For the CCP program, it is assumed there is no change in target price (TP), direct payment rates (DP), loan rates (LR), base acres, and counter cyclical payment yields. For completeness, the CCP formulas are summarized here. The CCP payment is triggered if the market price is less than the target price minus the direct payment rate or:

CCP Rate = Max [(TP – DP) – Max [Season Average Price or LR], 0.0]

The producer's CCP payment is calculated as:

CCP Payment = CCP Rate * CCP Payment Yield * Base Acres * 0.85

Results

The FAPRI January 2007 Baseline price and yield projected were used for the present analysis. The Baseline provides 500 draws of prices and yields based on historical variability and correlation of these variables. The 500 draws of prices and yields for 2008-2016 were used to simulate the Administration's proposed loan rates, national actual revenue and CCR payments, as well as the CCP payments for the nine eligible crops. The total CCR and CCP payments were compared each year and over the nine year planning horizon.

Over the 2008-2016 period, total CCR payments would average $7.345 billion while total CCP payments would average $8.806 billion (Table 3). Thus the proposed CCR would provide a $1.46 billion budget savings over nine years. The budget savings are back loaded because average total CCR payments ($5.176 billion) are almost equal to average total CCP payments ($5.126 billion) during the first five years.

The biggest difference between the proposed CCR and continuing the CCP is observed on a crop by crop basis. The average CCR payment for corn is zero over 2008-2012 and only $1.8 million over 2008-2016 while average CCP payments for corn is $40.9 million in 2008-2012 and $180.2 million over 2008-2016 (Table 3). This pattern of support is observed for: wheat, sorghum, soybeans, rice, and peanuts. Cotton, barley, and oats receive higher support from the CCR than the CCP in the first five years and less support from CCR in the last four years. Over the 2008-2012 period, the average total cotton CCR is $4.76 billion while cotton CCP averages $4.2 billion, and over the 2008-2016 period total cotton CCR payments average $6.78 billion and total CCP payments average $7.04 billion.

The probability of CCR and CCP payments are reported for each crop in each of four time periods (Table 3). Crops with average prices higher than their target price in the Baseline (Table 1) have a low probability of receiving CCR and CCP payments. For example, there is a 98.2% chance of no CCR for wheat in 2008 and a 95.2% chance of no CCP for wheat in 2008. Cotton, rice, and peanuts have average Baseline prices lower than their respective target prices and have much lower probabilities of zero CCR and CCP payments in 2008. For example, cotton has a 7.8% chance of a zero CCR in 2008 and a 3.8% chance of a zero CCP in 2008. As average Baseline prices for cotton, rice, and peanuts increase over the 2008-2016 planning horizon the probability of receiving a CCR and CCP payment decreases. In the case of cotton the probability of a zero CCR in 2014 is 37.6% and the chance of a zero CCP in 2014 is 16.2%.

The proposed CCR would provide a safety net for total revenue much like the CCP. For commodities with Baseline prices lower than the target price, the CCR will actually provide a better safety net because it is also triggered by low yields and has no maximum payment rate. The CCP rate is maximized at the difference between [(TP – DP) – LR] while the CCR has no maximum. This result is demonstrated in Figures 5-7 where the distribution of 500 CCP's and CCR's for cotton, rice, and peanuts in 2008 are displayed as cumulative distributions. The CCP for cotton payment reaches a maximum at $74.5/acre while the CCR payment rate could reach to about $200/acre. A similar result is observed for rice and peanuts due largely to the fact that their average Baseline prices in 2008 are less than the target price. The Figures for wheat, corn, sorghum, and soybeans show that in the event that a CCR is triggered, it will pay producers a higher per acre payment than the CCP.

These results are presented to demonstrate the side-by-side effects of continuing the CCP vs. replacing this program with the proposed CCR. Any modifications to the provisions for the proposed CCR would change the results presented. Additionally, this analysis assumes that the proposed CCR would not result in a supply response that would alter the FAPRI stochastic Baseline distribution for crop prices.

Table 1. National Target Revenue, Olympic Average Yield and Policy Variables for CCR and CCP.

