

The Allocation of Conservation Reserve Program Acreage: A Political Economy Perspective

Keri L. Perez*

November 17, 2008

Abstract

The United States Department of Agriculture's Conservation Reserve Program (CRP) is the largest federally-funded private-land conservation program. In this program, landowners retire environmentally sensitive agricultural land for 10 to 15 years to a conservation cover and, in exchange, receive annual rental payments and incentives for maintaining the conservation practice on the parcel. During the 2006 program year, landowners enrolled in the program received approximately \$1.8 billion in rental payments for idling 36.7 million cropland acres (USDA 2007a). The program uses an Environmental Benefits Index (EBI) to rank offers of enrollment based on the offers' provisions of environmental benefits and cost. There is evidence in the literature that land enrolled in the CRP may not achieve environmental benefits at the lowest cost and that perhaps other targeting schemes could reduce program outlays and increase environmental benefits (Babcock et al. 1996, 1997; Reichelderfer and Boggess 1988). It is plausible that we observe "sub-optimal" enrollment in the program for the very reasons other federal subsidy and direct payment programs exhibit distributional effects associated with political factors: politics matters. The primary objective of this paper is to utilize information about the cross-sectional allocation of CRP enrollments over time and the underlying political environment in which allocation decisions were made to make inferences about the effect of political factors and political influence on the distribution of program benefits. To estimate the effect of political representation on CRP enrollments, a panel estimation method is applied to a state-level panel of CRP enrollments for the first 28 CRP signups which occurred between 1986 and 2004. Preliminary results suggest that political representation on Congressional committees with jurisdiction over the program may affect the allocation of CRP acres to a state and that the effect is different for the general and continuous signups.

* The author is a Ph.D. Candidate in the Economics Graduate Program at North Carolina State University. Correspondence: Box 8110, Economics Graduate Program, NCSU, Raleigh, NC 27695; email: keri_perez@ncsu.edu

I. Introduction

The Conservation Reserve Program (CRP) – overseen and administered by the United States Department of Agriculture (USDA) – is a voluntary conservation program in which landowners retire environmentally sensitive agricultural land for 10 to 15 years to a managed conservation coverage. In exchange landowners receive annual rental payments, maintenance payments and, in some cases, incentive payments for maintaining the conservation practice on the parcel. During the 2006 program year, landowners enrolled in the program received approximately \$1.8 billion in rental payments for idling 36.7 million cropland acres (USDA 2007a). The CRP is a complex piece of the United States' overall agricultural and conservation policy package and has important implications for agricultural production, agricultural markets and the environment.¹

The program's size and scope has made it a compelling topic for investigation. A relatively active strand of the CRP-related literature focuses on the program's targeting schemes and enrollment mechanisms and composition (Reichelderfer and Boggess 1998; Smith 1995; Babcock et al 1996, 1997; Cattaneo et al. 2006; Kirwan, Lubowski and Roberts 2005).² While the literature seems united in the view that the CRP does not employ an optimal or efficient targeting and enrollment strategy resulting in environmental benefits being achieved at a higher cost than under other targeting schemes, there has been little empirical work that offers an explanation for why the program enrolls the land it does. If

¹ For a portfolio of references and summaries citing the implications of the CRP on the environment, rural economies, farm structures, wildlife populations and other outcomes, see Amber Waves, July 2006 (USDA). See also Goodwin and Smith (2003), Roberts and Lubowski (2007), and Shoemaker (1989).

² The determinants of CRP participation, CRP in a land-use decision framework and the program's bidding structure are also highly active research areas (Parks and Schorr 1997, Konyar and Osborn 1990, Isik and Yang 2004, Vukina et al. 2008, Plantinga, Lubowski and Stavins 2002, Capozza and Li 1994, and Fleming 2004).

enrollment is not, by some general environmental or cost minimizing measure, optimal, then to what forces can we attribute the program's observed enrollment?

The CRP is a federal agricultural program that allocates funds to landowners on a perpetual basis, guided by statutes and rules borne of congressional legislation and administered in a political environment. It is plausible that we observe "sub-optimal" enrollment in the program for the very reasons other federal subsidy and direct payment programs exhibit distributional effects associated with political factors: politics matters. To the extent there exists a functioning political market for influence over things such as agricultural subsidies and program benefits, it is reasonable to consider that perhaps the CRP, too, is so influenced. With that in mind, the primary objective of this paper is to utilize information about the cross-sectional allocation of CRP enrollments over time and the underlying political environment in which allocation decisions were made to make inferences about the effect of political factors and political influence on the distribution of program benefits.

In order to explore the primary objective of this paper and to motivate a political economy explanation of the CRP, the following sections present an institutional background of the CRP, introduce the enrollment mechanism and targeting tools utilized and identify the avenues by which the program may be susceptible to political influence. The theoretical foundation for considering the CRP within a political economy framework is then discussed, followed by a description of the data used and empirical conclusions.

II. Institutional Basics of the CRP

The CRP has statutory authority in Title 12 of the 1985 Food Security Act and has been reauthorized and amended through the conservation title of each subsequent farm bill. Its authorization and enrollment is gauged in terms of acres enrolled, not budgetary limitations on total program

payments or outlays. Since 1990, enrollment in the CRP has been maintained between 30 and 36 million acres. Despite a planned future reduction to a cap of 32 million acres as a result of the Food, Conservation and Energy Act of 2008, the program remains the largest of all the federally-funded agricultural land conservation programs.

Though it has roots in and bears similarities to the Soil Bank – a precursor to the CRP that aimed to provide farm income support by controlling commodity supplies through land retirement – the reserve program is arguably more conservation oriented, providing incentives and annual rental payments to landowners for contractually retiring environmentally sensitive land from production for 10 to 15 years. The program’s “green” trend is evident in its changing objectives. In the 1980s the program took a rather narrow conservation focus of reducing soil erosion and, to that end, enrolled lands based on their ability to do so. In the 1990s the program’s focus shifted to include the improvement and protection of water quality and soil productivity, reduced wind erosion, and creation of wildlife habitat. Today the program has multiple initiatives aimed at providing benefits related to specific national, regional and local environmental concerns.³ Reducing soil erosion remains an important objective due to its future implications for water quality and soil productivity.

Enrollment in the CRP occurs via distinct enrollment periods, called “signups,” administered in large-part by the Farm Service Agency (FSA) branch of the USDA. Signups are of two types: general and continuous. The general signup is the type most commonly investigated in the economics literature, likely due to its relative size and enrollment process. The continuous signup is less acknowledged in the CRP-related literature but, given the research objectives of this paper, is an important facet of the

³ Current initiatives includes the bobwhite quail and upland bird habitat buffers, bottomland hardwood trees, non-flood plain and playa lakes wetlands, flood plain wetland restoration, prairie pothole duck nesting habitat, longleaf pine ecosystems and other state wildlife enhancement initiatives.

program because it stands in contrast to the general signup in terms of political incentives and potential redistributive characteristics. There have been over 30 signups since 1986. Table 1 provides the signup periods from 1986 through 2004 as well as the aggregate enrollment and payment data for each. Tables 2 and 3 provide contract, acreage and payment details on snapshots of current contracts by fiscal year and as the composition of new enrollments in a fiscal year. General signup enrollments account for a larger portion of total program enrollments but continuous signup enrollments have been utilized with greater frequency in recent years. Both signup types and their unique characteristics in terms of susceptibility to political influence are considered.

A. *The General Signup*

The standard scenario is one where a landowner submits an offer to idle cropland with the FSA/USDA under the general signup.⁴ General-signup contract terms are typically 10 years with extensions periodically allowed up to 15 years. Parcels are eligible for enrollment if they have a history of being cropped, are physically and legally capable of production and meet erodibility and capability classifications.⁵ If the landowner's offer is accepted by the USDA, s/he will receive annual rental payments over the life of the contract and, in some cases, maintenance payments for maintaining the cover and a one-time cost-share assistance payment to

⁴ There is an important distinction between the owner of the land and the operator of the land in many empirical agricultural applications; certainly this applies to the CRP as well. Some agents are owner-operators while others are one or the other. For purposes of this analysis, the contracting agent who wishes to idle land in the CRP will be referred to as the "landowner", regardless of whether s/he is an owner, operator, or owner-operator. This designation does not alter the results presented here.

⁵ Erodiability and capability classifications are determined by the Natural Resource Conservation Service (NRCS). Generally speaking, land enrolled under the general signup in recent years is required to have an erodibility index greater than 8.0 or be otherwise classified as highly erodible land (HEL).

offset a portion of the costs of converting the land to the approved conservation cover, such as native grasses, hardwoods, wildlife-enhancing covers, etc.⁶ Some conservation practices also provide for annual maintenance payments to offset the costs of maintaining the land in the cover. The conservation cover chosen is one of the biggest factors in determining whether an offer will be accepted. The amount paid on the contract is the rental rate: a per-acre annual rental payment to the landowner for retiring the land and maintaining the conservation practice(s) on it for the duration of the contract period. Both the rental rate and the conservation-type contractual obligations are determined during the offering period prior to enrollment.

The general signup utilizes a competitive enrollment scheme and, especially since Signup 15, has typically not resulted in all offers being accepted for enrollment. Each offer is evaluated on land characteristics and specific conservation and environmental factors identified by program administrators to help meet the objectives of the CRP.⁷ In early CRP signups, reduced soil erosion was the sole conservation objective and administrators based enrollment decision on simply identifying a parcel as being at or above “land capability classification,” an index used to determine erosion hazard (Helms 1992).⁸ Further, until 1995, information on how the offers were to be ranked and weighted was not available to landowners during the offer period and the

⁶ The type of cover established is commonly referred to as a “conservation practice.” For a complete list of currently used conservation practices and their payment provisions, refer to “Conservation Reserve Program: Summary and Enrollment Statistics, FY 2007” (USDA 2008).

⁷ Cattaneo et al. (2006) provides a nice overview of U.S. conservation programs and, specifically, identifies the mechanisms multi-objective conservation programs use to balance the program’s objectives.

⁸ Precisely how to classify lands for the purpose of writing legislation and administering programs such as the CRP remains an issue even today; however, once a classification is established, targeting and quantifying parcel factors for the purpose of determining eligibility and weighting program objectives is straightforward.

landowners' rental rate offers were not capped by pre-determined rates set by the NRCS, as they are today. Since the 15th signup in 1997, an Environmental Benefits Index (EBI) has been used to weight a parcel's characteristics and potential environmental benefits while accounting for the cost of achieving such benefits.⁹ Using the EBI ranking scheme, each general signup offer is evaluated on size factors (N1-N6). The first non-cost factors (N1-N5) used in the most recent version of the EBI are measures of wildlife and water quality benefits, erodibility, potential enduring benefits and air quality benefits from carbon sequestration and reduced wind erosion. These factors and how they are scored in the EBI depend on soil type, land characteristics, and the application of conservation covers and special farming practices on the offered land.¹⁰ The sixth factor (N6) upon which every offer is evaluated is the per-acre annual rental rate at which the landowner offers to enroll land. Each component factor is scored and the combined factor score is the offer's EBI. The index provides program administrators with a cost-adjusted measure of environmental benefits for the proposed conservation practice(s) on the parcel. Upon

⁹ A version of the EBI used in recent general signups was first used in Signup 10; however, relatively few offers for enrollment were received and the EBI was effectively non-binding on the acceptance decision of program administrators. An EBI was used in Signup 11, Signup 12 and Signup 13 also but its components, weights and scoring rules were not publicly available to landowners.

