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Abstract

This paper studies the allocation of agricultural disaster subsidies. Exploiting a regime change in agricultural disaster policy which occurred with the passage of the 2008 Farm Bill, disaster subsidy disbursement under both the 2005-2007 Crop Disaster Program and the SURE program that ran from 2008-2014 are estimated, and the effects of political factors on subsidy disbursement are compared. Results indicate that the transition from ad-hoc emergency disaster programs to a permanent agricultural disaster program did not reduce the political allocation of agricultural disaster subsidies, in contrast to results from the FEMA disaster payment literature.

Key words: Agricultural Policy, Campaign Finance, Lobbying, Rent Seeking

JEL classification: Q18,D72

Agricultural disaster programs persisted long after their replacement by as the primary risk management policy by the federal crop insurance program. For most of the history of agricultural disaster payments, disaster programs were passed on a temporary, ad-hoc basis by Congress as agricultural emergencies presented themselves. These programs are wasteful, since they are an

inferior substitute for federally subsidized crop insurance, inducing moral hazard and aiding farmers already covered by the crop insurance program. Garrett, Marsh, and Marshall (2006) find that disbursement of ad-hoc disaster payments are, in part, politically motivated based on congressional power, such as membership on key committees. The factors affecting the allocation of payments based on congressional politics should be mitigated by transitioning from ad-hoc to permanent disaster payment programs.

Following the implementation of the 2008 Farm Bill, the USDA implemented the Supplemental Revenue Assistance Program (SURE), a permanent federal program for the allocation of disaster payments, replacing the previous policy regime of ad-hoc programs. While a permanent program reduces the ability of Congress to allocate disaster payments politically, the potential for the executive to politically allocate disaster payments is increased.

The purpose of this paper is to revisit the topic of political allocation of agricultural disaster payments, answering the following three questions. First, were ad-hoc disaster payments from the early 2000's programs politically motivated in the same way as the programs from the late 1990s? Second, did the replacement of the ad-hoc disaster regime with a permanent program reduce congressional influence? Finally, did this policy change result in more executive political influence over disaster payments? To answer these questions, I draw on the both the agricultural policy and FEMA disaster payment literatures.

Over the last several decades, until the passage of the 2008 Farm Bill, agricultural disaster programs have been ad-hoc in nature. Economists find the continued existence of these programs to be inefficient, promoting moral hazard by reducing incentives to purchase crop insurance. Goodwin and Smith (1995) provide historical context, stating that starting the 1970's, disaster payments became a routine policy when widespread yield losses were experienced, amounting in essence to free catastrophic insurance. They further state that the majority of producers opted not to purchase federal crop insurance during this period, indicating an unwillingness to pay for insurance when free payments are all but guaranteed. There are also clear opportunities for Congress to control

subsidy disbursement, given the ad-hoc nature of the programs. By passing emergency legislation, the Congress maintains more control over disbursement than would be possible through a long term disaster program maintained by the executive branch.

In recent times, crop insurance has become an increasingly important component of agricultural policy. After the implementation of the 2002 Farm Bill, crop insurance became the primary farm aid policy of the US government. The government pays 63% of crop insurance premiums. Assuming that insurance premiums are actuarially fair, the farmer paid loss ratio is estimated to be 2.06 since the year 2000, according to Smith and Goodwin (2013). In other words, for every dollar farmers pay into the crop insurance program, they are paid on average $2.06 back. Today there exists a multitude of crop insurance policy types, including both yield and revenue insurance.

Given the prevalence of crop insurance subsidies, countercyclical payments, and other risk reducing farm subsidy programs, the continued existence of disaster subsidy programs for insured farmers is not only redundant, it reduces the effectiveness of other risk management programs. Several studies have found evidence of the negative effects that disaster payments and crop insurance have on farmer behavior. Goodwin and Rejesus (2008) find that farmers residing in counties that frequently receive federal disaster payments are less likely to purchase crop insurance. They also find that farmers who purchase insurance and receive disaster payments tend to have higher returns to farming, which suggests that both crop insurance payments and disaster payments constitute wealth transfers, rather than risk mitigation. Schoengold, Ding, and Headlee (2014) find that crop insurance and disaster payments have significant negative effects on conservation tillage practices, providing direct evidence of moral hazard. Smith and Goodwin (1996) find that crop insurance reduces use of agricultural chemical inputs to production. Goodwin and Vado (2007) find that both crop insurance and disaster payments increase risk in agriculture. These programs, along with subsidized crop insurance, likely affect both the input production decisions as shown here, and the decision to continue farming land particularly susceptible to production risk.

