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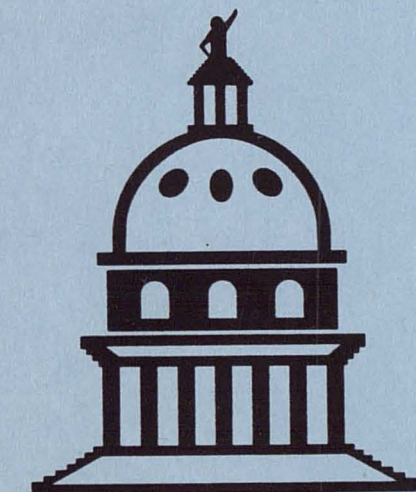
POLICY WORKING PAPER

ECONOMIC DIMENSIONS OF
CONSERVATION RESERVE AND TARGET PRICE
PROGRAM INTERACTIONS

AFPC WORKING PAPER 94-3

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February 1994

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ECONOMIC DIMENSIONS OF CONSERVATION RESERVE AND TARGET PRICE PROGRAM INTERACTIONS

Two issues that are likely to be the focal points of the upcoming policy debate over the 1995 farm bill are:

- The future of the Conservation Reserve Program (CRP).
- The level of support for farm income.

Both of these programs have large and interactive effects on government costs and prices. The primary economic concerns about continuing the CRP relate to its impacts on budget expenditures, government stocks and prices. In addition to the CRP issue there is concern about the decline in the level of support for farm income. The budgetary effect of gradual reductions in target prices and payment acres since 1985 has been to reduce the cost of the farm program. Farmers worry about the impacts on the profitability and survival of their operations resulting from policy decisions regarding both of these issues.

The purpose of this paper is to evaluate the relationships and impacts of changes in CRP and target price policies on government costs, stocks, commodity prices, producer incomes, producer surplus, and consumer surplus. While it is recognized that there are other considerations regarding these farm program tools, such as the impacts on the environment, no explicit attempt is made to quantify these effects.

This evaluation was completed utilizing a macroeconomic simulation model which places specific emphasis on the interface between the macroeconomy and the agricultural sector (AG-GEM) and a farm level simulation model (FLIPSIM). Both of these models are maintained by the Agricultural and Food Policy Center at Texas A&M University. This paper proceeds by describing sequentially:

- The nature and importance of the CRP and the target price programs.
- The agriculture sector impacts of four policy combinations involving the retention or elimination of CRP and reductions in target prices.
- The potential regional and farm level impacts of these policy changes.

Nature and Importance of CRP and Target Price Programs

Since 1985 two major programs impacting government farm level expenditures have been the target price program and the CRP.

- **Target Price Program.** Deficiency payments result under the farm program when market prices fall below target prices. The deficiency payment is determined as the deficiency payment rate times the farm program yield on the farmer's eligible payment acreage. The minimum level of target prices is specified in the farm bill for each year and has been frozen throughout the 1990 farm bill. In addition, payment acres have been reduced by the portion of base acres required to be set aside and the 15 percent nonpaid flex acres. Table 1 indicates the magnitude of deficiency payments by commodity along with wool incentive and CRP payments for fiscal year 1992. Feed grains and wheat clearly received the largest total deficiency payments. While price supports establish a floor on market prices, they have become a less important income-enhancing tool as the objective of export competitiveness has become an overriding concern.¹
- **The Conservation Reserve Program (CRP).** The CRP has removed highly erodible land from production under contract for a 10 year period. In 1992, 35.87 million acres were enrolled in CRP. Wheat base held the largest share of CRP land, followed by corn, barley, sorghum, and cotton. (Table 2). The 1993 Omnibus Budget Reconciliation Act placed a cap of 38 million acres on the quantity of land that could enter CRP. Under current policy, contracts for CRP land begin to expire in 1996 meaning that all but 4.1 million acres could come back into production by the year 2000. The resulting production increase is expected to have stock-increasing and price-depressing impacts. The future of the CRP will be a central issue in the 1995 farm bill debate.