¹⁰ Not everyone agrees that the CRP is targeting the "right" environmental factors; environmental benefits can mean very different things to different agents. However, the efficiency and effectiveness of the program is only discernable in terms of its stated objective and targeting tools. The EBI has been revised in both its components (N-factors) and relative weights assigned to them. In general signup 15, 16, 18 and 20 there was a seventh ranking factor for which points were given to offers whose land was located in a National or State-designated Conservation Priority Area (CPA). Beginning with general signup 26, land located in a CPA receives point-multipliers for portions of the N1-N5 ranking-factor scores; the separate CPA N-factor was dropped.

receiving and scoring all offers during a signup, the USDA determines the cut-off EBI score for the national pool of offers at or above the cut-off EBI are accepted for enrollment; those below are rejected.¹¹ Accepted contracts are not re-negotiated after acceptance and the rate offered by the landowner is the annual per-acre rental rate s/he will receive, much like a simple auction. The national average nominal per-acre rental rate for general signup contracts from 1986 through 2004, not including maintenance and cost-share payments, was approximately \$58 per acre.

The EBI takes into account things believed to influence the environmental benefits and costs associated with removing agricultural land from production. Landowners have no control over portions of their EBI factor scores such as location, parcel slope and soil characteristics. Other factors and scores, such as the cover practice, the way a landowner subdivides a field and the offered rental rate, have a significant effect on an offer's score and ranking. In preparing an offer that maximizes the return to enrollment, a landowner will often meet with a local FSA representative for assistance in determining which and how many acres to enroll, the proposed cover practice and the per-acre annual rental rate to offer. The scoring of the first five EBI factors (N1-N5) are known by the landowner when an offer is made; however, landowners do not know how their offered rental rate will be scored because that determination is made after all offers are received. The only information landowners know about how their offered rate translates to a score is that the lower the rate offered, the greater will be their N6 component

¹¹ The CRP is mandated by total enrolled acreage and not spending limits, per se. However, there are implied budget constraints as well as some formulation of expectations about future enrollments that affects the Secretary of Agriculture's decision regarding the cut-off EBI score. The enrollment cap established by the Farm Security and Rural Investment Act of 2002 was 39.2 million acres. The Food, Conservation and Energy Act of 2008 reauthorized CRP but reduced its maximum enrollment to 32 million acres over the next 4 years.

score and the more likely it is that their offer will be accepted. Though the factor components by which land is ranked for enrollment have changed in composition and weighting, this offer scheme is why the general signup is considered to be competitive.

The way in which the rental rate on an offer translates to a score is jointly determined by the soil characteristics of the parcel, whether cost-share assistance is requested and a transformation equation applied globally to all offers. Each parcel of agricultural land, and therefore each offer, has an associated maximum rental rate (MRR). The MRR is a weighted average of the soil rental rates associated with the parcel's three predominant soil types, which underscores the importance of the landowner's decision when subdividing a field for his enrollment offer. Soil rental rates are set by the NRCS and represent county-specific average dry-land cash rental rates based on the productivity of the soil in its best agricultural use.¹² The lower a landowner's offer rate relative to the parcel's MRR, the higher will be his N6 cost factor score in the EBI. In General Signup 33, a landowner would receive one cost-factor point for every whole dollar the offered rental rate was below the MRR to a maximum of 15 points and 10 additional points for not requesting a cost-share assistance payment.

Since Signup 15, the cost transformation has been $A * (1 - (\text{offered rental rate} / B))$, where A is the maximum points available for the cost factor (N6) and B is the maximum bid allowed. The program's administrators determine A and B after all enrollment offers are received; the offered rental rate is in the landowner's control. It is worth noting that B , the maximum bid

¹² The state and county NRCS agents and committees adjust soil rental rates over time and are responsible for maintaining the soil rental rates such that the rental rate for same soil type does not differ drastically from one county to the next; yet, the rates are set such that they reflect the current local agricultural economy. Soil rental rates for the purpose of the CRP are not intended to reflect non-agricultural land-use values.

allowed, is not the same as the MRR for the parcel being offered, but is an ad-hoc determination of the largest per-acre rental rate that will be considered for all offers, regardless of location, soil quality or environmental concerns and benefits. The cost component of the EBI penalizes offers of agricultural land with higher rental rates.

B. *The Continuous Signup*

An alternative to the general signup, the continuous signup was introduced in 1996. Like the general signup, continuous signup enrollments take place when a landowner offers to idle agricultural land at a specified rental rate and establish an approved conservation cover on the land. Continuous signup commitments are for 10 to 15 years, annual rental payments are made over the life of the contract and cost-share assistance is available for establishing an approved conservation cover. The continuous signup differs from the general signup in important ways: 1) the land enrolled is not required to meet the same erodibility classifications as in the general signup; 2) only a subset of the conservation practices are eligible as continuous-signup covers; 3) enrollment is guaranteed given that the eligibility and conservation criteria are met; 4) landowners receive the MRR for the parcel and do not have to offer a lower rental rate to improve their chances of being enrolled (non-competitive enrollment); and 5) there are often additional incentive payments available for establishing continuous-signup-type covers which can add significantly to the rent received by the landowner.

The first continuous signup occurred in 1996 – Signup 14 – and there have been ongoing continuous signups since then. Tables 1 through 3 provide continuous signup enrollment and payment data. The nominal national average annual rental rate paid on continuous enrollment contracts between 1986 and 2004 was approximately \$100 per acre. Practically speaking, the

continuous signup is a way for landowners to enroll partial-field buffer practices – riparian buffers, filter strips, living snow fences, contour grass strips and windbreaks – while still producing on the remainder of the field. Unlike the general signup in which entire fields can be retired to one or more conservation practices, the eligible practices in the continuous signup are not generally compatible with whole-field enrollments. In this way, the continuous signup is often regarded as a working-land conservation program while the general signup is analogous to conservation via land retirement.

C. *The Conservation Reserve Enhancement Program*

In 1997 the Conservation Reserve Enhancement Program (CREP) was authorized to address locally and nationally significant agriculture-related conservation issues – such as the impacts to water supplies, loss of habitat for threatened and endangered wildlife species, soil erosion and impacts to fish habitats and populations – through cooperative agreements between federal, tribal, local and state entities. The program is administered by the FSA as a continuous signup program under the umbrella of the CRP. The program is funded in part from CRP funds that pay a portion of the annual rental payments while the partnered state, tribal government or non-government entity provides resources for the balance of the rental payments as well as any cost-share and technical assistance. There are currently 37 CREP agreements in 31 states. On average, CREP enrollments are paid over \$120 per acre, significantly higher than payments for continuous (non-CREP) and general signup acreage (USDA 2007b). The higher per-acre rent explains why in 2006, CREP contracts accounted for approximately 2.4% of the total CRP

acreage but 5.6% of total annual CRP rental payments, not including other monetary incentives.¹³

III. Political Economy and the CRP

The process by which offers for enrollment of land into the CRP are made, scored and ultimately contracted upon is well documented and does not appear to leave room for political manipulation. However, changes to the program's rules and statutes, which affect how offers are ranked and enrollments allocated, do not occur in a vacuum. The question is whether such program changes – the changes that induce spatial shifts in offers and enrollment – are the result of political influence. This section begins with a brief overview of the public choice literature, identifies the characteristics and administrative details of the CRP that perhaps make it susceptible to political influence and then outlines the potential channels of political influence by which the program may be affected.

A. Public Choice Theory and Application

The seminal papers on the theory of the relationship among political interest, political influence legislation and economy policy are by Stigler (1971), Peltzman (1976) and Becker (1983). While each author's contributions are unique, their theories are similar along certain lines. All reject to a degree the idea that voter preferences translate directly to political activity. Stigler (1971) and Peltzman (1976) both recognize that there exists a political market in regulation and legislation in which interested groups compete for political favor and wealth transfer. Becker (1983) posits that success in the market for political influence and favors

¹³ Continuous and CREP enrollment are sometimes eligible for signing incentive payments and practice incentive payments not available to general signup enrollments.

depends on the effectiveness of interest groups in increasing their relative efficiency, reducing free-riding (decreasing marginal deadweight costs) and achieving an optimal size. All three recognize a diminishing return to group size in politics. The group size argument says that if the group bearing the tax is relatively large, so that each member of the group bears a small portion of the tax and therefore has little incentive to become informed, the group benefiting from the wealth transfer is more efficient in gaining the subsidy and warding off alliances that fight it. Becker recognizes that agricultural pressure groups have been successful in influencing farm subsidy programs because the group being subsidized (farmers) is small relative to the group of taxpayers bearing the cost of the subsidy.

Empirical applications of public choice theory, while diverse in how they account for and model political influence, face a common obstacle: how to clearly represent the role and direction of political influence when there exists a complex and innumerable set of inter- and intra-relationships between interest groups, legislators and congressional functionaries. Stratmann (1998) applies the theories of regulation to the issue of whether political action committee (PAC) contributions are used to influence political elections or voting behavior. Matching PAC contributions data during election and off-election years with important legislative events concerning two farm bills, he finds a significant relationship between voting events and the timing of political contributions.¹⁴ Gibbs, Gokcekus and Tower (2002) studied Congressional Record entries regarding legislation related to the Steel Import Quota Bill of 1999.

¹⁴ Stratmann contends that farm bills and farm legislation in general are targets for influence and appropriate applications of public choice theory because the legislation has narrow focus, benefits are concentrated and costs are highly dispersed among the taxed. He posits that it is not complicated with issues of public goods and competition from many interest groups.

They observe that the number of lines in the Congressional Record that legislators devoted to supporting the bill was an increasing function of political contributions from interest groups representing the steel industry and unions. In the absence of observed voting behavior, Cropper et al. (1992) used a similar strategy of gauging comments by proponents and opponents during the regulatory process for pesticides. They find that intervention in the regulatory process by interest groups influences the likelihood and structure of regulation, supporting the idea of a market for political influence. They, too, find that larger groups are more influential.