Further, there is strong evidence that disaster payments in general are partially politically mo-

tivated. As previously discussed, Garrett, Marsh, and Marshall (2006) conduct an analysis of the impact of congressional committee representation on agricultural disaster payments. Controlling for the size of the disaster using weather variables, and controlling for the endogeneity of crop insurance payments, they find that states represented by members of the House and Senate committees that control agriculture and appropriations have a statistically significant impact on the quantity of disaster subsidies received. Further, they find that the committee membership variables are not endogenous in the disaster subsidy disbursement equation. The previously mentioned paper by Schoengold, Ding, and Headlee (2014) also control for political motivations when conducting their analysis.

Political motivations for disaster payment allocation are not unique to agriculture. Garrett and Sobel (2003) study the allocation of disaster payments by the Federal Emergency Management Agency (FEMA). They find evidence that disaster payments are motivated by tiers of political factors. The first stage of receiving disaster funding is for the governor of an affected state to request a disaster declaration from the president. The authors find evidence that the disaster declaration decision is motivated by the electoral importance of the state to the president, and whether or not the disaster occurs in an election year. The second stage of the FEMA payment process is allocation of funds by congress. The authors further find evidence that states represented by members of the FEMA oversight committee receive more disaster funding, estimating that half of the the total disbursement is due to political influences rather than necessity. In 2003, FEMA was incorporated into the newly created Department of Homeland Security. According to Sobel, Coyne, and Leeson (2007), after this institutional change, the effect of congressional influence on FEMA payments disappeared, while the impacts of political factors on the president's decision to declare a disaster persist.

Husted and Nickerson (2013) conduct a similar study to Garrett and Sobel, with a much longer time series, spanning 1969 through 2005. They find, as with prior studies, that presidents up for reelection are more likely to declare a disaster, that the number of electoral votes has a significant

impact on this decision, and that the decision is more likely when a governor of the same party is running for reelection. They further find that the total disbursement increases after the political reorganization of FEMA into the Department of Homeland Security. Democrats also award more disaster aid than Republicans.

Gasper (2015) conducts an analysis of the decision of the president to deny disaster declaration requests. Unlike the prior studies, this analysis is conducted at the county level. Results echo those found in the previous studies. He finds that in non-election years, disaster severity is the primary predictor of disaster requests being granted, while political factors drive disaster requests during election years. Drivers include the competitiveness of the presidential election, and whether or not the governor is of the same party as the president.

This research adds to the literature on agricultural risk management policy by revisiting the subject of agricultural disaster payment allocation and assessing whether the change from ad-hoc to permanent agricultural disaster programs reduced political allocation of disaster payments by Congress. Further, given the parallels between the concentration of executive control of FEMA and executive control through the SURE program, this research assesses if this regime change increased presidential political allocation of agricultural disaster payments.

Section 2 explains the institutional history of agricultural disaster programs, section 3 discusses the empirical model, section 4 explains the data used in the empirical analysis, and section 5 analyzes the results. Section 6 concludes.

Institutional History of Agricultural Disaster Programs

Given the ad-hoc nature of the disaster programs, these programs vary significantly in the triggers for disbursement, the timing of the payments relative to the negative event that triggered it, and other institutional details. The following presents information on the major disaster payment programs implemented since 2001. There are significant issues with the timing of the payments relative to the timing of the events that caused them, which will be elaborated upon when

describing the data in section 4. In particular, a Government Accountability Office report states that for certain ad-hoc disaster programs, the lag between the crop loss and the program payment can be as high as four years. This analysis affirms this, as can be seen in table 1.