¹However, farmers continue to rely on the price support (nonrecourse) loan as a tool for financing the holding of inventories after harvest. In addition, large quantities of butter are acquired by CCC under the dairy price support program.

Table 1. U.S. Government Payments for the Target Price, Wool Incentive, and CRP Programs, FY 1992.

Commodity	CRP	Million Dollars
Wheat		1,699.5
Feed Grain		2,257.2
Cotton		777.9
Rice		484.3
Program Crop Total		5218.9
Wool		176.5
Conservation Reserve Program		1,653.9

Source: Bureau of Census, U.S. Department of Commerce.

Table 2. CRP Acreage Holding Base and Planted Acreage by Commodity, 1992.

Crop	CRP Acres	Percent of CRP	Planted Acres	Percent of Planted Acres
	Million	%	Million	%
Wheat	10.60	29.6	72.26	14.7
Cotton	1.40	3.9	13.03	10.7
Rice	0.01	0.0	3.17	0.0
Corn	4.10	11.4	79.32	5.2
Sorghum	2.40	6.7	13.28	18.1
Barley	2.8	7.8	7.80	35.9
Oats	1.40	3.9	7.96	17.6
Feed Grain Subtotal	10.70	29.8	108.36	9.9
Soybeans ¹	4.00	11.2	59.30	6.7
Program Crop Subtotal	26.71	74.5	256.12	10.4
Other Crops ¹	9.16	25.5	N/A ²	N/A
Total	35.87	100.0	N/A	N/A

¹Does not hold base acreage. ²Not Applicable

Agriculture Sector Impacts

Due to the impacts of the CRP on farm prices and incomes for U.S. program crops, four policy scenarios were analyzed:

- **Elimination of the CRP.** This baseline scenario assumed that 25 percent of the CRP land would remain idle. The remaining 75 percent would come into production of its base acreage crops with farmers exercising their most profitable options under the existing farm program as CRP contracts expire.² Farmers were assumed to make decisions on the utilization of CRP-released land based on profitability within the framework of the farm program as prescribed by the 1990 farm bill. This option would be expected to increase supplies and reduce market prices resulting in increases in deficiency payments.
- **Elimination of CRP With a 10 Percent Reduction in Target Prices.**³ Under this scenario, all baseline assumptions including the treatment of CRP land were held constant except that a 10 percent reduction in the baseline target price levels was assumed beginning in 1996. This scenario is expected to adversely affect producer receipts due to the lower market price caused by increased supply, the elimination of CRP payments, and reduced deficiency payments.
- **Retain CRP With Frozen Target Prices.** This scenario operates under the provisions of the 1990 farm bill except that land is retained in CRP with contracts assumed to be renewed at the original payment rate. Holding CRP land out of production would be expected to restrict supplies and raise market prices from the baseline scenario thus reducing deficiency payments.

²Options available to farmers included idling land under the 0/85 program, meeting ARP requirements, and flexing to the most profitable alternative crop on nonpayment flex acres. The simplifying assumption was made that the yield on CRP acres returning to production was identical to acres already in production. To the extent that yields on these returning acres is lower than the existing average, the price impacts of the CRP options will be overstated.

³In the case of milk and soybeans, the price support level was reduced by 10 percent. In crops, the loan was determined by formula as specified in the 1990 farm bill.

Table 3. Level of Selected Economic Variables for Reduced Farm Subsidy Options

- **Retain CRP With a 10 Percent Reduction in the Target Price.** This scenario recognizes continued pressures to reduce farm subsidies. From a political perspective, it compensates a 10 percent target price reduction with continued CRP payments and the price enhancement resulting from the retention of CRP land in production.

Price and Income Impacts

Table 3 summarizes selected price, income, farm financial, and government cost consequences of the four policy options projected by the AG-GEM model.⁴ The years 1996 and 2000 are used to report results because 1996 is the first year land begins to come out of the CRP and by the year 2000, the effects of changed market supplies on both the crop and livestock sectors become more apparent.

