A National-Level Economic Analysis of Conservation Reserve Program Participation: A Discrete Choice Approach

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Abstract *The decision to participate in a Government program can be viewed as a discrete choice problem, where a farmer will choose to sign up for the program if the expected utility of participating outweighs the expected utility of not participating In this article, the probability of farmer participation in the Conservation Reserve Program (CRP) is modeled as a discrete choice problem and the model is estimated based on data for the entire United States Results from the first three CRP signup periods indicate that farm tenure, farm size, land value, farmer age, erosion rate, and expected net returns with and without participation influence the probability of CRP participation These results can be useful in evaluating how farmers might react to similar programs*

Keywords *Conservation Reserve Program, discrete choice approach, logistic regression, minimum chi-square method*

The Conservation Reserve Program has been seen as an effective policy instrument for achieving environmental benefits and may be used as a model for other environmental legislation In this paper, we develop and estimate a model of CRP participation The analysis includes important economic variables not considered in the previous studies In addition, unlike the previous CRP modeling efforts, the empirical analysis in this study is based on national data rather than data from a few counties Conclusions drawn from the model are useful in assessing the importance of different factors affecting participation in an expanded CRP as well as in designing and implementing other cropland retirement programs

The CRP is a voluntary cropland retirement program established in the Conservation Title (XII) of the Food Security Act of 1985 (PL 99-198) Its purpose is to assist owners and operators of highly erodible cropland in conserving and improving the soil and water resources of their farms and ranches, improving offsite environmental quality, and limiting the production of surplus commodities Up to 40-45 million acres of highly erodible cropland are to be placed into the CRP by the end of 1990

Participants in the CRP must place highly erodible cropland into grasses, trees, or other acceptable conserving uses for 10 years They must also agree not to harvest, graze, or make other commercial use of the forage for the duration of the contract, except where the Secretary of Agriculture permits, as in a drought or similar emergency In exchange, the U S Department of Agriculture (USDA) pays participating farmers annual per acre rent and one-half the cost of establishing a permanent land cover (usually grass or trees) The rental payment is determined on a per farm basis through a pseudobidding process in which the farmer indicates the amount of land to be enrolled and a yearly rental payment (rental bid) After verifying that eligibility conditions have been met, county Agricultural Stabilization and Conservation Service (ASCS) committees review the farmer's application The application is accepted and a contract is signed if the rental bid does not exceed a predetermined maximum and if the rental bid is consistent with market rents for comparable cropland Nearly 31 million acres had been enrolled in the CRP during the eighth signup period in February 1989

An estimated 101 million acres of highly erodible cropland meet the physical requirements for CRP enrollment Most of this cropland is in the Corn Belt, Northern Plains, Southern Plains, and Mountain regions Enrollment in the CRP, however, is limited to 25 percent of the cropland in a county The 25-percent limit reduces the amount of highly erodible cropland eligible for CRP enrollment to about 70 million acres

Previous Studies

Several studies have analyzed CRP participation Studies by Boggess, Ervin and Dicks, and Jagger developed theoretical models of the determinants of CRP participation *(1,4,6)* [1] They did not, however, provide any empirical estimations Esseks and Kraft, and Kula estimated the relationship between CRP participation and farm and farmer characteristics based on limited geographical data *(7,5)* Kula's study was based on data from one county in Missouri He found that a farmer's age and tenure status were more significant in explaining the probability of entering the CRP than were farm size, erosion, rate, and cash

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[1] Italicized numbers in parentheses cite sources listed in the References section of this article

rents Esseks and Kraft used data from a survey conducted in four midwestern study sites Among their results was the negative relationship of CRP participation to income from farming and the positive relationship to income from annual crops and percentage of land with erosion problems

The empirical analysis in this paper is based on data from the first three CRP signup periods Unlike previous empirical analyses of CRP participation, the data used in this study cover the entire country, and the analysis incorporates additional economic variables such as land values, profitability of CRP participation, and the expected profitability of continued crop production Previous empirical analyses were based on farm-level data In this model, the CRP participation rates and explanatory variables are evaluated at the regional level Therefore, statistical inference on CRP participation can be made only at the regional level, not at farm level

Model

Farmers with eligible fields have the choice of enrolling in the CRP USDA pays enrolled farmers annual rental for 10 years and half of the cost of establishing a vegetative cover If farmers choose not to enroll, they presumably continue to earn income associated with crop production By its nature, the CRP participation decision can be viewed as a dichotomous choice problem