The 2001-2002 Crop Disaster Program was implemented by the "Agricultural Assistance Act of 2003", authorizing the Secretary of Agriculture to provide assistance to producers who suffered crop losses due to adverse weather conditions. This legislation allows producers to receive disaster payments for the 2001 and 2002 crop years. Producers must choose which of the crop years they wish to receive benefits for; they cannot receive benefits for both. Producers were eligible for benefits when the quantity lost exceeded 35% of expected production, or had a quality reduction of over 20%. This program did not require producers to have purchased crop insurance on insurable crops to qualify.

The 2003/2004/2005 Crop Disaster Program is similar to the prior program. Authorized by the "Military Construction and Emergency Hurricane Supplemental Appropriations Act of 2005", farmers qualified for benefits if they suffered a 35% quantity loss or a 20% quality loss, just as before. Furthermore, special programs specific to crop losses in Virginia, totaling $50 million, and fruit and vegetable losses in North Carolina, totaling $3 million, were also included. These payments were available both to insured farmers, farmers of insurable crops who chose not to insure, and farmers of non-insurable crops. Farmers of insurable crops who chose not to insure, or farmers of non-insurable crops who chose not to enroll in the non-insurable crop disaster assistance program were required to enroll in the applicable program for the two crop years after the application for the disaster payment. Like the prior program, producers could only receive disaster payments for one of the applicable crop years. Further, producers were only eligible for payments for the 2005 crop year if their losses were caused by hurricanes in 2004, in counties that were declared disaster areas by the president.

The 2005-2007 Crop Disaster Program was authorized by the "U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act of 2007". This program

possesses many similarities to the prior program. Producers were required to to pick which crop year they wished to receive benefits for. Eligibility required that producers had obtained crop insurance or enrolled in the Non-Insured Crop Disaster Assistance Program. Producers had to have been prevented from planting, have had a 35 percent loss of production or a 35 percent loss in value for the crop to receive payments. Only certain crops qualified for value loss disaster payments. Examples of such crops include vegetables, aquaculture, floriculture and Christmas trees.

The nature of disaster payments shifted from ad-hoc measures to permanent programs with the passage of the 2008 Farm Bill. The 2008 Farm Bill created five permanent disaster payment programs. These programs are the Livestock Forage Disaster Program, the Livestock Forage Indemnity Program, the Emergency Assistance for Livestock, Honeybees and Farm-Raised Fish Program, the Tree Assistance Program for Orchardists and Nursery Tree Growers, and the Supplemental Revenue Assistance (SURE) Program, according to Bekkerman and Watts (2011). The latter is the primary focus of this research. Due to the establishment of a permanent disaster payments program, directly controlled by the USDA and funded by standard appropriations bills. In theory, the political allocation of disaster payments by Congress should be reduced or eliminated.

Unlike prior disaster aid programs, the SURE program guarantees revenue. The SURE program has two triggers. If the Secretary of Agriculture declares a county to be a disaster county, then farmers within that county or within a contiguous county must have at least a ten percent production loss in a crop which makes up at least five percent of farm revenue to qualify for payments. In the absence of a disaster declaration in their county or a contiguous county, farmers only qualify if they suffer a production loss of at least 50%. Further, eligibility requires farmers to have at a minimum catastrophic crop insurance for insurable crops or be registered in the Non-Insured Crop Disaster Assistance Program for non-insurable crops. If crops are not eligible for either program, they are not covered by the SURE program. Since the program is revenue

based, payments require data on prices, which are not available until September or October of the year following the crop year. This means there will be a delay of at least one year between the event that triggers the payment and the payment itself. Further, a report by the Government Accountability Office states that payments for the 2008 crop year did not begin until early 2010, suggesting a lag of two years between the crop year and program year Shames (2010).