Public choice theory has been applied to agricultural subsidy programs in several contexts. Gardner (1987) examined historical variations in the commodity price protection afforded producers by farm price-support programs and found that redistributive efforts attempt to minimize the deadweight losses associated with commodity price subsidies. The factors of successful influence recognized by Peltzman (1976) and Becker (1983) – interest group size, costs of organizing and minimizing deadweight losses – were found to be important. Gokcekus and Fishler (2008) analyzed hearings for the Farm Security and Rural Investment Act of 2002 and developed a Cotton Influence Index to measure the impact on cotton legislation from the actions and participations of Congressional representatives. They found a significant and positive relationship between political action committee campaign contributions and the influence demonstrated by representatives in advancing the interest of cotton growers. Muth et al. (2003) inventoried the history of the honey subsidy program and reconciled exogenous shocks in the honey market to political responses. Garrett, Marsh and Marshall (2006) analyzed the United States' agricultural disaster relief programs for evidence of political influence. They found that membership on the House and Senate Agricultural Committee's subcommittees with oversight of the programs resulted in significantly higher levels of disaster relief to a

representative's state. Similarly, Law, Tonon and Miller (2008) found statistically significant and positive effects of committee membership on the share of USDA earmarked research funds allocated to a state or institution.

B. *The CRP as a Political Tool*

The primary objective of this paper is to determine whether there is evidence that political factors affect the distribution of CRP program benefits. There are reasons to suspect that political influence may affect the program and that this influence has changed over time.

Given how agricultural land is enrolled in the CRP, one might argue that program participation represents the most “bang for the buck” in terms of improving the targeted environmental factors. In this view, the Environmental Benefits Index is designed to allow program administrators to enroll offers that represent the highest environmental benefit per conservation dollar. However, there is a literature on the efficiency of the CRP that challenges that view. Babcock et al. (1996, 1997) posited that the targeting tools used by the CRP result in environmental benefits obtained at a cost higher than required under other targeting schemes. Reichelderfer and Boggess (1988) suggested that though the CRP's state objectives include improved soil, water and enduring benefits, performance in these areas could be improved even at a reduced cost. Smith (1995) characterized a least-cost CRP in terms of the relationship between marginal land rents and acres farmed and found that the current “offer system” for enrollment may not be optimal and, further, may result in higher payments to landowners than necessary.¹⁵ It is conceivable that we observe “sub-optimal” performance from enrollments

¹⁵ Smith's research was based on Signups 1 through 9 in which an EBI was not used to rank offers. The “offer system” to which the author refers is no longer used but his point is valid even with the current ranking system.

because the enrollment and administrative mechanisms are devised and revised with political forces at play. To understand how the CRP could be influenced by a political market it is helpful to consider its components separately.

1. *Offered rental rates and MRRs*

The rental rate offered by a landowner in a competitive general signup is converted to the N6 factor score of the EBI; the conversion from rental rate to cost score is at the discretion of the USDA and is not determined until all enrollment offers are received. The lower is the offered rental rate compared to the MRR, the more likely it is that the offer will be accepted because additional points are awarded for each whole-dollar increment the offered rate is below the MRR. The conversion formula, which does not incorporate the MRR but instead an ad-hoc “maximum bid allowed,” in a linear transformation of the offered rental rate, the total points for the cost factor and the maximum allowed rate. This transformation allows the CRP’s administrators to adjust the spread or concentration of the acres enrolled in a given general signup by manipulating *A* and *B*. For example, *B* had been set to a value of 165 for general signups 15, 16, 18 and 20 but was increased to 185 for signups 26 and 29 and then increased to 204 for signup 33. By increasing the maximum allowed rental rate, administrators can bring into the potential offer pool agricultural land with higher rental rates, increasing the dispersion of the acres enrolled. Similarly, by changing the value of *A*, administrators change the weight given to the cost component in the EBI. The more weight assigned to the cost component, the less likely it is that high-rent agricultural land will be enrolled. Since Signup 15, the weight given to the cost component has decreased from about 33%

to 27% of total EBI points while the maximum allowed rent has increased, both of which implicitly bring into the program agricultural land with higher rental rates.

2. *Non-cost EBI component factors and weights*

The individual components of the EBI each have a total number of points possible in the scoring mechanism, providing relative weights to each in the total EBI score. The weights, and indeed the factors themselves, change over time. Given that the program is administered by ranking all offers nationally using the same weighting scheme, changing the weighting scheme will change the composition of lands enrolled because land is not homogenous and because the costs of installing conservation practices and the benefits associated with those practices vary spatially.

Consider a simple example. Suppose there are two landowners from different production/resource regions – Farmer A and Farmer B – that each faces the decision of how many acres to devote to a particular conservation practice (e.g., native grass) on land being offered into the CRP. Both landowners are subject to the same scoring rules and know that the installation of native grass is weighted such that its installation accounts for 1/10th of the total non-cost EBI points. Due to location, Farmer A installs a grass native to his region at a cost of \$x per acre while Farmer B faces a production cost for a grass native to his region at \$y per acre, where $\$x < \y . If, because of a CRP rule change, the weight applied to the installation of native grass increases relative to other conservation cover choices, then Farmer A would install a larger portion of his parcel to native grass than Farmer B and receive more points in the factor component. In this scenario, Farmer A's likelihood of being enrolled in the program increases relative to Farmer B as a result of changes to the program.

Generally and simply put, landowners with a relative advantage in producing particular conservation covers will benefit from rule changes that increase the weight placed on those covers in the EBI. Other landowners will face a lower probability of acceptance, all else equal. All else is not equal, of course, but the point is an important one and shows how it may be possible to favor certain land types or agricultural regions and, essentially, influence the distribution of CRP acres and payment via the scoring mechanism.

3. *Continuous Signup*

Continuous signups are often restricted in the conservation practices eligible for enrollment compared to the general signup and offer greater financial incentives than in a general signup. These enrollments do not compete on the basis of EBI and enrolled acres receive the parcel's MRR, given that they meet eligibility and conservation-cover requirements. Additionally, some practices are eligible for signing incentives and practice-incentives of up to 20% of the annual rental rate. Continuous signup practices are, by design, generally installed in the marginal areas of the field while production continues on the remainder. This happens with greatest frequency in the Heartland and Northern Great Plains resource regions where soil rental rates are some of the highest nationally due to the high productivity of the land. Evidence exists of an observed shift in the location of CRP enrollments within regions and this shift has been anecdotally attributed to the introduction and increased utilization of the continuous signup (Bucholtz

2004).¹⁶ Because of its financial incentives, the continuous signup seems a likely channel for political influences that seek to distribute CRP rents.

4. *National and State Conservation Priority Areas*

There are designated National and State Conservation Priority Areas (CPAs) to address specific water and resource concerns and agricultural land in these areas can receive additional points in the EBI factors.¹⁷ States are responsible for identifying and designating State CPAs and they are recognized and given weight in the EBI. There are five National CPAs for which offers to retire agricultural land in them can receive a higher EBI score: the Chesapeake Bay Region, the Great Lakes Region, the Long Island Sound Region, the Prairie Pothole Region and the Longleaf Pine Region. These national priority areas cover 25 states. National CPAs are not determined by legislation but their existence and effect on the national ranking of CRP offers provides an interesting contrast to general signup enrollments in non-CPA areas. Because CPA points enhance or serve as multipliers of other EBI factor points, they provide a possible avenue for political influence over the distribution of program acreage enrollment.

5. *Conservation Reserve Enhancement Program*

CREP agreements result when tribal, state government and/or non-governmental entities develop conservation plans and initiatives with the federal government to address

¹⁶ On a national scale, we do not observe substantial regional shifts in the CRP enrollments; however, there is evidence of within-region shifts since inception of the continuous signup.

¹⁷ The EBI for general signups 15, 16, 18 and 20 include a separate factor for land located in a CPA. EBIs since then have been constructed such that land in these areas receives extra points for the other component factors, much like a “multiplier” effect.

a specific and locally relevant conservation or environmental concern. A CREP designation requires that a state formalizes a conservation plan and submits the plan to a regulatory review process involving the USDA and the Commodity Credit Corporation (CCC). A few states have secured funding for more than one CREP agreement while other states have none. CRP enrollment through CREP provides another possible channel for political influence.

C. Interested Groups, Channels of Influence and Political Functionaries

It is natural to think of an agricultural payments program as being redistributive and therefore a candidate for influence from both the groups receiving the benefits as well as from the taxed group bearing the cost of the tax. Public choice theory implies that special interests gain access to the legislative and regulatory bodies that oversee the CRP – the U.S. Congress and the USDA – to influence the distribution of program benefits. Further, it implies that the group that is most effective at influencing the political market will be the one whose size is optimal in terms of the incentives and costs its members face relative to the incentives and costs of the opposing group's members.

Though there are many channels for and types of influence working simultaneously – many groups with an interest in the implications and effects of the CRP – efforts at influence ultimately must be funneled through the legislative bodies in the House and Senate with jurisdiction over the program and the rule-making authorities within the USDA. Identifying the groups with an interest in CRP outcomes and understanding their access to and channels of influence on the political agents is an important step in establishing a viable political economic modeling strategy. It is noted that rights and access to the political market do not belong solely

to businesses, large organizations and federal agencies; non-profit organization and other entities with a stake in the program's implications have access to the political market as well.

1. *Interested Groups*

- a) *Landowners and Agricultural Producers*

The general and continuous signup CRP are popular conservation options for landowners and we generally think of landowners as the primary group to which program benefits accrue. As an agricultural support program, the CRP is a tool by which landowners can reduce the uncertainty associated with agricultural production on marginal land while generating a reliable, annual income from the parcel. Additionally, there's a commodity price support component to retiring marginal agricultural land from production. As an environmental program, the CRP encourages landowners to be good stewards of the land by offering incentives for agricultural practices that are believed to be environmentally sound. It also provides for the installment of land cover that will improve and provide enduring benefits to soil quality, future soil productivity, water quality and wildlife habitats. In recent years landowners have received approximately \$1.8 billion in annual payments and incentives for participating in the program.

While clearly there is a subset of all landowners or agricultural producers who would support a program like CRP, there's also a group of landowners and producers whose direction of support for the CRP is unclear: livestock producers. To the extent that CRP participation reduces commodity supplies and increases feed prices – an input production factor for livestock – livestock producers would be opposed to a program like the CRP. However, livestock production does not

preclude crop production and certainly there are CRP opportunities for livestock producers as well.

Individually, landowners generally do not have access to the political market; their interests are represented by membership-based organizations such as the Farm Bureau, various commodity-specific grower associations and livestock associations. For example, if the Farm Bureau – a large non-governmental organization that represents agricultural producers – requests on behalf of agricultural producers that a particular conservation practice or concern be addressed or designated as a priority in the program, it is likely that the Farm Bureau’s request would be considered and addressed within the rule-making process by the political functionaries.

b) Agribusiness

Agribusiness and the industries closely related to production agriculture in general is susceptible to the negative impact of CRP enrollment and may have an incentive to work to reduce the number of CRP acres in their operating region or even nationally. High levels of local enrollment in the CRP is not always well-received by businesses that support the local agricultural economy such as implement dealers and fertilizer and seed companies. Even the major agricultural processors like ADM and Cargill, whom we typically think of operating in national or global markets and not necessarily vulnerable to local economies, would potentially be opposed to high levels of CRP enrollment. Reduced local commodity supplies require the processors to originate their inputs (corn, beans)

from a larger geographic base and would face higher commodity prices and transportation costs.

c) *Environmental, Conservation and Wildlife Groups*

Groups with objectives for and interests in environmental improvements, wildlife habitat and increased conservation favor CRP enrollments due to the conservation-cover benefits it can provide. Pheasants Forever and Quail Forever are two strong supporters of CRP initiatives that increase habitat for birds, waterfowl and other wildlife; both came out in opposition to requests made to the Secretary of Agriculture in 2008 that the USDA release landowners from their CRP contracts early to allow increased corn and soybean plantings in the face of higher commodity prices.¹⁸ Ultimately, the early release from CRP contracts was not allowed. Hunting associations and landowners who lease their land to hunters also favor the CRP conservation practices that increase wildlife habitat and improve wildlife populations. In the last five years there have been a number of CRP initiatives aimed at wildlife habitat and population health.