If a farmer's behavior is consistent with a well-defined utility function in a dichotomous choice setting, a rational farmer will compare the expected utility received during the 10-year period of participation in the CRP with the expected utility received during the same period of nonparticipation If the expected utility of participation is greater than the expected utility of not participating, the farmer will choose to participate The stochastic utility of participation for the i^{th} farmer who participates (superscript 1) can be written as *(2)*

$$U_i^1 = V(x_i^1, s_i) + e(x_i^1, s_i), \qquad (1)$$

where $V(x_i^1, s_i)$, is a real-valued function that denotes the mean utility associated with participation, $e(x_i^1, s_i)$ is a random component in utility, x_i^1 is a vector of observed attributes associated with participating in CRP, and s_i is a vector of socioeconomic characteristics of the farmer or the farm The utility of nonparticipation (superscript 0) can be expressed as

$$U_i^0 = V(x_i^0, s_i) + e(x_i^0, s_i), \qquad (2)$$

where x_i^0 is a vector of observed attributes associated with nonparticipation

A farmer will likely join the program if

$$U^1 > U^0 \qquad (3)$$

Because the utility values are stochastic, the event that condition 3 holds will occur with some probability rather than with certainty That is, the event that the i^{th} farmer will participate in the program (P_i^1) is determined from the condition,

$$P_i^1 = \text{Prob} [U_i^1 > U_i^0], \qquad (4)$$

or substituting in equations 1 and 2

$$P_i^1 = \text{Prob} [e(x_i^0, s_i) - e(x_i^1, s_i) < V(x_i^1, s_i) - V(x_i^0, s_i)] \qquad (5)$$

The form of the function V is based on the theory of individual choice behavior For the purposes of this empirical analysis, V is assumed to have the following linear functional form

$$V(x, s) = \sum_k Z^k(x, s) b_k = Z(k, s)' b \quad k = 1, \quad , K, \qquad (6)$$

where $Z(x, s)'$ is a 1 by K vector of empirical functions that are used for transforming the data, b is a vector of unknown parameters to be estimated, and K is the number of explanatory variables

A parametric functional form for P_i^1 can be derived by specifying a parametric joint distribution function, say G, for the stochastic terms in equation 5 Commonly used distribution functions are the cumulative normal, logistic, and Cauchy The form of the function G is influenced by concern for computational simplicity, and, in this study, the logistic function was selected for G This produced the following binary logit probability function of participation

$$P^1 = \frac{1}{1 + \exp[b' Z(x^1, s) - b' Z(x^0, s)]}, \qquad (7)$$

or by inverse transformation,

$$\log \frac{P^1}{1 - P^1} = b' [Z(x^0, s) - Z(x^1, s] \qquad (8)$$

Here, b_k's measure the effect of each of the k independent variables on the log of the odds of participating in the CRP versus not participating

Explanatory variables fall into two categories The first category has variables that measure the attributes of each choice as perceived by the individual decision-maker (vectors x^1 and x^0) The second category has variables that measure the farm's and farmer's characteristics (vector s)

Attributes of Choice

An obvious element of vectors x^1 and x^0 is the net return the farmer expects from participation and nonparticipation in the CRP for the duration of the contract If farmers participate, they can expect a return equaling the guaranteed annual rental payment from the Government for each acre enrolled in the CRP minus the costs of maintaining a conservation cover Boggess suggests additional benefits to CRP participation Some farmers can receive nonmonetary as well as monetary benefits from the CRP by allowing wildlife activities on suitable CRP-enrolled acres Labor and management released from CRP acreage can earn off-farm income Farmers with trees planted as a CRP cover can receive additional revenue if the trees are harvested and marketed after the contract expires Costs associated with CRP participation involve establishing and maintaining vegetative cover on the enrolled acres plus any additional costs, such as the opportunity cost of the immobile factors of production that will be idled With these costs and benefits of CRP in mind, the present value of the net return under the standard 10-year CRP (π^1) participation period can be expressed as

$$\pi^1 = \sum_{t=1}^{10} \frac{PNR_t}{(1+r)^t},$$

where PNR_t is the expected per acre net return under CRP in year t, and r is the discount rate