Empirical Model

This paper estimates the impact of political factors on disaster subsidy disbursement for both the 2005-2007 Crop Disaster Program and the SURE program. A simple Tobit model is used for the estimation of county level disbursement during the 2005-2007 Crop Disaster Program, since there is no way to determine or infer the crop year that the subsidy pertains to. Let α_0, α_1, α_2 be vectors of regression coefficients, with S_i^* denoting the propensity to disburse disaster payments, the vector P_i denoting the political factors, and the vector X_i denoting metrics of crop disaster severity for county i. Then, we have the following model.

$$S_i^* = \alpha_0 + \alpha_1 P_i + \alpha_2 X_i + \varepsilon_i \tag{1}$$

$$S_i = \begin{cases} S_i^* \text{ if } S_i^* > 0 \\ 0 \text{ otherwise.} \end{cases} \tag{2}$$

$$E[\varepsilon_i] = 0 \tag{3}$$

$$E[\varepsilon_i^2] = \sigma^2 \tag{4}$$

Since farmers have the ability to choose which crop year they wish to receive disaster payments for, the crop year cannot be imputed from the timing of the payment. Thus, disaster severity variables for each possible year must be included within the vector of disaster severity variables. For

political variables, the year chosen is 2007, the year in which the disaster bill was passed.

The variables contained within the vector P_i are indicators, which include membership on the House Committee on Agriculture, the Subcommittee on General Farm Commodities and Risk Management, the House Committee on Appropriations, the Subcommittee on Agriculture, Rural Development, Food and Drug Administration and Related Agencies, the Senate Committee on Agriculture, Nutrition and Forestry, the Subcommittee on Commodities, Risk Management and Trade, the Senate Committee on Appropriations, the Subcommittee on Agriculture, Rural Development, Food and Drug Administration and Related Agencies, and an indicator for whether or not the governor representing the state is a member of the same political party as the president in 2007.

The variables contained within the vector X_i control for disaster severity. First there are a number of variables that control for the importance of agriculture within the county. These include the number of acres of farm land, the number of farming operations, and farmer income in 2007, when the bill became law. Controlling for disaster severity is done through the use of crop insurance variables, such as total annual liability, indemnities and the farmer paid loss ratios for 2005, 2006 and 2007. Also, monthly palmer drought severity indices are included for these three years. Regional indicators are used to control for spatial heterogeneity. State level indicators are not used, since this would preclude analyzing the effect of the gubernatorial political factors on subsidy disbursement.

Unlike the 2005-2007 Crop Disaster Program, the SURE program has a more regimented temporal structure. As previously stated, farmers are eligible if their county or a contiguous county is declared a disaster county by the Secretary of Agriculture, and contingent on this declaration, are eligible for SURE program payments if they experience a production loss of at least 10% on an economically significant crop. This suggests two separate mechanisms which should be taken into account; the decision to declare a disaster and the decision of how much funding to allocate. To model this process, a type 2 Tobit model, as described by Amemiya (1984), is used. Let $D^*_{i,t}$ denote the propensity to grant disaster assistance, $S^*_{i,t}$ denote the amount of subsidies received contingent

on qualifying, $X_{1,i,t}$ denote metrics of disaster severity affecting whether or not disaster subsidies are allocated, $X_{2,i,t}$ denote metrics of disaster severity affecting the quantity of subsidies allocated, contingent on subsidies being disbursed in county i and period t. $P_{i,t}$ denotes political variables pertaining to county i during period t. Then, we have the following model.

$$D^*_{i,t} = \alpha_0 + \alpha_1 P_{i,t} + \alpha_2 X_{1,i,t} + \varepsilon_{1,i,t} \tag{5}$$

$$D_{i,t} = \begin{cases} 1 \text{ if } D^*_{i,t} > 0 \\ 0 \text{ otherwise.} \end{cases} \tag{6}$$

$$S^*_{i,t} = \beta_0 + \beta_1 P_{i,t} + \beta_2 X_{2,i,t} + \sigma\varepsilon_{2,i,t} \tag{7}$$

$$S_{i,t} = \begin{cases} S^*_{i,t} \text{ if } D^*_{i,t} > 0 \\ 0 \text{ otherwise.} \end{cases} \tag{8}$$