Eliminating CRP With Frozen Target Prices (Baseline). As anticipated, wheat prices fall from \$3.30 per bushel in 1996 to \$3.05 in 2000 as land comes out of CRP. A modest increase in corn price is projected, however, over 1996, because not as much CRP land has a feed grain base. Due to the dominate position corn plays in feed grain price determination, other feed grain prices (sorghum, barley and oats) follow the same basic pattern as corn prices. The impact of eliminating CRP with frozen target prices on cotton prices appears insignificant.

With frozen target prices, U.S. net farm income, average land prices, and farmers' net worth rise despite release of CRP. Government costs fall by \$630 million between 1996 and 2000 as reduced CRP costs more than offset increased deficiency payments resulting from lower market prices.

Eliminating CRP With Reduced Target Prices. Reducing the target price by 10 percent causes farmers to cut back on production, thus raising wheat prices by about 3 percent relative to the baseline. The corn price rises by about 2 percent. By the year 2000, these higher feed prices begin to result in

Source: AG-GEM model

⁴A description of the AG-GEM model's properties is in press at this time. For more information, contact John Penson or Joe Davis, Department of Agricultural Economics, Texas A & M University.

Table 3. Level of Selected Economic Variables for Reduced Farm Subsidy Options.

Economic Variable	Baseline: CRP Elimination With Frozen Target Prices		CRP Elimination With 10 Percent Target Price Reduction		Retain CRP With Frozen Target Prices		Retain CRP With 10 Percent Target Price Reduction	
	1996	2000	1996	2000	1996	2000	1996	2000
Prices	----- Dollars -----							
Wheat (bu.)								
Market	3.30	3.05	3.43	3.13	3.36	4.21	3.49	4.07
Target	4.00	4.00	3.60	3.60	4.00	4.00	3.60	3.60
Corn (bu.)								
Market	2.24	2.28	2.28	2.33	2.26	2.53	2.31	2.62
Target	2.75	2.75	2.47	2.47	2.75	2.75	2.47	2.47
Cotton (bu.)								
Market	0.562	0.560	0.563	0.561	0.562	0.581	0.563	0.583
Target	0.729	0.729	0.656	0.656	0.729	0.729	0.656	0.656
Fed Steer (cwt)	76.32	89.31	76.62	89.55	76.32	90.46	76.62	90.96
Broilers (lb)	0.531	0.624	0.533	0.625	0.531	0.638	0.533	0.642
Net Farm Income (bil.)	41.8	46.5	38.3	44.6	41.8	49.4	38.3	48.4
Farm Debt (bil.)	159	179	154	160	159	180	154	163
Net Worth (bil.)	723	793	711	761	723	797	711	767
Land Price (\$/acre)	690	779	671	665	690	785	671	734
Government Costs (bil.)	10.8	10.17	7.80	7.34	10.97	9.07	7.95	6.52

Source: AG-GEM model projections.

higher cattle and broiler prices. Cotton prices remain stable relative to the baseline. The effect of reduced government support resulting from the lower target prices reduces net farm income in the year 2000 by 7 percent, land prices by 7 percent, and farmers' net worth by 4 percent. Government costs decline to approximately \$7 billion.

Retain CRP With Frozen Target Prices. Retaining CRP provides substantial crop price enhancement. With tightened supplies, wheat prices rise above the target price to \$4.21 per bushel in the year 2000--a 38 percent increase relative to the baseline--while corn prices rise by nearly 11 percent. Cotton prices rise by nearly 4 percent if CRP is retained. Both beef and broiler prices respond to the resulting higher feed prices by cutting back on production as their returns fall. By the year 2000, net farm income rises by 6.3 percent. While in 1996 government costs exceed the baseline, by the year 2000 costs fall by \$1 billion.

Retain CRP With 10 Percent Target Price Reduction. By the year 2000, net farm income under this scenario is at almost exactly the same level as when CRP is retained with frozen target prices. However, net worth is lower and land prices are lower because they did not receive the benefit of frozen target prices early in the period when higher deficiency payments were made. Government cost once again fall below the baseline where CRP is eliminated.