The expected revenue under nonparticipation depends on the expected revenue from producing crops on the CRP-eligible land The expected revenue is determined by the market or support price and the actual or program yield for the crops, depending on whether the farmer is participating in other Government programs Therefore, expected net revenue of nonparticipation (CNR) is the expected revenue from crop production minus production costs If farmers participate in support programs, the opportunity cost of land taken out of production under the Acreage Reduction Program (ARP) must also be subtracted from the expected revenue from crop production The present value of the expected net return outside CRP (π^0) for the same 10-year period can be expressed as

$$\pi^0 = \sum_{t=1}^{10} \frac{CNR_t}{(1+r)^t}$$

In equation 8, then, π^0 and π^1 are the single elements of vector x^0 and x^1, respectively The discount rate for the net present value of calculations of participation and nonparticipation net returns may be different *(4)* The revenue from CRP is certain, therefore a risk-free discount rate can be used Uncertainty of income from crop production may call for use of a discount rate that includes a risk component

Attributes of Farms and Farmers

In the second category of explanatory variables (vector s), several candidates may affect the probability of CRP participation These candidates include such farm characteristics as land value, farm size, and erosion rate, and farmer characteristics, such as age and tenure status

The decision to participate in the CRP may be inversely related to the market value of cropland Farmers who wish to sell land enrolled in the CRP must reimburse the Government for CRP payments received if the new owners do not keep the land in the program So, farmers may be reluctant to participate if their land has a high market value

The size of the farm may also be related to farmers' CRP enrollment Larger farms have greater capital investment that may not be easily disposed of or put to alternate uses if land is retired from production under CRP *(14)* Having large capital investment effectively increases the cost of the CRP participation

The average annual rate of erosion on the farm may have a positive effect on CRP enrollment Farmers who have highly erosive lands may be more sensitive to erosion problems and, therefore, more inclined to participate in the CRP Also, CRP provides farmers with a means of retiring highly erodible cropland in order to the meet the conservation compliance provision of the Food Security Act of 1985 Conservation compliance requires farmers with highly erodible cropland to obtain an approved soil conservation plan by January 1, 1990, and to fully implement the plan by January 1, 1995 Failure to comply causes producers to lose eligibility for USDA program benefits for their entire farming operation during the years not in compliance Conservation compliance results in a more cost-effective CRP because farmers who are subject to compliance should be willing to accept lower rental payments for retiring their highly erodible cropland

A farmer's age may have either a positive or a negative effect on the CRP enrollment decision Young farmers may be more willing to experiment with new alternatives to farming and thus may be more likely to participate in the CRP Compared with older farmers, young farmers may have more and higher paying job opportunities in the labor market should they decide to participate in the CRP and pursue alternative employment The young farmers are likely to have a higher debt-to-asset ratio compared with older farmers and may want to cut their debt by enrolling cropland in the CRP Older farmers, on the other hand may have fewer risks than young farmers, and would participate in the CRP to assure a guaranteed income on enrolled land for 10 years Upon retirement, older farmers may choose to enroll land in the CRP as a means of reducing the area farmed Therefore, no sign was speculated for the coefficient of the age variable

A farmer's tenure status may also have an effect on CRP enrollment *(7)* An owner-operator has both labor and capital invested in farming A nonoperating owner (landlord) does not have labor invested and may not have capital invested The transaction cost of joining the CRP will be higher for the owner-operator than for the nonoperating owner, unless alternative uses for capital and labor can be found Nonoperating owners are more likely to enroll their eligible land into the CRP than owner-operators In equation 8, then, land value, farm size, farmer's age, erosion rate, and tenure are the elements of vector s

Data

The model requires data on CRP-participating farmers and on nonparticipating farmers Data on the participating farmers, such as net return under CRP and farm and farmer characteristics, are available from ASCS However, no nationwide data exist on farmers who are eligible but not in the CRP The model, therefore, could not be estimated using the individual farmer as the observational unit because only participating farmers were observed

The model can be estimated, however, if the observational unit is defined as a cell consisting of a group of CRP-eligible acres for farms and farmers that share similar characteristics The dependent variable takes on a value equal to the proportion of acres enrolled in the CRP out of the total eligible CRP acres in that cell Each explanatory variable takes on a value equal to the mean for the group of farms and farmers in that cell The statistical estimation is then based on the interregional variations in the CRP participation rates, and average farm and farmer characteristics Therefore, statistical inference on CRP participation can be made only at the regional level rather than at farm level That is, the estimated model predicts the proportion of eligible acres that will be enrolled into the CRP in a region, given the average levels of the explanatory variables in that region