$$E[\varepsilon_{1,i,t}] = E[\varepsilon_{2,i,t}] = 0 \tag{9}$$

$$E[\varepsilon^2_{1,i,t}] = \sigma_1 \tag{10}$$

$$E[\varepsilon^2_{2,i,t}] = \sigma_2 \tag{11}$$

$$E[\varepsilon_{1,i,t}, \varepsilon_{2,i,t}] = \rho \tag{12}$$

Due to the structure of the SURE program, the crop year can be inferred from the transaction date. Since the program initially covers the 2008 crop year, and the first payments take place in 2010, a two year lag is inferred from the data. As such, political and demographic variables correspond to the transaction year, while weather, crop insurance, yield and revenue information correspond to the inferred crop year.

Due to the increased sample size resulting from having a four year panel, state indicators are used to control for spatial heterogeneity. Since crop years can be inferred from the timing of subsidy disbursements, monthly Palmer drought severity indices are included for the inferred crop

year only. Likewise, the amount of the total liability, the total indemnity and the farmer paid loss ratio are also included in both equations, corresponding to the inferred crop year.

Since qualifying for subsidies is based in part on having a production loss, the qualification equation contains the percentage change in yield for barley, corn, cotton, peanuts, rice, sorghum, soy and wheat, to control for yield losses. The percentage change is calculated based upon a five year moving average. Since the actual payment amount is based on revenue, the percentage change in revenue for the same crops are included in the disbursement equation. Revenues are calculated by multiplying county level production values times state level prices. These percentage changes in revenue are also calculated using a five year moving average.

While Garrett, Marsh, and Marshall (2006) include endogenous crop insurance payouts within their model, instrumenting them with a variety of variables, attempts to do so here have been unsuccessful. As one should expect, all of the relevant crop insurance payout determinants are highly correlated with the disaster subsidy disbursement, rendering them invalid for use as instruments. The primary difference between the programs of the 1990s and the programs analyzed here are the level of participation in crop insurance and the requirement that it be purchased to qualify for these programs, which are likely to make the crop insurance covariates endogenous with respect to disaster subsidies. For this reason, these models instead attempt to explain all of the disaster driven components of disaster payment variation, in order to draw inference for the impact of political factors on the remainder of the variation not accounted for by disaster severity and farm demographics.

Data

Data on subsidy disbursement come from a FOIA request to the USDA Farm Services Agency (FSA) USDA Farm Services Agency (2016). These data contain individual transaction level records. Program descriptors allow for identification of payments made through the 2005-2007

Crop Disaster Program and the SURE program.

For ad-hoc disaster programs like the 2005-2007 Crop Disaster Program, there is a large delay between the events that trigger payments and the transaction date of the payment, reported in table 1. The vast majority of transactions took place in 2008, with the bulk taking place between 2007 and 2009. There are some payments disbursed as late as 2012. It is possible that payments as late as 2012 were disbursed for a crop loss that took place in 2005, potentially confounding attempts to enforce maximum subsidy caps. Average annual disbursements for the SURE program are reported in table 4. The mean transaction sizes during the SURE program are substantially higher than for 2005-2007 Crop Disaster Program, with the highest average transaction amount being double that of the prior program.

Information on crop insurance comes from the USDA Risk Management Agency (2017). These data contain county level information on crop insurance, separated by crop and insurance type. All observations are aggregated to the county level. Since disaster subsidy data from the FSA dataset does not contain crop codes, all crops are aggregated together. The insurance variables chosen to control for disaster severity are total indemnities and total liability. In this context, the indemnity is the total amount of the loss, while the liability is the maximum possible payout if there is a total loss. These variables are summed by county. Also included as a covariate is the farmer paid loss ratio. The farmer paid loss ratio, defined as total indemnities divided by the total premium paid by farmers after the application of subsidies, measures how much farmers receive in crop insurance payments per dollar paid for crop insurance. Due to the subsidized nature of crop insurance, farmers on average receive far more in indemnity payments than they pay in premiums, according to tables 3 and 4. So, despite the fact that farmers on average receive over twice as much in insurance payments as they pay in premiums, disaster payment programs persist until the passage of the 2014 Farm Bill.