	FAPRI January 2007 Baseline		Target Price	Direct Payment	Natl CCP Yield 2006	Base Acres 2006
	2008 Prices	2014 Prices				
	($/Yield Unit)		($/Yield Unit)			(M. Acres)
Wheat	4.07	4.17	3.92	0.52	36.10	76.00
Corn	3.24	3.06	2.63	0.28	114.40	87.60
Sorghum	2.98	2.98	2.57	0.35	58.10	12.03
Barley	3.20	2.97	2.24	0.24	48.70	8.74
Oats	1.93	1.85	1.44	0.02	50.00	3.13
Soybeans	7.02	6.55	5.80	0.44	34.10	52.90
Cotton	0.5538	0.5879	0.72	0.07	638.40	18.70
Rice	8.02	8.81	10.50	2.35	51.20	4.51
Peanuts	454.68	443.44	495.00	36.00	1.60	1.52

Table 2. Projected Values for National Target Revenue per Acre and Olympic Average Yields.

	National Target Revenue	Olympic Average Yield 2002-06*
	($/Acre)	(Yield Units)
Wheat	140.39	41.29
Corn	345.76	147.13
Sorghum	129.97	58.55
Barley	123.14	61.57
Oats	88.63	62.42
Soybeans	220.20	41.08
Cotton	511.90	778.79
Rice	547.49	67.18
Peanuts	676.69	1.47

*Based on preliminary 2006 yields.

Table 3. Projected Average CCR and CCP Payments by Crop for Selected Years and Expected Program Savings over the First Five Years and Nine Years.

	2008 Payments		2014 Payments		2008-2012 Payments		2008-2016 Payments	
	CCR	CCP	CCR	CCP	CCR	CCP	CCR	CCP
Wheat (m $s)	3.6	12.5	1.7	11.0	12.0	42.5	16.7	77.6
Prob(Pmt=0)*	98.2%	95.2%	99.4%	94.6%	94.8%	85.4%	94.0%	75.8%
Corn (m $s)	-	4.0	-	42.8	-	40.9	1.8	180.2
Prob(Pmt=0)*	100.0%	99.6%	100.0%	95.6%	100.0%	96.2%	99.8%	86.2%
Sorghum (m $s)	0.0	2.1	-	2.3	0.4	6.1	0.7	11.9
Prob(Pmt=0)*	99.8%	97.2%	100.0%	97.4%	98.8%	92.2%	98.6%	86.0%
Barley (m $s)	-	0.0	0.1	0.6	0.2	0.2	0.7	1.5
Prob(Pmt=0)*	100.0%	99.8%	99.8%	98.6%	99.6%	99.2%	98.8%	96.2%
Oats (m $s)	0.3	0.1	0.3	0.3	1.1	0.9	2.3	2.4
Prob(Pmt=0)*	98.0%	97.6%	97.4%	95.8%	91.6%	89.2%	83.2%	77.8%
Soybeans (m $s)	5.2	17.8	3.5	63.4	27.9	152.4	39.4	413.1
Prob(Pmt=0)*	98.0%	95.2%	98.4%	84.4%	89.8%	66.0%	85.8%	35.8%
Cotton (m $s)	1,256.9	963.8	538.0	726.6	4,764.4	4,246.9	6,780.1	7,038.7
Prob(Pmt=0)*	7.8%	3.8%	37.6%	16.2%	0.0%	0.0%	0.0%	0.0%
Rice (m $s)	86.3	97.2	19.7	50.2	261.3	355.1	333.1	545.2
Prob(Pmt=0)*	60.8%	48.6%	82.6%	69.8%	19.0%	10.0%	11.6%	2.6%
Peanuts (m $s)	19.6	44.1	16.5	63.3	108.3	281.6	171.0	535.5
Prob(Pmt=0)*	49.8%	46.2%	61.4%	37.8%	2.4%	1.6%	0.6%	0.2%
Total (m $s)	1,372.0	1,141.7	579.8	960.5	5,175.7	5,126.4	7,345.7	8,806.0
CCR Savings Over CCP (m $s)						(49.3)		1,460.3

*Prob(Pmt=0) is the probability that the CCR or CCP is zero for the particular time period.