2. *Political Channels and Functionaries*

a) *Congressional Committees and Subcommittees*

Congressional authority over the statutes governing the CRP lies with House and Senate committees and subcommittees. The Environmental, Soil Conservation and Forestry Subcommittee of the Senate Agriculture Committee

¹⁸ For recent examples of Quail Forever's and Pheasants Forever's involvement in CRP legislation and their interaction with the USDA regarding CRP, see "Quail Forever Weighs in on Implementation of New Farm Bill" (July 30, 2008) at <http://www.quailforever.org/page/1/LegislativeAction.jsp> and "Pheasants Forever Opposes Early Outs to CRP" (July 1, 2008) at <http://www.pheasantsforever.org/page/1/pressReleases.jsp>.

and the Conservation, Credit and Rural Development Subcommittee of the House Agriculture Committee have non-budgetary jurisdiction over the CRP. Budgetary jurisdiction lies with the Agriculture Subcommittee in both the House and Senate Appropriations Committee.

These committees are permanent entities of Congress but a state's representation on the committees can change with each new Congress. Committee assignments are determined in a three-part process that begins with each party assembling a panel. The panel review members' committee assignment requests and makes assignment suggestions. Assignment lists for the various committees are then approved or revised by each party's caucus and, finally, there is a pro forma election of the full House and Senate (Davidson and Oleszek 1990). Representatives in both houses, as well as their parties, know that committee membership matters in terms of reelection as well as influencing legislative outcomes. Understanding the importance of committee membership to their success in Congress, representatives "campaign" within their party to be awarded membership to a committee on which they wish to serve.¹⁹ That representatives face committee-assignment incentives underscores the importance of these political agents in the market for political influence and resources.

b) Federal Government Agencies

Representatives on the committees with budgetary and statutory oversight of the CRP have the ability to shape the program's administration and direction

¹⁹ Davidson and Oleszek (1990) provide a good description of how committees and subcommittee function (pages 195-204).

through legislation. Much of the fine-tuning of the CRP, however, is handled by the USDA and its agencies and service branches, the Farm Service Agency (FSA) and Natural Resource Conservation Service (NRCS). While agency and service branch personnel are not political representatives, they often work closely with the Representatives and Senators and their congressional staffers (who are, in practice, often credited as the writers of legislation).

The USDA first and foremost represents the Office of the President and follows its directives accordingly. However, especially for rule or program changes that do not carry the interest of the Office, there is room for influence from other political functionaries: Representatives and Senators with constituent or election concerns, interest groups and lobbying efforts and so forth. To illustrate, suppose the Conservation, Credit and Rural Development Subcommittee of the House Agriculture Committee was considering changing the language of the statutes governing the CRP in the conservation subtitle of the farm bill to include a change to the eligibility requirements for enrolling in the general signup CRP. The proposed new language or amendment would be drafted by the congressional staffers and, before being sent to the House Agriculture Committee for approval, would almost certainly be presented to the program's administrators at the USDA for their input. The reason for this type of exchange between congressional and regulatory bodies is to ensure, in this example, that the USDA would interpret the language in a manner consistent with the committee's intentions of the language. This is just one example of the types of exchange that might take place between political agents and the regulatory

agencies. It underscores the point that though the program administrator's in the USDA are not elected officials with the same subjectivity to political influence, they are involved as political functionaries.

IV. An Empirical Model of CRP Allocation

To understand how political factors may affect the distribution of CRP enrollment acres, state-level CRP enrollment data and political representation data are considered. A fixed-effects estimation strategy is employed to control for state effects on CRP allocations. Least-squares estimates of the effect of political representation on CRP enrollments are presented. The paper concludes with a discussion of the direction of future modeling and estimation strategies.

A. Data

1. CRP Enrollment Data

State-level CRP enrollment data for Signup 1 through Signup 28 – all general and continuous signups from 1986 through 2004 – are constructed from fiscal-year CRP contract files.²⁰ There are over 1.3 million unique contract observations from the CRP contract files from which state-level aggregate values of CRP acres enrolled are derived.

Tables 4 and 5 provide descriptive information of the contract-level observations. The

²⁰ This research utilizes contract-level CRP enrollments and payments data obtained via Interagency Agreement between the North Carolina State University and the U.S. Department of Agriculture, Farm Service Agency Economic and Policy Analysis Staff and the Commodity Credit Corporation. The availability of contract-level data is unique and will ultimately be used to aggregate enrollment and payments data to the congressional district level.

contract-level data include the number of acres enrolled, the cropland acreage associated with the parcel, the annual rental rate and payment amount, the length of the contract (years), whether it was a general or continuous signup offering and the state and county location of the landowner.²¹ The general and continuous signups differ from a landowner's perspective because of how land is enrolled and the types of conservation practices allowed. The two signup types are also likely different in terms of their susceptibility to political influence, as was discussed in the institutional details of the CRP. The distinction is carried through in the empirical model, with different political influence effects estimated for the two varieties of CRP enrollments.

2. *House and Senate Committee Membership Data*

Membership data for the committees and subcommittees with direct non-budgetary jurisdiction over the program were collected for the 99th through 108th Congress, covering 1985 through 2004. Since before 1980 the House has had 435 divided among states based on the census population at the time. Each state has two Senators. A new Congress generally commences in early January and remains for a two-year term.

Committee membership variables are constructed in binary and continuous form.

The binary variables capture whether a state was represented on the particular agriculture

²¹ Early CRP contract data captured the state and county location of only the contract landowner; however, recent enrollment data also captures the state and county physical location of the land. While there is a non-trivial incidence rate where the landowner and physical location of the parcel are not in the same county, the incidence of them being located in different states occurs in the data only one-tenth of 1% of the time for the contracts in which both location identifiers are recorded.

committee or conservation subcommittee during the signup; the continuous variables measure the proportion of a committee or subcommittee occupied by a state. For example, in the 106th Congress, California had eight Representatives on the House Agriculture Committee while Iowa had one; the committee had 50 members. Iowa, California and all other states with at least one Representative on the committee receive a value equal to 1 for the particular binary membership variable. However, the value of the continuous variable measuring the proportion of the committee represented by a given state would be $8/50 = 0.16$ for California and $1/50 = 0.02$ for Iowa. The Senate committee and subcommittee variables are constructed similarly.

To control for an effect of representation associated with tenure or seniority, a measure of the total number of years of service by committee members is constructed for the House and Senate Agriculture Committees. In the 107th Congress North Carolina had four Representatives on the House Agriculture Committee: E. Clayton, B. Etheridge, R. Hayes and M. McIntyre. These four Representatives had a combined experience in the House of Representatives of 24 years; therefore North Carolina's value for this variable is 24 for all signups that occur during the 107th Congress.

Representation on the appropriations committee and the agriculture subcommittee in either house of Congress is not included as an independent variable in the estimation. While it is true that the appropriations committee has budgetary jurisdiction over the CRP, the CRP represents a small portion of its total budgetary considerations, even if you only consider programs and agencies administered within the USDA. More important, the CRP's program rules and ranking scheme are the mechanisms by which allocation of the program is achieved, not its total budgetary authorization.

Tables 6 and 7 identify a state's membership in the House and Senate for the Agriculture Committee and conservation subcommittees. An initial concern was whether there would be sufficient variation in the representation variables over time to estimate the model. There does appear to be variability both in the states that are represented on the House Agriculture Committee in a Congress and the levels of representation over time; 10 states are not represented on this committee from 1986-2004. It is not unexpected that there is less variation in membership on the Senate committees because each state has just two Senators.

Each Congress convenes in early January; however, signups do not occur on such a predictable schedule, nor do signups correspond with Congressional elections. Some signup periods last a few weeks while others last for several months and span fiscal years and Congressional periods. The interest here is to test whether Congressional membership affects the distribution of CRP enrollments at the state level, presuming that this happens via change to the rules and statutes governing the program. CRP rules and administrative procedures governing a signup are set before the signup period begins. To match the Congressional data to the signup-level CRP data, each signup is matched with a particular Congress. More specifically, matching a Congress and signup requires that the time period in which the rules and statutes for the signup would have been set be identified, not necessarily the Congress that was active when the signup occurred. For example, the third continuous signup was Signup 19 and it took place between October 1, 1998 and September 30, 1999. The 105th Congress was in session until December 18, 1998 and the 106th Congress began in January of 1999. Even though the 106th Congress was in-session for a majority of the continuous signup, the CRP acreage data would be

matched with political representation variables from the 105th Congress because the 105th Congress was in-session when the rules and statutes for the signup were determined. With the exception of the 103th Congress in which there were no signups, each Congress had at least one signup occur. Examples of a similar matching strategy include Rucker, Thurman and Sumner (1995), Cropper et al. (1992) and Gibbs, Gokcekus and Tower (2002).

B. Incorporating State Fixed Effects

The estimation of an empirical model of CRP enrollments as a function of political representation on House and Senate committees potentially suffers from endogeneity and simultaneity. These are issues that empirical applications of political economy typically confront. CRP enrollments and representation on agricultural committees quite possibly are simultaneously determined. Public choice theory posits that utility-maximizing political agents (representatives) on a committee with jurisdiction over the CRP have incentives to influence the allocation of program benefits and subsidies. The causal direction is from representation to distributed benefits. However, the theory does not preclude the situation where representatives seek assignment to agricultural committees and conservation subcommittees when CRP is important to their state or district, implying that CRP enrollments may cause representation on these committees. Based on what we know about how and why representatives campaign for assignment to their choice committees, this is a plausible scenario and requires consideration within the estimation.

There are a number of factors that influence a state's participation in the CRP. CRP enrollments are tied closely to the level of agriculture in a state, or at least the amount of

agricultural land, because of the eligibility requirements for enrollment. Additionally, there are other characteristics of each state that contribute to its unique propensity to enroll in the CRP. Some of the sources of state-specific heterogeneity are observable and some are not. If the assumption can be made and asserted that the sources of state-level heterogeneity that influence CRP enrollment and membership on agriculture committees do not vary over time, then estimation problems resulting from this source of endogeneity can be mitigated using state fixed-effects. The CRP enrollment data and political membership data are panels; therefore, state fixed-effects can be estimated that account for the time-invariant observed and unobserved heterogeneity influencing CRP enrollments.