Figure 1 reports a choropleth map of disaster payment disbursement by county during the 2005-2007 Crop Disaster Program. Like the prior ad-hoc disaster programs before it, the benefits of

these programs are highly concentrated in arid agricultural regions, such as the center of the US, extending vertically from Texas to North Dakota and central California. Eastern coastal areas likewise receive more in disaster payments, presumably caused by storm damage. Figure 2 shows an analogous map for the SURE program. While benefits continue to go to the areas that historically received ad-hoc disaster payments, we see also that SURE payments are heavily disbursed to the corn belt, suggesting an expansion in the number of farmers benefiting from this particular program.

While total subsidy disbursement fits a consistent geographic pattern, disbursement per capita for the 2005-2007 Crop Disaster Program, shown in figure 3 suggests that individual farmers in the western US and in Florida received more per person than in the center of the country, where the highest levels of payments were allocated. It also appears that farmers outside of the corn belt receive more than those within the corn belt per capita. Per capita allocation of SURE payments, shown in figure 4, shows no discernible pattern, with subsidies being disbursed more evenly across counties. This is consistent with the low thresholds necessary to trigger payments, resulting in higher numbers of farmers qualifying.

Farm demographic data comes from the U.S. Bureau of Economic Analysis (2016). Three variables are obtained from these data; county level acres of farmland, farmer income and the number of farming operations. Since these statistics are only sampled every five years, the values between years are linearly imputed. In particular, for the number of farming operations and the number of acres of farmland, these variables should not be subject to major changes over time, so that linear imputation should result in a good approximation of true values. Crop yields and prices are used to control for revenue in the SURE Program model. These data come from NASS (2017).

Congressional committee assignments come from Stewart III and Woon (2017a) and Stewart III and Woon (2017b). The relevant committees accounted for in this analysis are the House Committee on Agriculture, the House Committee on Appropriations, the Senate Committee on Agriculture, Nutrition and Forestry, and the Senate Committee on Appropriations. Subcommittee

information was acquired from the Proquest congressional database, and manually coded. The relevant subcommittees of the House and Senate agricultural committees oversee the implementation of FSA programs, while the relevant subcommittees on the House and Senate appropriations committees oversee USDA funding. These subcommittees are the House Agricultural Subcommittee on General Farm Commodities and Risk Management, the House Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies, the Senate Agricultural Subcommittee on Commodities, Risk Management and Trade, and the Senate Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies. Members of these subcommittees have direct oversight functions over the USDA FSA, making legislators on these subcommittees the most likely to have the ability to exert influence.

For the sake of comparison, figures 5 and 6 show choropleth maps for which districts are represented by members of the House agricultural subcommittee with FSA oversight authority. Note, the districts were redrawn for the 113th congress. These graphs show that members of these House subcommittees consistently represent districts in the center of the country, where total payment disbursement is highest. At the same time, there are other regions which don't consistently receive high levels of disaster payments that are represented by members of this subcommittee at least once in the time series. Figure 7 shows an analogous graph for the Senate agricultural subcommittee with FSA oversight authority. While the center of the country is heavily represented by members of the Senate agricultural subcommittee, there are other represented states, namely Arkansas, Ohio and Mississippi, that receive relatively few disaster subsidies in terms of levels.

Also important is the location of relevant appropriation subcommittee members with USDA oversight authority. Figures 8 and 9 show which congressional districts are represented by members of the House appropriations subcommittee. Here we see that few of these legislators represent the center of the country, with repeat membership occuring mostly in the south east, California and the corn belt. The areas represented by these members don't appear to receive disproportionately

high levels of disaster subsidies, in either level or per capita terms. Figure 10 shows an analogous choropleth for membership on the Senate subcommittee that oversees USDA appropriations. Unlike the analogous House committee, members of the Senate appropriations subcommittee do appear to disproportionately represent areas that receive high levels of disaster subsidies.