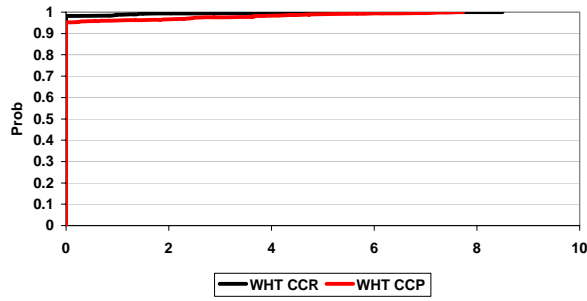**Figure 1. Probability Distribution of per Acre CCP and CCR Payments for Wheat in 2008 ($/base acre)**

Figure 2. Probability Distribution of per Acre CCP and CCR Payments for Corn in 2008 ($/base acre)
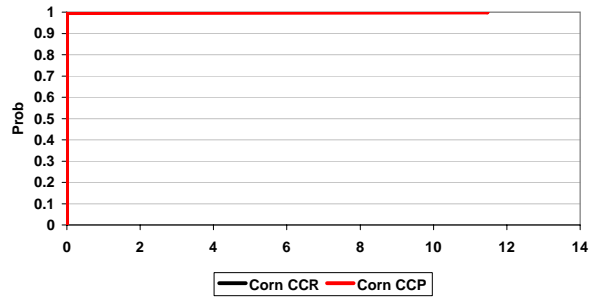
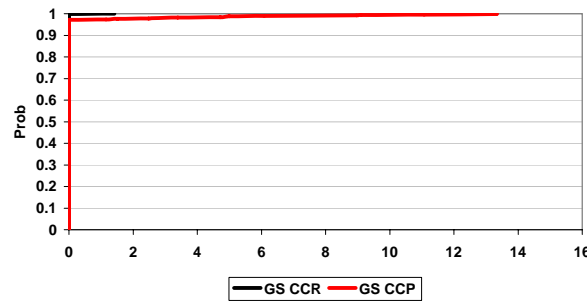**Figure 3. Probability Distribution of per Acre CCP and CCR Payments for Sorghum in 2008 ($/base acre)**

Figure 4. Probability Distribution of per Acre CCP and CCR Payments for Soybean in 2008 ($/base acre)
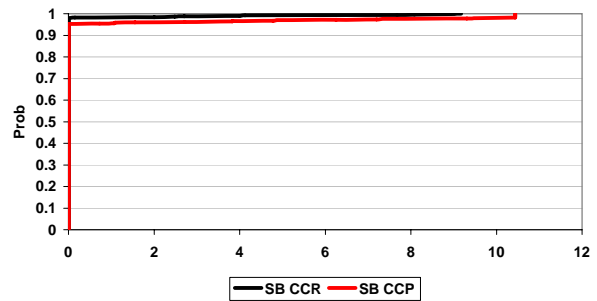
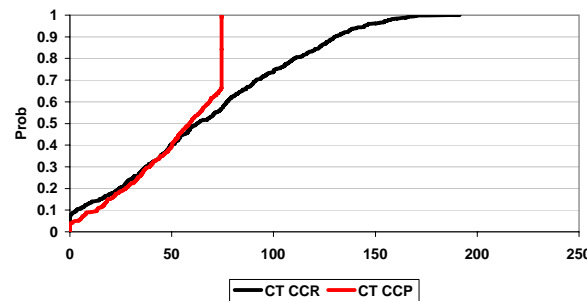**Figure 5. Probability Distribution of per Acre CCP and CCR Payments for Cotton in 2008 ($/base acre)**

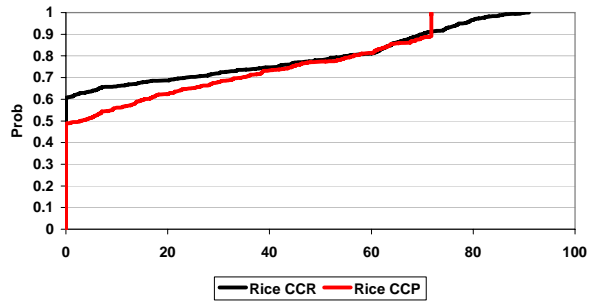**Figure 6. Probability Distribution of per Acre CCP and CCR Payments for Rice in 2008 ($/base acre)**

Figure 7. Probability Distribution of per Acre CCP and CCR Payments for Peanuts in 2008 ($/base acre)