For this study, a cell consists of the farms and farmers located in each Major Land Resources Area (MLRA) USDA's Soil Conservation Service has established 156 MLRA's covering the Nation Each MLRA comprises several counties and often crosses State boundaries MLRA's were chosen as the unit of observation rather than counties since the data we used to establish CRP eligibility were not statistically reliable at the county level The boundaries of the MLRA's are defined so that the soil characteristics and growing conditions are similar within an MLRA This similarity allowed the use of the MLRA mean value for variables, such as net returns, land value, and erosion, as the representative values in a given MLRA The use of the mean value as the representative value for tenure, farm size, and age was not as defensible However, there is a sufficient amount of variation in all the explanatory variables across MLRA's so that estimation of the model is statistically meaningful

Total CRP-eligible acres in each MLRA were calculated from the 1982 National Resources Inventory (NRI) data Acres enrolled in the CRP were obtained from ASCS From these data, the dependent variable, P_i^1, can be constructed in the following way view the eligible acres in MLRA i as multiple observations n_i corresponding to (x_i, s_i) and assume that in m_i of those acres, the event (enrollment in the CRP) occurred Then the empirical probability of participation $\hat{P}_i^1$ (the dependent variable) equals m_i/n_i *(8)*

Average MLRA net returns under CRP participation, PNR_i, were calculated as the weighted average of individual net returns in each MLRA Individual net returns under participation equal Government CRP payments minus the farmer's cost for initial cover establishment and annual cover maintenance We assumed that participating farmers would find other uses for their farm's fixed assets or sell them at a fair market price so no capital cost is subtracted from CRP revenue Government payments and establishment cost figures were obtained from ASCS records of individual CRP contracts Ervin provided an estimate of per acre maintenance cost estimates *(3)*

Average net return for the nonparticipants in an MLRA, CNR_i, was calculated on the basis of net return to crops, including hay and forage used for livestock, grown in that MLRA Crop-specific net returns were calculated using county average crop yields and State market prices of crops obtained from USDA's National Agricultural Statistics Service ASCS furnished the crop loan rate (by State) and national deficiency payments Detailed State crop budgets were provided by USDA's Economic Research Service (ERS) For program crops, the effective prices received by farmers in each State were calculated as the weighted average of the market and target prices The proportion of participating and nonparticipating acres in crop programs were used as weights Where an MLRA crossed a State boundary, crop prices and budgets for the MLRA were calculated as a weighted average of the respective States' prices and budgets Each State's contribution to the total acreage of the crop in the MLRA was used for weighting The net return to a crop in an MLRA was then calculated as the return to land and management A typical net return a nonparticipant should expect in an MLRA (CNR_{ik}) is the weighted average of individual crop net returns in that MLRA The crops included in the analysis were corn, wheat, sorghum, barley, cotton, soybeans, oats, and hay

We calculated the land value variable as the weighted average of county land values in each MLRA The ERS County Land Value Survey contains the annual county land value estimates The erosion variable was calculated as the average annual soil loss (tons/acre) from sheet, rill, and wind erosion aggregated to the MLRA level from 1982 NRI data We aggregated the remaining explanatory variables to the MLRA from the 1982 Census of Agriculture The tenure variable was calculated as the ratio of crop acreage occupied by full tenants to total crop acreage in a given MLRA "Full tenant" is defined as farm operators that rent all the land that they cultivate Acreage cultivated by full tenants is identical to acreage owned and rented out by the nonoperating owners The farm size and age variables became the average farm size and the average age of farmers in a given MLRA

Estimation

We estimated the model by using data from the first three CRP signups held in 1986 The more recent data were not included in the analyses for two reasons First, in the initial signups, farmers did not have the knowledge of the bid caps Therefore, their bids were more likely to represent their true reservation price Second, in some counties, after the third signup, the maximum acreage enrollment limits of 25 percent were being reached, and this kind of constraint could not be successfully incorporated into the model