Finally, the political party of the governor representing the state where the subsidy is disbursed is included. Figures 11 and 12 show the relationship between presidential and governor political party affiliation. The relevant characteristic of the governors is whether or not they belong to the same political party as the President. Note that the party of the President changed between the 2005-2007 Crop Disaster Program and the SURE program, and that several governorships switched hands between Republicans and Democrats, resulting in temporal variation that can be exploited to better ascertain if the political party of the governor has an effect on disbursement of payments under the SURE program.

The unit of observation in the 2005-2007 Crop Disaster Program model is county level disaster payments, as a function of county level farm demographic variables at the time the program was passed into law, crop insurance variables, and Palmer drought severity indices for each crop year that was eligible for benefits. If a county contains less than 100 acres of crop land, the observation is dropped. This is important because there is no guarantee that the farmer, who's mailing address the observation is based on, actually lives at the site of the farm. There are some observations for major metropolitan areas, such as downtown New York City, where farms can't plausibly exist. By deleting counties with no farm land from the analysis, bias caused by the most severe county level mismatches is reduced.

To control for the direct effects of weather on crop disaster payments, monthly Palmer drought severity indices are used to control for drought conditions. In the case of the 2005-2007 Crop Disaster Program, these monthly variables are included for the 2005, 2006 and 2007, since the payments in question could be disbursed for events that occurred in any of these crop years. For the SURE program, the monthly drought severity indices are based on the assumed two year lag

between the crop year and the payment date.

Indicators for Senate committee and governor partisanship variables are based on the state where the county is located. More problematic is the assignment of counties to congressional districts. Nearly half of the counties included in the analysis bisect congressional districts. The county is coded as having representation on a given House committee if any part of this county bisects a congressional district represented by a member of that committee.

Results

Estimations are conducted using the QLIM procedure in SAS software, using full information maximum likelihood, optimized using the quasi-Newton algorithm. Empirical results for the 2005-2007 Crop Disaster Program are reported in tables 5 and 6. The dependent variables in models one, two and three are the level of inflation adjusted disaster payments, disaster payments per capita and disaster payments per farm acre.

Total liability and total indemnities are also scaled in the same terms as the dependent variable. Disaster payments per capita are calculated as disaster payments per disaster payment recipient, while the per capita liability and indemnity variables are scaled per farming operation. Table 7 reports Wald statistics for the farm demographic, crop insurance, drought and regional indicator variables.

For all three models, the crop insurance variables have a jointly significant impact on disaster payment disbursement. The monthly Palmer drought severity indices have a significant joint effect on disaster payment disbursement in terms of levels and disbursement per acre for each applicable crop year, while the Palmer drought indices for 2005 don't have a joint impact on payments per capita. Regional indicators are not jointly different from zero in all three models. Having controlled for disaster severity and spatial characteristics through the use of the regional indicators, of primary interest is whether the political variables explain the remainder of the variation.

On a per farm and per acre basis, and contrary to intuition, counties represented by members

of the House Committee on Agriculture receive significantly less in disaster payments then those without representation, on a per capita and per acre basis. However, counties represented by House members on the subcommittee with direct oversight authority receive significantly more in disaster payments per farm acre.

In terms of levels, counties represented by legislators on the House Committee on Appropriations receive fewer disaster payments, while on a per capita and per acre basis, the affect on receipts are not statistically different from zero. The effect of membership on the House subcommittee which oversees USDA appropriations has a significantly lower payment in terms of levels, but a significantly higher payment per acre, suggesting that while there may be fewer farmers or fewer farmers incurring losses in their districts, on a per acre basis they do receive more in disaster funding than counties without representation on this committee.

In terms of levels and on a per acre basis, counties in states represented by a member on the Senate Committee on Agriculture receive more disaster payments than those in states without representation, though on a per capita basis, they receive less. It could be the case that states represented by members of the Senate agricultural committee have higher numbers of farmers than other states, resulting in a lower per capita disbursement relative to other states. However, on a per farm basis, counties in states represented by members of the Senate agricultural subcommittee with FSA oversight authority receive more disaster payments than those without, while this effect is not statistically different from zero in terms of overall or per acre disbursement.