C. *An Empirical Model of Political Influence on State-level CRP Enrollment*

A state fixed-effects model is estimated to determine whether representation on the House and Senate committees with jurisdiction over the CRP results in different levels of CRP enrollment in the representatives' state than states without representation, or than the same state when representation is absent. Further, estimates are obtained for the difference in the effect of representation during general and continuous signups. The data are organized as a panel of 28 signup-level observations of CRP acreage enrolled for each of the 50 states. A state fixed-effects regression of CRP enrollment acres in state i during signup t takes the form:

$$y_{it} = \alpha + \sum_{k=2}^{50} \gamma_k d_{it}^k + x'_{it} \beta + Cont_t x'_{it} \theta + u_{it}, \quad i = 1, \dots, 50; t = 1, \dots, 28$$

where $y_{it} = \frac{ACRES_{it}}{\sum_{j=1}^{50} ACRES_{jt}}$

$d_{it}^k = 1$ when $i = k$; 0 otherwise (state fixed effects)

x_{it} = political representation variables

$Cont_t = 1$ for continuous signup; 0 otherwise

The signup subscript, t , is included as a reminder that the political representation variables for each state differ across signups. Each state's CRP enrollment value, y_{it} , is defined as the newly enrolled acreage allocated to the state as a proportion of the total newly enrolled CRP acreage in a signup ($Prop Acres_{it}$). A weighted measure of enrollment for the dependent variable is used because, as Table 1 shows, the number of acres enrolled in one signup is not the same as another. The political variables in x_{it} are binary indicators of membership on the House and Senate Agricultural Committee ($House Ag Mem_{it}$, $Senate Ag Mem_{it}$) and conservation-related subcommittees ($House Ag Cons Mem_{it}$, $Senate Ag Cons Mem_{it}$), variables for the House and Senate Agriculture Committees and the conservation subcommittees that measure the proportion of the committee held by a particular state ($Prop House Ag_{it}$, $Prop House Ag Cons_{it}$, $Prop Senate Ag_{it}$, $Prop Senate Ag Cons_{it}$), and a variable each for the House and Senate Agriculture Committee that is the total number of House or Senate years served by the state's member(s) on the committee ($House Yrs_{it}$, $Senate Yrs_{it}$). A continuous-signup indicator ($Cont_t$) is interacted with the political variables to differentiate between the effect of representation on general signup and continuous signup acreage allocations to a state. Finally, state dummy variables capture the time-invariant state heterogeneity factors. Table 8 provides definitions of the CRP and political variables used in the estimation.

D. Estimation Results

Table 9 reports coefficient estimates for the political representation variables in a state fixed-effects model explaining the proportion of newly enrolled CRP acres allocated to a state in

a signup; estimates of the state fixed-effects have been omitted. An LM test for heteroskedasticity based on a modified White's (1980) test is conducted for all estimations and in each case heteroskedasticity is detected.²² Therefore, heteroskedasticity-robust standard errors are constructed and reported in the estimation results.

Consider, first, Model 1, which includes only binary indicator variables for the House and Senate Agriculture Committee and conservation subcommittee memberships, an interaction term on each of the four committee membership variables indicating whether the signup was continuous and state fixed-effects. In Model 1, the coefficient estimates on the full Agriculture Committee membership variables and interaction terms in both the House and Senate are not statistically significant and the coefficient estimates on the conservation subcommittee membership variables when the continuous signup variable equals 0 (indicating the signup was general) are also not statistically significant. However, there is statistical significance at the 5% level of the membership variables in both houses for the conservation subcommittees when interacted with the continuous signup dummy variable. In the House, the coefficient on the conservation subcommittee membership variable during a continuous signup is positive while it is negative for the comparable Senate variable. For the reason given below, this coefficient

²² The modified White's (1980) test for heteroskedasticity was implemented by regressing the squared error (\widehat{u}_i^2) on a constant and the OLS fitted values of the dependent value and its square ($1, \widehat{y}_i, \widehat{y}_i^2$). This is a special case of White's test in that this test contains linear combinations of the squares and cross-products of the regressors while White's test explicitly regresses the squared error term on all the regressors, squares of the regressors, and all cross-products. The modified test was used for ease of implementation and has been shown to be valid for testing purposes (Wooldridge 2002, pages 125-128).

cannot be interpreted by itself but does suggest that perhaps there is a difference between the effects of membership on CRP enrollments in the continuous signup versus the general signup.

The interpretation of the conservation subcommittee coefficients is not straightforward in any of the estimations because membership on a conservation subcommittee requires membership on a full agriculture committee – subcommittee members are always also full committee members; they are not independent events. So the coefficient estimate on the conservation subcommittee variable interacted with the continuous signup is the joint effect of the marginal effect between a general and continuous signup when a state has representation on the Agriculture Committee and the conservation subcommittee plus the marginal effect when a state goes from having membership, during a continuous signup, on the Agriculture Committee but not the conservation subcommittee to having membership in a signup on the conservation subcommittee. To correctly interpret the coefficients and perform individual tests of significance, the variables can be re-specified (transformed) in a way that nets-out the joint marginal effects that are confounding the interpretation. That task is left for future estimations.

Model 2 is a variation of Model 1 where the binary membership variables for the conservation subcommittees in both houses are replaced with the variables that measure the proportion of the committee's membership that comes from a particular state. The thought behind a variable measuring the proportion of a committee that is occupied by a state is that perhaps there is a different effect on CRP enrollments when there are more representatives from the same state, rather than just a scalar effect from representation. The estimation results for Model 2 are not unlike Model 1 in that the coefficient estimates on the full Agriculture Committee membership variables and interaction terms in both the House and Senate are not statistically significant at the 5% level. It is interesting that while in Model 1 the coefficient

estimates on the variables related to the conservation subcommittees in both houses was not statistically significant for a general signup ($Cont_{it} = 0$), in Model 2 the coefficient on the proportion membership variable for the House conservation subcommittee is negative and statistically significant at the 5% level.

Given how the dependent variable and the proportion-of-membership variables were constructed, the coefficient on $Prop\ House\ Ag\ Cons_{it}$ is interpreted as the change (decrease) in a state's proportion of newly enrolled CRP acreage due to a proportion increase in representation on the conservation subcommittee. The coefficient estimate is -0.042, indicating that if a state's membership on the House Agriculture Committee's conservation subcommittee increased by 0.01, its proportion of newly enrolled CRP acreage would decrease by 0.00042, or 0.042 percentage points. To put this into context, consider the House conservation subcommittee had 19 members in the 106th Congress and 15 members in the 107th Congress and Minnesota had one representative on the subcommittee in the 106th Congress and two representatives in the 107th Congress. Minnesota's representation as a proportion of total representation on the subcommittee increased by $(0.13 - 0.05) = 0.08$. Putting this change in representation in the context of the coefficient estimates, the model would predict that Minnesota's share of general-signup CRP acreage would decrease 0.00336, or .336 percentage points. As in Model 1, the interpretation of the proportion-of-membership variables when interacted with the continuous signup is not straightforward. However, that these coefficient estimates are statistically significant at the 5% level and positive and in the House and negative and larger in the Senate is interesting and indicates that there may be an effect on CRP enrollment due to the level representation on these committees.

Model 3 is a variation of Model 1 that begins to address the issue of seniority and tenure and whether there is an effect on the distribution of CRP acreage as a result of tenure. The coefficient estimates on the variable that measures the number of years of service of the Representatives in the House on the Agriculture Committee are not statistically significant at the 10% level in the House. However, there does appear to be a statistically significant effect on CRP enrollments due to experience in the Senate; in this estimation that effect is positive for general signup enrollments and negative for continuous signup enrollments. The coefficient on $Senate\ Yrs_{it} * Cont$ measures the marginal effect of years of service on continuous signup enrollments from general signup enrollment. To determine whether the number of years of service in the Senate of members on the Senate Agriculture Committee affects the allocation of CRP acres, not just the difference between general and continuous signup acres, the model should be re-specified using a variables-transformation approach.

What do these estimates suggest and is there a plausible story for why we might observe lower or higher allocations of total CRP enrollment to a state as a result of political representation? The case was made earlier of the potential influence from agribusiness and other interest groups who would oppose higher levels of CRP enrollment, especially general-signup enrollment which removes whole fields from production as opposed to the continuous signup that removes only the marginal areas, leaving production on the remainder of the field. Given the parameter estimates given in Table 9, one could make the case that the interested groups opposed to CRP enrollment in a state prevail to some degree, though the effects in the House and Senate appear to be in opposite directions. There are opportunities for further modeling to obtain estimates of the specific marginal effects for the continuous signup and also the overall impacts

to CRP enrollments from representation, not just the difference between the general and continuous signups.

E. Additional Modeling Options and Future Research Direction

A fixed-effect modeling strategy was utilized to control for state-specific factors that do not vary over time while allowing for cross-sectional variation in the effect of political influence on CRP allocation to a state. The model estimates above suggest opportunities for alternative modeling options. First, the analysis above was performed at the state level. Ideally, a public choice model estimation involving political agents whose utility-maximization problem is likely functionally related to congressional-based resources should be conducted at the congressional district level. A congressional district analysis is interesting because it allows a direct correlation between the political representatives in the House and the outcomes of the program. One difficulty with a congressional-district analysis is that, nationally, districts vary in size to a great degree. Some districts are smaller than a county while some states have just one congressional district.

Another option is to forego state fixed-effects and instead use other measures of the state's agricultural characteristics that would not have significant variation over time by state but would vary in the cross-section. State-level agriculture-related measures are available using the USDA's Economic Research Service published data on agricultural productivity and farm-related employment over the period 1986-2004 and 1986-2002, respectively. These include an index of the total value of crop output in a state by year, the amount of farm production employment (farm proprietors and farm workers) relative to total state employment and the employment level in farm-related industries (input and processing industries) relative to total

state employment.²³ These variables can be substituted for the state fixed-effects in the regression presented above. *A priori* there is no expectation as to which model would perform better but a test of overall significance can be employed. The employment variables - employment in farm-related industries relative to farm production employment - may allow for estimating whether states with a higher presence of agribusiness and agriculture-related industries have relatively fewer CRP acres allocated to them than states with a higher presence of farm production.

The outcome of CRP allocation is measured in terms of acreage to a county, state or congressional district. Another way to measure the allocation of program benefits is in terms of program payments. The contract enrollment data include sufficient information for each observation to estimate a model where a measure of CRP payments is the dependent variable. In a model with CRP payments, the difference between general and continuous signup could be carried through.

Finally, the current data on CRP enrollments or CRP payments could be aggregated by Congressional periods instead of signups. There are nine Congresses for which we observe general and continuous signups.

V. Conclusion

The CRP is the nation's largest federally-funded private-land conservation program.