Several expectation formations for PNR and CNR were tried in preliminary analyses, and the naive expectation formation was selected Thus, the expected net returns in 1986 were presumed to equal actual 1985 net returns The expected net returns were assumed to stay constant over the 10-year CRP contract period Assuming net returns stayed constant over the duration of enrollment meant net returns from 1 year were used instead of the present value over 10 years This simplifying assumption produces similar statistical results and implicitly discounts both PNR and CNR at the same rate The actual equation used for estimation took the following form

$$\log \frac{\hat{P}^1_i}{1 - \hat{P}^1_i} = b_0 + b_1 (CNR_i - PNR_i) + b_2\,LANDVALUE_i + b_3\,TENURE_i + b_4\,FARMSIZE_i + b_5\,AGE_i + b_6 EROSION_i + u_i \quad (9)$$

Equation 9 was estimated using the "minimum logit chi-square" method This method involves applying weighted ordinary least squares (OLS) to equation 9 The estimator is consistent and asymptotically normal *(8)* Weights are equal to the variance of the error term which was estimated as

$$Var(u_i) = 1 / (n_i \cdot \hat{P}_i^1 \cdot \hat{P}_i^2)$$

Results and Implications

Table 1 shows the regression results for the first three CRP signups Estimated coefficients were significantly different from zero at the 1-percent level for (CNR_i - PNR_i), LANDVALUE, TENURE, FARM SIZE, and AGE, and at the 5-percent level for EROSION All *a priori* expectations for the signs of coefficients were confirmed Two statistical tests were used to determine the explanatory power of the model The first was the pseudo-R^2 which equals ($WSSR_c$ - $WSSR_u$) / $WSSR_u$, where $WSSR_c$ and $WSSR_u$ are the weighted residual sum of squares from the constrained model (that is, all the coefficients except the constant term are set to zero) and the unconstrained model (that is, the model that is being estimated), respectively This measure indicated that 69 percent of the variation in the dependent variable came from the model's explanatory variables As a

Table 1—Estimates of the parameters of the CRP participation decision model

Parameter	Coefficient estimates[1]	Standard errors	Aggregate elasticity
INTERCEPT (signup 1)	1 7989	2 84620	
INTERCEPT (signup 2)	2 9380	2 84430	
INTERCEPT (signup 3)	3 3638	2 84310	
(CNR - PNR)	0102[1]	00218	-0 553[4] 0 322[5]
LANDVALUE	- 0007[2]	00006	- 446
TENURE	12 0520[2]	2 11130	1 690
FARMSIZE	- 0003[2]	00006	- 316
AGE	- 1580[2]	05550	-6 950
EROSION	0425[3]	02570	390

Pseudo - R^2 = 0 69
χ^2_8 = 223 70

[1]Coefficients measure the effect of the variable on the log of the odds of participation divided by the odds of nonparticipation
[2]Significant at 1-percent level
[3]Significant at 5 percent level
[4]Elasticity of participation with respect to CNR
[5]Elasticity of participation with respect to PNR

second measure of the model's significance, we used a chi-square statistic with k-1 degrees of freedom (k is the number of exogenous variables in the model) The statistic was calculated as -2 $\ln(L_c/L_u)$, where L_c and L_u are the value of the likelihood function for the constrained and unconstrained models, respectively The magnitude of this statistic suggested that the coefficients of the estimated model differ significantly from zero

Equation 9 was estimated separately for each signup and for the first three signups combined The coefficient estimates from different signups allowed for the detection of changes over time in farmers' response to the explanatory variables An F-test was applied to determine if the estimated coefficients of subsequent signups were significantly different Such a difference in coefficient estimates would imply structural changes in farmers' reactions to CRP participation between signups The hypothesis that the slopes and intercepts were equal for all three signups was rejected at the 1-percent level But, a further F-test showed that the structural change between signups came from changes in intercept and not in the slopes This outcome suggests that although the farmers responded similarly to the explanatory variables in each signup, average participation during the first three signups increased due to some other factor The most likely factor is the time it takes for farmers to learn about the CRP Because CRP rental payments increased only marginally over the first three signup periods and the other explanatory variables presumably remained the same, the increase in enrollment rates that occurred was probably attributable to growing knowledge of the program by farmers Examination of the magnitude of the intercepts with subsequent signups shows that the marginal learning effect decreased with time