Producer and Consumer Surplus Impacts

Table 4 indicates the changes in producer and consumer surplus as deviations from the baseline involving CRP elimination with frozen target prices.

Eliminate CRP With 10 Percent Target Price Reduction. Net producer surplus declines by \$2.8 billion in the year 2000 from an elimination of CRP, combined with a 10 percent reduction in the target price relative to the baseline. Crop producers lose because of reduced target prices. Livestock producers lose relative to the baseline because lower target prices mean higher feed prices than would exist with frozen target prices and the elimination of CRP. In the year 2000, domestic consumers

Table 4. Changes in Distribution of Benefits and Costs From Reduced Farm Subsidy Options as Compared to the Baseline Scenario of CRP Elimination and Frozen Target Prices (in Billions of Dollars).

Sector	CRP Elimination With 10 Percent Target Price Reduction		Retain CRP With Frozen Target Price		Retain CRP With 10 Percent Target Price Reduction	
	1996	2000	1996	2000	1996	2000
----- Million Dollars -----						
Change in Producer Surplus	-3,929.8	-3,134.7	8.2	1,544.8	-2,662.5	-111.8
Change in Producer Tax Burden	-385.4	-307.2	0.9	151.5	-261.0	-11
Net Change in Producer Surplus	-3,544.6	-2,827.5	7.4	1,393.2	-2,401.3	-101.0
Change in Domestic Consumer Surplus	-161.7	-351.5	-181.2	-3,733.3	-860.0	-4,610.6
Change in Consumer Tax Burden	-2,833.4	-2,974.0	-197.4	-3,345.8	-3,196.4	-5,112.3
Net Change in Domestic Consumer Surplus	2,671.7	2,622.5	16.2	-387.5	2,336.4	501.7
Total Domestic Surplus Change	-872.9	-205.0	23.6	1,005.7	-64.9	400.7
Change in Foreign Consumer Surplus	-325.5	-377.8	-187.4	-3,291.5	-559.1	-3,371.8
Total Surplus Change	-1,198.4	-582.8	-163.8	-2,285.8	-624.0	-2,971.1

Source: AG-GEM model projections.

realize over \$2.6 billion in benefits most of which is from tax gains as a result of reduced deficiency payments. Foreign consumers, on the other hand, lose \$378 million due to the higher market prices resulting from reduced target prices. The result is a net loss to society of \$580 million in the year 2000.

Retain CRP With Frozen Target Prices. Retaining CRP with frozen target prices results in a net gain to producers of nearly \$1.4 billion in the year 2000 -- mostly due to higher market prices resulting from reduced supplies and the CRP payments on land idled. Consumers lose because of higher crop and livestock prices but gain from reduced deficiency payments resulting in a net loss of only \$387.5 billion in the year 2000. Foreign consumers pay \$3.3 billion in higher import costs. Therefore, the net loss to society is \$2.3 billion.

Retain CRP With 10 Percent Target Price Reduction. This option markedly reduces producer surplus in the first years of the period (\$2.4 billion) due to lower target prices with no change in CRP acreage. However, from a total perspective by the year 2000, producer loss is largely offset by higher market prices due to reduced production. While domestic consumers are better off due to the dramatic drop in deficiency payments, the big loser in the year 2000 is the foreign consumer who ends up paying higher prices for farm products. The net loss to society is actually higher than retaining CRP with no reduction in the target price (\$3 billion versus \$2.3 billion by the year 2000).

Farm Level Impacts

Farm level impacts of the four policy options were determined utilizing the FLIPSIM model. This model allows consideration of changes in macroeconomic conditions as well as the risk due to variation in weather and prices. Table 5 provides a comparison of farm level results utilizing two critical economic impact variables:

- Change in real net worth defined as the percentage change in net worth adjusted for inflation over the period 1992-2000.

Table 5. Farm Level Impacts of Alternative CRP and Target Price Reduction Options, 1992-2000.