Landowners voluntarily retire environmentally sensitive, previously cropped agricultural land and

²³ The crop output index is normalized such that Alabama in 1996 is equal to unity. The output index data are available at <http://www.ers.usda.gov/Data/AgProductivity/#datafiles>. Farm-related employment data are available at <http://www.ers.usda.gov/Data/FarmandRelatedEmployment/>.

receive in exchange annual rental payments and incentives for establishing various conservation covers on the land. Enrollment in the program occurs via a competitive general signup and non-competitive continuous signup. An Environmental Benefits Index (EBI) is used to rank offers of enrollment in the general signup based on their provision of environmental benefits and the associated cost. Previous work regarding the CRP suggests that it has not enrolled the most environmentally sensitive agricultural land, does not accomplish its stated objectives in an effective way and that its environmental benefits could be achieved at a lower program cost. The CRP is a program whose enrollment rules and governing statutes are the result of Congressional legislation; it is plausible that the observed allocation of enrollments is the result of the redistributive effects of political influence.

Based on public-choice theory, this paper examines the CRP in a political-market context to examine whether the enrollment outcomes we observe are the result of political factors. The institutional and administrative structure of the program and its unique components are considered and the channels of influence that interested groups have in asserting influence over the political functionaries of the program are identified. The functionaries identified are the representatives on the committees and subcommittees in the House of Representatives and Senate that have non-budgetary jurisdiction over the CRP: the Agriculture Committee in both houses and the appropriate conservation subcommittees. Using a panel of state-level CRP enrollments for the first 28 signups and committee membership data (1986 – 2004), the effect on CRP enrollments in a signup due to representation on the committees with jurisdiction over the program are estimated, controlling for state-specific heterogeneity. The effects of committee membership are identified separately for the general and continuous signups because their characteristics make them susceptible to political influence in unique ways.

Preliminary results suggest that, just as with other redistributive government programs, political forces may play a role in the allocation of CRP acres. Further, there may be opposite effects on

enrollment outcomes in the general signup than the continuous signup and the effects of House committee membership and Senate committee membership are different in sign and magnitude. To more broadly identify the effect of political influence on the allocation of CRP acreage, alternative modeling strategies are offered for future consideration, including aggregating enrollments to the congressional-district level, conducting the analysis based on Congressional periods instead of signups and estimating the effect of political influence on program payments instead of program acreage.

References

- Babcock, B.A., P.G. Lakshminarayan, J. Wu, and D. Zilberman. 1997. "Targeting Tools for the Purchase of Environmental Amenities." *Land Economics* 73:325-39.
- . 1996. "The Economics of a Public Fund for Environmental Amenities: A Study of CRP Contracts." *American Journal of Agricultural Economics* 78:961-71.
- Becker, G. 1983. "A Theory of Competition Among Pressure Groups for Political Influence." *Quarterly Journal of Economics* 98: 371-400.
- Bucholtz, S. 2004. *Geographic Distribution of Acres Enrolled in the Conservation Reserve Program is Stable*. Washington DC: U.S. Department of Agriculture, Economic Research Service, Amber Waves Vol 2, November.
- Capozza, D. and Y. Li. 1994. "The Intensity and Timing of Investment: The Case of Land." *American Economic Review* 84:889-904.
- Cattaneo, A., D. Hellerstein, C. Nickerson, and C. Myers. 2006. *Balancing the Multiple Objectives of the Conservation Programs*. Washington DC: United States Department of Agriculture, Economic Research Report No. 19, May.
- Cropper, M.L., W.N. Evans, S.J. Berardi, M.M. Ducla-Soares and P.R. Portney. 1992. "The Determinants of Pesticide Regulation: A Statistical Analysis of EPA Decision Making." *Journal of Political Economy* 100:175-97.
- Davidson, R.H. and W.J. Oleszek. 1990. *Congress and Its Members*, 3rd ed. Washington, D.C.: Congressional Quarterly Inc.
- Fleming, R.A. 2004. "An Econometric Analysis of the Environmental Benefits Provided by the Conservation Reserve Program." *Journal of Agricultural and Applied Economics* 36:339-413.
- Gardner, B.L. 1987. "Causes of U.S. Farm Commodity Programs." *Journal of Political Economy* 95: 290-310.
- Garrett, T.A., L Marsh, and M.A. Marshall. 2006. "Political Allocations of U.S. Agriculture Disaster Payments in the 1990s." *International Review of Law and Economics* 26:143-61.
- Gibbs, R., O. Gokcekus and E. Tower. 2002. "Is Talk Cheap? Buying Congressional Testimony with Campaign Contributions." *Policy Reform* 5:127-31.
- Goodwin, B.K. and V.H. Smith. 2003. "An Ex Post Evaluation of the Conservation Reserve, Federal Crop Insurance, and Other Government Programs: Program Participation and Soil Erosion." *Journal of Agricultural and Resource Economics*, 28:201-216.

Helms, D. 1992. *Readings in the History of the Soil Conservation Service*. Washington, DC: Soil Conservation Service.

Isik, M. and W. Yang. 2004. "An Analysis of the Effects of Uncertainty and Irreversibility on Farmer Participation in the Conservation Reserve Program." *Journal of Agricultural and Resource Economics* 29: 242-259.

Kirwan, B., R.N. Lubowski, and M.J. Roberts. 2005. "How Cost Effective Are Land Retirement Auctions? Estimating the Difference between Payments and Willingness to Accept in the Conservation Reserve Program." *American Journal of Agricultural Economics*, 87:1239-1247.

Konyar, K. and C.T. Osborn. 1990. "A National-Level Economics Analysis of the Conservation Reserve Program Participation: A Discrete Choice Approach." *Journal of Agricultural Economic Research*, 42:5-12.

Muth, M.K., R.R. Rucker, W.N. Thurman, and C. Chuang. 2003. "The Fable of the Bees Revisited: Causes and Consequences of the U.S. Honey Program." *Journal of Law and Economics* 46:479-516.

Parks, P.J. and J.P. Schorr. 1997. "Sustaining Open Space Benefits in the Northeast: An Evaluation of the Conservation Reserve Program." *Journal of Environmental Economics and Management*, 32:85-94.

Peltzman, S. 1976. "Toward a More General Theory of Regulation." *Journal of Law and Economics* 19:211-240.

Plantinga, A.J., R. Alig, and H. Cheng. 2001. "The Supply of Land for Conservation Uses: Evidence from the Conservation Reserve Program." *Resources, Conservation and Recycling*, 31:199-215.

Reichelderfer, K. and W.G. Boggess. 1988. "Government Decision Making and Program Performance: The Case of the Conservation Reserve Program." *American Journal of Agricultural Economics* 70:1-11.

Roberts, M.J. and R.N. Lubowski. 2007. "Enduring Impacts of Land Retirement Policies: Evidence from the Conservation Reserve Program." *Land Economics* 83:516-538.

Rucker, R.R., W.N. Thurman, and D.A. Sumner. 1995. "Restricting the Market for Quota: An Analysis of Tobacco Production Rights with Corroboration from Congressional Testimony." *Journal of Political Economy* 103:142-175.

Schoemaker, R. 1989. "Agricultural Land values and Rents under the Conservation Reserve Program." *Land Economics*, 65:131-139.

Smith, R.B.W. 1995. "The Conservation Reserve Program as a Least-Cost Land Retirement Mechanism." *American Journal of Agricultural Economics* 77:93-105.

Stigler, G. 1971. "The Theory of Economic Regulation." *Bell Journal of Economics and Management Science* Spring: 3-21.

Stratmann, T. 1998. "The Market for Congressional Votes: Is Timing of Contribution Everything?" *Journal of Law and Economics* 41:85-113.

U.S. Department of Agriculture. 2007a. *Conservation Reserve Program: Summary and Enrollment Statistics, FY 2006*. Farm Service Agency, Washington DC.

U.S. Department of Agriculture. 2008. *Conservation Reserve Program: Summary and Enrollment Statistics, FY 2007*. Farm Service Agency, Washington DC.

U.S. Department of Agriculture. 2007b. *CRP Monthly Program Summary*. Farm Service Agency, Washington DC, February.

Vukina, T., X. Zheng, M. Marra, and A. Levy. 2008. "Do Farmers Value the Environment? Evidence from a Conservation Reserve Program Auction." *International Journal of Industrial Organization*, 26:1323-1332.

White, H. 1980. "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity," *Econometrica* 48:817-838.

Wooldridge, J.M. 2002. *Econometric Analysis of Cross Section and Panel Data*, Cambridge, Massachusetts: The MIT Press.

Table 1. CRP Signup Data

Signup	Type	Signup Period	Program Year	# Contracts	Acres Enrolled	Avg Acres per Contract	Annual Contract Payments ¹	Avg Rental Rate ²	Avg Per-Acre Annual Payment
1	General	3/3/1986 - 3/14/1986	1986	12,251	935,414	76.4	\$39,340,489	\$46.07	\$42.06
2	General	5/5/1986 - 5/16/1986	1986, 1987	28,822	3,610,684	125.3	\$158,612,985	\$49.80	\$43.93
3	General	8/4/1986 - 8/15/1986	1986, 1987	46,674	6,129,855	131.3	\$286,104,988	\$52.96	\$46.67
4	General	2/9/1987 - 2/27/1987	1987, 1988	122,719	12,013,063	97.9	\$615,024,414	\$57.28	\$51.20
5	General	7/20/1987 - 7/31/1987	1987, 1988	58,646	5,623,218	95.9	\$269,732,601	\$54.59	\$47.97
6	General	2/1/1988 - 2/19/1988	1988, 1989	55,102	4,067,625	73.8	\$195,715,227	\$53.92	\$48.12
7	General	7/18/1988 - 8/31/1988	1988, 1989	40,173	3,136,861	78.1	\$157,712,479	\$58.46	\$50.28
8	General	2/6/1989 - 2/24/1989	1989, 1990	39,037	3,031,795	77.7	\$156,240,992	\$60.61	\$51.53
9	General	7/17/1989 - 8/4/1989	1989, 1990	49,933	4,293,910	86.0	\$220,969,321	\$60.57	\$51.46
10	General	3/4/1991 - 3/15/1991	1991	13,090	717,852	54.8	\$38,461,980	\$59.66	\$53.58
11	General	7/8/1991 - 7/19/1991	1992	27,594	1,774,317	64.3	\$105,098,949	\$65.11	\$59.23
12	General	6/15/1992 - 6/26/1992	1993	31,810	1,729,419	54.4	\$108,283,848	\$67.69	\$62.61
13	General	9/11/1995 - 9/22/1995	1996, 1997	18,223	882,349	48.4	\$47,231,291	\$66.43	\$53.53
14	Continuous	9/3/1996 - 9/30/1997	1997, 1998	44,122	768,434	17.4	\$57,541,128	\$113.38	\$74.88
15	General	3/3/1997 - 3/28/1997	1998, 1999	245,343	25,405,816	103.6	\$992,497,000	\$45.82	\$39.07
16	General	10/14/1997 - 11/14/1997	1998, 1999	102,396	8,155,144	79.6	\$366,438,666	\$54.56	\$44.93
17	Continuous	10/1/1997 - 9/30/1998	1998, 1999	34,309	285,666	8.3	\$29,673,054	\$111.30	\$103.87
18	General	10/26/1998 - 12/11/1998	2000	76,833	6,221,589	81.0	\$282,330,732	\$54.40	\$45.38
19	Continuous	10/1/1998 - 9/30/1999	1999, 2000	39,523	332,910	8.4	\$35,856,826	\$107.19	\$107.71
20	General	1/18/2000 - 2/11/2000	2001	45,411	2,811,185	61.9	\$147,524,748	\$61.97	\$52.48
21	Continuous	10/1/1999 - 4/6/2000	2000, 2001	16,699	142,241	8.5	\$15,993,661	\$108.96	\$112.44
22	Continuous	4/6/2000 - 9/30/2000	2000, 2001	28,396	241,382	8.5	\$24,976,212	\$101.24	\$103.47
23	Continuous	10/1/2000 - 9/30/2001	2001, 2002	65,507	540,029	8.2	\$56,352,375	\$93.74	\$104.35
24	Continuous	10/1/2001 - 9/30/2002	2002, 2003	57,102	477,319	8.4	\$50,023,504	\$90.64	\$104.80
25	Continuous	10/1/2002 - 9/30/2003	2003, 2004	30,443	259,576	8.5	\$24,789,132	\$84.87	\$95.50
26	General	5/5/2003 - 6/13/2003	2004, 2005	35,211	1,683,776	47.8	\$97,199,283	\$66.36	\$57.73
27	Continuous	5/5/2003 - 9/30/2003	2003, 2004	15,008	185,707	12.4	\$15,845,605	\$88.52	\$85.33
28	Continuous	10/1/2003 - 9/30/2004	2004, 2005	19,835	156,332	7.9	\$15,059,654	\$91.79	\$96.33