The negative coefficient value of (CNR_i - PNR_i) suggests that as the magnitude of this variable decreases, the proportion of acres enrolled in the CRP increases The magnitude of (CNR_i - PNR_i) will decrease if net returns to CRP participation increase or net returns to growing crops on CRP-eligible lands decrease The estimated coefficient of LANDVALUE indicates that in areas where the price of farmland is high, farmers are less likely to enroll acres into the CRP Farmland prices in an MLRA may be relatively high due to high cropland productivity or because of alternative uses (for example, metropolitan development) for the land The positive sign of the TENURE coefficient suggests that nonoperating landowners are more likely to enroll their eligible acres in the CRP than owner-operators This finding confirms one of the main results of Kula *(7)* The negative sign of the FARMSIZE coefficient indicates that the rate of participation in the CRP by large farms will be lower than the participation rate among smaller farms There was no *a priori* expectation on the sign of the AGE variable coefficient The estimated negative sign suggests that the older the farmer, the lower the probability of participation in the CRP The positive sign of the EROSION variable shows that the probability of CRP participation is higher in areas where the soil is eroding at a higher rate

Table 1 also shows the weighted aggregate elasticities of probability of CRP participation The formulas developed by Domencich and McFadden give the i^{th} farmer's elasticity of participation, E^1, with respect to explanatory variable k that is related to choice 1 as

$$E_i^1(1,k) = b_k Z_i^{1k}(1 - P_i^1),$$

and the elasticity of participation with respect to explanatory variable k that is related to choice 0, is expressed as

$$E_i^1(0,k) = b_k Z_i^{0k} P_i^0$$

These expressions clearly show two distinct elasticities for the choice-specific explanatory variables The weighted aggregate elasticity is calculated by multiplying the individual elasticities by $n_i P_i^1 / \sum_i n_i P_i^1$ and summing over i

A particular aggregate elasticity estimate measures the change in the percentage of eligible land enrolled in the CRP resulting from a uniform 1-percent change in an explanatory variable across all observations For example, a uniform 1-percent decrease in land values in an average MLRA, *ceteris paribus*, would bring about an additional 0 466-percent increase in the number of acres enrolled in CRP out of the MLRA's eligible acres

An important elasticity estimate from a policy standpoint is the elasticity of probability of participation with respect to net returns This elasticity can be separated into two different elasticities one associated with net returns from CRP participation (PNR) and the other associated with returns from continued crop production (CNR) Both measure the percent change in the frequency of acres enrolled in CRP as their respective net returns change by 1 percent Interpretation of the estimates shows that farmers are more responsive to changes in returns from crop production than to changes in returns from CRP participation This result may seem counterintuitive because CRP participation provides a guaranteed income while returns from crop production are usually more risky USDA commodity programs, however, essentially provide a guaranteed price floor to participating farmers for the commodities they produce If market prices are high, farmers can reap even greater profits In contrast, while CRP participation provides an income floor it also imposes an income ceiling because rental payments are constant over the duration of the contract Moreover, farmers face significant penalties if they wish to terminate prematurely CRP contracts to resume crop production Consequently, as we have defined these variables, *ceteris paribus*, the farmer would prefer a $1 increase in CNR to a $1 increase in PNR This suggests that in the face of increasing returns to crop production, the Government has to increase CRP bid levels even faster to get more acres into the CRP under existing eligibility conditions

Another policy-relevant elasticity is the elasticity with respect to erosion Interpretation of the elasticity shows that a 1-percent increase in the average erosion rate results in a 0 39-percent increase in the number of acres enrolled as a percent of total eligible acres Unlike rental payments, policymakers cannot vary erosion rates However, program eligibility criteria can be altered to target more or less erodible cropland The elasticity of erosion suggests that if policymakers enlarge the number of CRP-eligible acres by admitting new acres that are less erosive, they should expect lower rates of participation from the additional acres

Conclusions

An important policy conclusion stemming from the results of the model is that farmers are more responsive to changes in returns from crop production than to changes in returns from CRP participation To keep pace with increasing returns to crop production, the Government has to increase CRP bid levels even faster if more acres are to be brought into the CRP under existing eligibility conditions

Some groups, including the U S General Accounting Office, have noted that the benefits of the CRP could have been improved by using different eligibility criteria or by employing different implementation strategies However, many regard the CRP as an effective policy instrument for achieving environmental benefits from the retirement of targeted acreage The CRP will likely be used as a policy model for additional environmental legislation Legislative bills have been proposed that would increase actual land devoted to the CRP from 40-45 million acres to 60 million acres through 1992 and would create a wetlands reserve program modeled after the CRP The national model developed and estimated here could be useful in assessing the relative significance of the factors that would affect additional CRP participation, as well as the design and implementation of future cropland retirement programs similar to the CRP

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