Crop and Farm Location	Baseline: CRP Elimination With Frozen Target Price		CRP Elimination With 10 Percent Target Price Reduction		Retain CRP With Frozen Target Price		Retain CRP With 10 Percent Target Price Reduction	
	Change in Return Real Net Worth	on Assets	Change in Return Real Net Worth	Return on Assets	Change in Return Real Net Worth	Return on Assets	Change in Return Real Net Worth	Return on Assets
----- Percent -----								
Wheat								
KSMG	-48.4	-0.2	-68.0	-1.2	-38.8	0.5	-46.1	-0.1
KSLG	-9.8	2.4	-30.2	0.9	-6.0	3.1	-12.7	2.2
NDMG	13.5	3.8	5.3	3.6	35.7	5.2	41.3	5.2
NDLG	17.5	2.7	9.9	2.4	29.3	4.2	33.4	3.9
WAMG	-2.5	1.7	-10.7	1.3	0.5	2.1	1.8	2.0
WALG	14.7	4.6	5.9	4.2	17.0	4.9	18.9	4.8
Corn								
NEMG	-6.3	1.9	-18.6	1.2	-1.2	2.3	-2.9	1.9
NELG	8.8	4.0	-4.5	3.4	-12.4	4.4	10.1	4.0
TXHPMG	-25.1	2.9	-50.3	1.2	-14.3	4.1	-26.3	2.9
TXHPLG	76.8	8.4	52.5	7.1	82.3	9.4	77.7	8.5
IAMG	6.5	4.2	-5.2	3.7	17.9	5.2	16.9	4.9
IALG	82.1	10.3	71.4	9.9	85.6	11.2	89.8	10.9
MOMG	9.7	4.1	2.0	3.9	15.7	4.9	18.4	4.9
MOLG	64.7	8.2	56.9	8.1	68.8	9.0	74.7	9.0
Cotton								
TXSPMC	-98.6	-0.6	-124.3	-3.4	-94.3	-0.5	-119.7	-3.1
TXSPLC	-27.0	2.4	-68.0	-0.0	-25.0	2.6	-56.1	0.5
TXRPMC	-33.2	1.0	-76.7	-1.5	-30.3	1.2	-63.0	-0.9
TXRPLC	1.4	3.4	-30.1	1.1	1.6	3.6	-18.3	1.7
CAMC	10.7	6.2	-7.4	4.7	11.3	6.1	2.6	5.0
CALC	57.5	8.6	25.4	6.6	56.9	8.8	37.5	6.8

Source: FLIPSIM model projections.

- Average return to assets defined as the average ratio of net income to assets over all solvent years during the period 1992-2000.

The abbreviations on the farms in Table 5 can be interpreted as follows:

- The first two letters indicate the state in which the farm is located.
- After the state abbreviation, the Texas farms also provide an indication of where the farm is located within the state (HP = High Plains, SP = South Plains, RP = Rolling Plains).
- The next to the last letter indicates whether the farm is a moderate (M) size farm or a large (L) size farm. A moderate size farm is specified for the region as a typical full-time farmer who receives most of his/her income from farming. A large size farm is generally 2 to 4 times as large as a moderate size operation.
- The last letter indicates whether the primary crop produced on the farm is (G) grain or (C) cotton.

The farm level results indicate that the four alternative policy options have substantially different regional and farming enterprise impacts. Specifically, although all farms benefit from retaining CRP, the wheat and corn farms are considerably more favorably impacted than are the cotton farms.

Conclusions

Four policy combinations of CRP and a 10 percent reduction in target prices were evaluated. It was found that retaining CRP sufficiently tightened the wheat supply-demand balance to the point where the market price rose above the target price by the year 2000. Because 30 percent of the CRP land has a wheat production history (base) associated with it, the wheat price rises more than the prices of other grains and cotton. The rise in the price of commodities resulted in a decline in government expenditures by the year 2000. The farm level results suggest that while all crop farms benefit from retaining CRP, substantial regional differences exist in the distribution of benefits.

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