1 Annual payment is the sum of annual rental and incentive payments for all active contracts. Does not include cost share and other incentives.

2 The average across all observations of the contracted, per-acre annual rental rate, including maintenance payments, if any. Does not include cost share or incentive payments .

Table 2. Newly Enrolled CRP Acres and Payments by Program Year

Fiscal Year	Number of Contracts				CRP Acreage				Avg Rental Rate ²	Annual Contract Payments ³	Avg Per-Acre Annual Payment ⁴
	General	Continuous ¹	CREP	Total	General	Continuous ¹	CREP	Total			
1986	27,111	0	0	27,111	2,521,346	0	0	2,521,346	\$47.39	108,084,903	\$42.87
1987	172,939	0	0	172,939	17,608,949	0	0	17,608,949	\$56.30	\$878,651,511	\$49.90
1988	115,162	0	0	115,162	10,894,858	0	0	10,894,858	\$54.00	\$516,468,727	\$47.40
1989	82,417	0	0	82,417	6,563,990	0	0	6,563,990	\$58.84	\$330,810,404	\$50.40
1990	55,728	0	0	55,728	5,253,281	0	0	5,253,281	\$59.65	\$265,437,951	\$50.53
1991	13,090	0	0	13,090	717,852	0	0	717,852	\$59.66	\$38,461,980	\$53.58
1992	27,594	0	0	27,594	1,774,317	0	0	1,774,317	\$65.11	\$105,098,949	\$59.23
1993	31,810	0	0	31,810	1,729,419	0	0	1,729,419	\$67.69	\$108,283,848	\$62.61
1994	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0
1996	15,044	0	0	15,044	637,830	0	0	637,830	\$68.52	\$35,657,726	\$55.90
1997	3,179	15,653	0	18,832	244,519	143,376	0	387,895	\$115.54	\$26,492,821	\$68.30
1998	273,597	46,742	330	320,339	27,355,406	774,030	3,609	28,129,435	\$56.28	\$1,149,547,286	\$40.87
1999	74,142	35,798	2,264	109,940	6,205,554	305,058	33,401	6,510,612	\$73.45	\$299,938,017	\$46.07
2000	76,833	35,997	3,374	112,830	6,221,589	330,563	63,465	6,552,151	\$74.85	\$318,691,354	\$48.64
2001	45,411	51,344	8,231	96,755	2,811,185	474,739	117,570	3,285,924	\$88.95	\$197,152,850	\$60.00
2002	0	58,545	11,654	58,545	0	598,549	199,457	598,549	\$109.81	\$62,137,063	\$103.81
2003	0	34,317	9,075	34,317	0	379,709	149,859	379,709	\$108.46	\$38,046,421	\$100.20
2004	35,211	31,652	5,968	66,863	1,683,776	383,573	91,547	2,067,349	\$84.63	\$131,669,333	\$63.69

1 Continuous signup includes CREP.

2 The average across all observations of the contracted, per-acre annual rental rate, including maintenance payments, if any. Does not include cost share or incentive payments.

3 The annual payment is the sum of annual rental and incentive payments for all active contracts. Does not include cost share and other incentives.

Table 3. Fiscal Year Snapshots of Conservation Reserve Program Acres and Payments

Fiscal Year	Number of Contracts				CRP Acreage				Avg Rental Rate ²	Annual Contract Payments ³	Avg Per-Acre Annual Payment ⁴
	General	Continuous ¹	CREP	Total	General	Continuous ¹	CREP	Total			
1986	21,434	-	-	21,434	1,927,592	-	-	1,927,592	\$47.23	\$82,855,295	\$42.98
1987	152,413	-	-	152,413	15,328,277	-	-	15,328,277	\$54.81	\$753,868,097	\$49.18
1988	241,340	-	-	241,340	23,843,311	-	-	23,843,311	\$54.39	\$1,156,860,657	\$48.52
1989	303,659	-	-	303,659	28,846,607	-	-	28,846,607	\$55.24	\$1,409,063,272	\$48.85
1990	341,444	-	-	341,444	32,488,810	-	-	32,488,810	\$55.74	\$1,593,318,639	\$49.04
1991	349,949	-	-	349,949	32,961,873	-	-	32,961,873	\$55.83	\$1,618,706,610	\$49.11
1992	364,852	-	-	364,852	33,957,436	-	-	33,957,436	\$56.19	\$1,677,764,520	\$49.41
1993	383,255	-	-	383,255	34,978,448	-	-	34,978,448	\$56.72	\$1,742,111,534	\$49.81
1994	383,276	-	-	383,276	34,979,368	-	-	34,979,368	\$56.72	\$1,742,162,334	\$49.81
1995	387,249	-	-	387,249	34,943,554	-	-	34,943,554	\$56.75	\$1,740,033,700	\$49.80
1996	392,892	-	-	392,892	34,447,017	-	-	34,447,017	\$57.12	\$1,715,140,752	\$49.79
1997	376,738	11,328	-	388,066	32,692,372	101,096	-	32,793,469	\$58.88	\$1,618,988,723	\$49.37
1998	342,412	47,504	270	389,916	29,620,653	680,181	3,173	30,300,834	\$61.03	\$1,382,326,648	\$45.62
1999	334,901	76,114	2,067	411,015	28,860,082	920,824	30,003	29,780,905	\$64.27	\$1,344,358,247	\$45.14
2000	357,207	106,376	4,896	463,583	30,176,743	1,190,431	82,129	31,367,175	\$66.99	\$1,417,090,458	\$45.18
2001	387,673	151,153	12,265	538,826	31,940,432	1,592,807	184,351	33,533,239	\$70.62	\$1,553,334,252	\$46.32
2002	385,600	204,345	22,931	589,945	31,769,352	2,124,223	360,865	33,893,575	\$74.18	\$1,598,596,751	\$47.17
2003	384,426	237,052	31,675	621,478	31,569,883	2,478,651	503,377	34,048,534	\$76.01	\$1,622,253,959	\$47.65
2004	394,044	270,043	37,766	664,087	31,789,816	2,867,626	595,433	34,657,443	\$77.29	\$1,662,766,709	\$47.98

1 Continuous signup includes CREP.

2 The average across all observations of the contracted, per-acre annual rental rate, including maintenance payments, if any. Does not include cost share or incentive payments.

3 The annual payment is the sum of annual rental and incentive payments for all active contracts. Does not include cost share and other incentives.

**Table 4. Acreage and Payment Summary Statistics for Enrolled CRP Contracts
1986 through 2004**

Variable	N	Mean	Minimum	Maximum	Std Dev
Contract year	1359316		1986	2004	
Signup	1359316		1	28	
<i>Signup Type</i>					
General	1359316	0.772	0	1	
Continuous (incl CREP)	1359316	0.228	0	1	
CREP	1359316	0.030	0	1	
<i>Acres</i>					
Cropland acres	1359316	1344.99	0.00	603090.00	4957.57
CRP acres	1359316	70.34	0.10	11815.40	133.49
General	1359316	67.85	0.00	11815.40	134.16
Continuous (incl. CREP)	1359316	2.49	0.00	1706.40	12.60
CREP	1359316	0.48	0.00	923.20	5.38
<i>Payment Variables</i>					
Ann. Rent Rate (per acre)	1359316	67.91	0.01	422.70	36.29
Ann. Rent	1359316	3391.88	0.04	472025.23	5575.82

Table 5. Distribution of Acres and Payments Data
n= 1,359,316

Variable	Acres		Payment	
	Crop Land	CRP	Rent (per acre)	Annual Rent
Min	0.0	0.1	0.01	0.04
Mean	1,344.9	70.3	67.91	3,391.88
Median	238.0	27.9	59.00	1,619.92
Max	603,090.0	11,815.4	422.7	472,025.2
Std. Dev.	4,958.0	133.5	36.29	5,576.00
<i>Percentile</i>				
100th	603,090.0	11,815.4	422.70	472,025.23
99th	19,777.0	622.2	179.00	25,636.00
95th	5,682.0	280.3	150.20	12,061.00
75th	797.3	77.0	82.85	4,034.38
50th	238.0	27.9	59.00	1,619.92
25th	82.1	8.8	40.49	609.00
5th	18.0	1.6	29.89	137.00
1st	5.5	0.5	23.71	48.30
0	0.0	0.1	0.01	0.04

Table 6. Representation by State and Congress on the House Agricultural Committee and Conservation Subcommittee*

State	FIPS	Congress										
		98th	99th	100th	101st	102nd	103rd	104th	105th	106th	107th	108th
AL	1	0/0	0/0	1/0	1/1	0/0	2/1	2/0	2/2	3/0	3/0	3/1
AK	2	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
AZ	4	0/0	0/0	0/0	0/0	0/0	0/0	1/0	0/0	0/0	0/0	0/0
AR	5	0/0	0/0	0/0	0/0	0/0	2/1	0/0	1/1	1/0	2/0	1/0
CA	6	4/0	4/1	4/0	4/0	5/0	6/2	7/4	6/5	8/1	6/3	6/1
CO	8	0/0	0/0	1/0	1/0	2/1	1/1	1/1	1/1	1/0	1/0	2/0
CT	9	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
DE	10	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
FL	12	0/0	1/0	1/0	2/0	1/0	3/1	3/0	2/0	1/0	1/1	0/0
GA	13	2/0	2/1	2/0	1/0	1/0	3/1	2/0	2/1	2/2	2/0	3/2
HI	15	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1
ID	16	1/0	1/1	1/1	1/1	1/1	0/0	2/2	1/1	2/0	1/0	0/0
IL	17	3/2	3/1	2/1	1/0	1/0	1/1	2/1	2/1	3/1	2/1	1/0
IN	18	0/0	0/0	1/1	2/1	2/1	1/1	1/1	1/1	2/1	2/0	3/0
IA	19	3/1	2/1	2/2	2/2	2/2	1/1	1/0	1/0	1/0	1/0	2/1
KS	20	2/1	2/1	2/0	2/0	2/1	2/0	1/0	1/1	1/1	1/1	1/1
KY	21	1/0	1/0	1/0	1/0	1/0	3/2	2/1	2/2	2/0	1/0	1/0
LA	22	1/0	1/0	2/0	2/1	1/1	0/0	1/0	2/2	2/0	1/0	1/0
ME	23	0/0	0/0	0/0	0/0	0/0	0/0	1/1	1/1	1/1	1/1	0/0
MD	24	0/0	0/0	0/0	1/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
MA	25	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
MI	26	0/0	1/0	1/0	1/0	1/0	1/1	1/1	2/2	2/1	1/0	1/0
MN	27	2/0	2/0	2/1	2/1	2/1	3/3	2/2	2/2	3/1	3/2	2/1
MS	28	1/0	1/1	1/0	1/1	1/1	1/1	1/0	2/1	1/1	3/0	2/0
MO	29	3/0	3/1	3/1	3/1	3/0	2/0	1/0	2/1	0/0	1/1	1/1
MT	30	1/0	1/0	1/0	1/0	1/0	1/0	0/0	0/0	0/0	1/0	1/0
NE	31	0/0	0/0	0/0	0/0	1/1	1/1	1/1	1/1	1/1	1/1	1/1
NV	32	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
NH	33	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
NJ	34	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
NM	35	1/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
NY	36	0/0	0/0	0/0	1/0	1/0	0/0	0/0	0/0	0/0	0/0	0/0
NC	37	3/0	3/1	3/0	3/0	2/0	2/1	3/1	3/1	4/2	4/1	4/2
ND	38	0/0	0/0	0/0	0/0	0/0	1/1	1/1	1/1	1/1	0/0	1/0
OH	39	0/0	0/0	0/0	0/0	1/1	1/0	1/0	1/0	1/1	1/0	1/1
OK	40	1/1	1/0	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1
OR	41	1/1	2/1	1/0	1/0	2/1	1/0	1/0	1/0	1/0	0/0	0/0
PA	42	0/0	0/0	0/0	0/0	0/0	1/1	1/1	1/1	1/1	2/1	1/1
RI	44	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SC	45	1/1	1/1	1/1	1/1	1/0	0/0	0/0	0/0	0/0	0/0	0/0
SD	46	1/1	1/1	1/1	1/0	1/1	1/1	1/1	1/0	1/1	1/1	1/1
TN	47	1/1	1/1	1/1	0/0	0/0	0/0	1/0	2/1	1/1	1/0	2/0
TX	48	2/1	3/1	3/1	4/2	4/3	4/2	3/1	2/1	2/0	2/0	2/0
UT	49	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
VT	50	1/0	1/1	1/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
VA	51	1/0	1/0	1/0	1/0	1/0	1/0	1/0	2/0	1/0	1/0	1/0
WA	53	2/0	2/1	1/1	1/1	1/0	1/1	0/0	0/0	0/0	1/0	1/0
WV	54	1/0	1/0	1/0	1/1	1/1	0/0	0/0	0/0	0/0	0/0	0/0
WI	55	1/0	1/1	1/1	1/1	1/1	1/1	1/1	1/0	0/0	1/0	0/0
WY	56	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
Totals		41 / 10	43 / 17	44 / 15	45 / 16	45 / 19	49 / 27	48 / 22	50 / 32	51 / 19	50 / 15	48 / 16

* Entries are the number of representatives on the full committee / the number of representatives on the subcommittee

Table 7. Representation by State and Congress on Senate Agriculture Committee and Conservation Subcommittee*

State	FIPS	Congress										
		98th	99th	100th	101st	102nd	103rd	104th	105th	106th	107th	108th
AL	1	1/1	1/1	1/1	1/1	1/1	1/0	1/1	0/0	0/0	0/0	0/0
AK	2	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
AZ	4	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
AR	5	1/0	1/1	1/0	1/0	1/0	1/0	1/0	0/0	1/0	2/2	1/1
CA	6	1/1	1/1	1/0	1/0	1/0	0/0	0/0	0/0	0/0	0/0	0/0
CO	8	0/0	0/0	0/0	0/0	0/0	0/0	1/1	0/0	0/0	1/1	0/0
CT	9	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
DE	10	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
FL	12	1/0	1/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
GA	13	0/0	0/0	1/1	1/1	1/1	1/0	1/1	1/1	1/1	1/0	2/0
HI	15	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
ID	16	0/0	0/0	0/0	0/0	1/1	1/1	1/1	1/1	1/1	1/1	1/1
IL	17	1/0	1/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1	1/0	1/0
IN	18	1/0	1/1	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/1
IA	19	1/1	1/1	1/0	1/0	2/0	2/1	1/1	2/1	2/1	1/0	2/0
KS	20	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/1	1/0	1/0	1/1
KY	21	1/0	1/1	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/1	1/1
LA	22	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/0	0/0	0/0	0/0
ME	23	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
MD	24	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
MA	25	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
MI	26	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1	1/0
MN	27	1/0	1/0	1/0	1/0	0/0	0/0	0/0	0/0	0/0	2/1	2/2
MS	28	1/1	1/1	1/0	1/0	1/0	1/1	1/0	1/0	1/0	1/0	1/0
MO	29	0/0	0/0	1/1	1/1	0/0	0/0	0/0	0/0	0/0	0/0	1/1
MT	30	1/1	1/1	1/0	1/1	1/0	1/0	1/0	1/1	1/1	1/1	1/0
NE	31	1/0	1/0	1/0	1/0	1/0	1/1	1/0	1/0	1/0	1/0	1/1
NV	32	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
NH	33	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
NJ	34	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
NM	35	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
NY	36	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
NC	37	1/0	1/1	1/0	1/0	1/1	1/0	1/1	1/0	1/0	1/0	1/0
ND	38	1/0	1/0	1/0	1/0	1/0	1/0	1/1	1/1	1/1	1/0	1/0
OH	39	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
OK	40	1/0	1/1	1/0	1/0	1/0	1/0	0/0	0/0	0/0	0/0	0/0
OR	41	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
PA	42	0/0	0/0	0/0	0/0	0/0	0/0	1/0	1/1	1/1	0/0	0/0
RI	44	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SC	45	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
SD	46	0/0	0/0	1/0	1/0	1/1	1/1	1/0	2/1	2/1	1/1	1/1
TN	47	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
TX	48	0/0	0/0	0/0	0/0	0/0	0/0	1/0	1/0	0/0	0/0	0/0
UT	49	1/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
VT	50	1/0	1/0	1/0	1/0	1/0	1/0	1/0	1/1	1/1	1/1	1/1
VA	51	0/0	0/0	0/0	0/0	0/0	0/0	1/1	0/0	0/0	0/0	0/0
WA	53	0/0	0/0	0/0	1/1	0/0	0/0	0/0	0/0	0/0	0/0	0/0
WV	54	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
WI	55	0/0	0/0	0/0	0/0	0/0	1/0	0/0	0/0	0/0	0/0	0/0
WY	56	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	1/1	0/0
Totals		18/6	17/10	18/3	19/5	18/5	18/5	19/8	18/9	18/9	21/11	21/11

* Entries are the number of representatives on the full committee / the number of representatives on the subcommittee

Table 8. Variable Names and Descriptions

Prop Acres _{it}	<i>state i's proportion of newly enrolled CRP acres during signup t</i>
Cont _t	<i>=1 if a continuous signup; 0 otherwise</i>
House Ag Mem _{it}	<i>=1 if state has representation on House Ag. Committee; 0 otherwise</i>
House Yrs _{it}	<i>number of years served in House by state's delegation on House Ag. Committee</i>
Prop House Ag _{it}	<i>proportion of House Ag. Comm. occupied by state</i>
House Ag Cons Mem _{it}	<i>=1 if state has representation on conservation subcommittee of House Ag. Committee; 0 otherwise</i>
Prop House Ag Cons _{it}	<i>proportion of House Ag. conservation subcommittee held by state</i>
Senate Ag Mem _{it}	<i>=1 if state has representation on Senate Ag. Committee; 0 otherwise</i>
Senate Yrs _{it}	<i>number of years served in Senate by state's delegation on Senate Ag. Committee</i>
Prop Senate Ag _{it}	<i>proportion of Senate Ag. Comm. occupied by state</i>
Senate Ag Cons Mem _{it}	<i>=1 if state has representation on conservation subcommittee of Senate Ag. Committee; 0 otherwise</i>
Prop Senate Ag Cons _{it}	<i>proportion of Senate Ag. conservation subcommittee held by state</i>

Table 9. State Fixed Effects Model Using State-Level CRP Enrollment by Signup

Dependent Var: Prop Acres
N = 1400

	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>
	R ² = 0.523	R ² = 0.531	R ² = 0.532
	F = 25.4	F = 26.3	F = 24.5
Intercept	0.016** (0.004)	0.017** (0.004)	0.013** (0.004)
<i>Political Variables</i>			
<i>House of Representatives</i>			
House Ag Mem	-0.003 (0.004)	-0.002 (0.004)	-0.004 (0.004)
House Ag Mem*Cont	-0.002 (0.005)	-0.002 (0.005)	-0.004 (0.006)
House Yrs			0.000 (0.000)
House Yrs*Cont			0.000 (0.000)
House Ag Cons Mem	-0.004 (0.003)		-0.003 (0.002)
House Ag Cons Mem*Cont	0.011** (0.005)		0.011** (0.004)
Prop House Ag Cons		-0.042** (0.012)	
Prop House Ag Cons*Cont		0.085** (0.018)	
<i>Senate</i>			
Senate Ag Mem	-0.003 (0.004)	-0.003 (0.003)	-0.009* (0.005)
Senate Ag Mem*Cont	0.011 (0.007)	0.011 (0.007)	0.022** (0.01)
Senate Yrs			0.001** (0.000)
Senate Yrs*Cont			-0.001* (0.000)
Senate Ag Cons Mem	0.007 (0.004)		0.01* (0.005)
Senate Ag Cons Mem*Cont	-0.022** (0.008)		-0.024** (0.01)
Prop Senate Ag Cons		0.074 (0.05)	
Prop Senate Ag Cons*Cont		-0.228** (0.098)	

Notes: White's heteroskedasticity-robust standard errors of marginal effects in parentheses.

Two (**) and one (*) astericks indicate significance at the 5% and 10% level, respectively.

The F-statistic is the test of joint restrictions. Coefficient estimates for the state fixed effects have been omitted.