Counties within states represented by members of the Senate Committee on Appropriations receive significantly less than counties in states without such representation in terms of levels, while the effect is statistically indistinguishable from zero in per capita or per acre terms. Since the appropriations committees oversee funding for the entire federal government, it seems reasonable to conclude that funding for agricultural disaster programs isn't a high priority for the typical member of the committee. Counties represented by members of the subcommittee that oversees USDA funding, however, receive significantly more in disaster payments than those that do not. However,

this effect isn't statistically different from zero on a per capita or per acre basis.

Lastly, counties within a state where the governor is a member of the same political party as the president receive significantly more in disaster payments per capita than those in states where this is not the case. While the effect is also positive in terms of levels and per farm, it is not statistically different from zero. This does suggest, however, that presidential politics played at least a small role prior to the implementation of a permanent disaster payment program.

It is also worth noting the effects of the number of acres of farm land and the number of farms on disaster payment disbursement. Obviously, both variables have a significant positive effect in terms of levels. However, while the number of acres of farmland within a county has a positive impact on disaster payment disbursement per capita and per acre, the number of farms has a significant negative effect. This suggests that counties with a smaller number of larger farms receive more in disaster payments than counties with a larger number of smaller farms, which in turn suggests that larger scale farms receive more in disaster payments.

This analysis of a program representative of the prior regime of ad-hoc disaster payment programs forms a basis of comparison against the more recent regime, the SURE program. Estimates for the SURE program are reported in tables 8 through 12.

Wald statistics for farm demographics, crop insurance, Palmer drought severity indices, percentage changes in yields for major crops, percentage changes in revenues for major crops and state indicators are reported in table 12. For the participation equation, the farm demographic variables, crop insurance variables and state indicator variables have have effects which are jointly distinguishable from zero, while the drought severity indices and percentage change in yields are not statistically significant. This is surprising, given that the eligibility for the program should be determined in some part by crop losses. It could be the case that this result is driven by the fact that a very minor reduction in yields qualifies farmers in counties declared as disaster counties. This suggests that yields and drought play little role in qualifying for SURE payments. While possible that the effect is dominated by the crop insurance variables, it should be noted that the same Farm

Bill that created the SURE program also created revenue insurance policies, potentially reducing the correlation between yields and insurance payouts.

For the disbursement equation, which is itself conditional on disaster payments being made, farm demographics and crop insurance covariates jointly have a highly statistically significant impact on disbursement, in terms of levels, per capita and per care. Palmer drought severity indices have a joint impact in terms of levels and per capita, but not on a per acre basis. State indicators only have a significant joint effect on disbursement per capita. Unlike with the eligibility equation, the analogous variables in the disbursement equation, the percentage change in revenue for major crops has a jointly statistically significant impact in each estimation.

Tables 8 and 9 report estimates of parameters in the participation equation. Political variables have little effect on whether or not counties are eligible to receive payments. The only political factor which has a positive and significant impact on eligibility in each model is membership of the local Senator on the agricultural committee. Counties in states represented by members of the Senate agricultural subcommittee that oversees the USDA FSA are less likely to qualify than agricultural committee members in general. This should not be surprising, given the lax conditions required to be eligible for payments under the SURE program.

Tables 10 and 11 report estimation results for the payment allocation equation. In the allocation equation, political factors have a greater impact. Farmers represented by members of the House appropriations subcommittee that oversees FSA funding receive significantly higher SURE payments in terms of levels, per farm and per capita terms relative to those who do not. Farmers in districts represented by members of the House Committee on Appropriations in general receive significantly less than those in other counties. This is intuitive, since members of other appropriations subcommittees likely have other funding priorities. In the Senate, for most models, appropriations committee membership, along with membership on the subcommittee that oversees USDA funding, has no significant impact on payment disbursement. While membership on the Senate agricultural committee has a negative impact on SURE payment allocation, membership on

the senate subcommittee that oversees the USDA FSA has a positive and statistically significant impact on SURE payment allocation in terms of levels, per capita and per acre terms.

Finally, in each estimation, the effect of the governor belonging to the same political party as the president is positive, and for the models in per capita and per acre terms, is weakly statistically significant. This suggests that the president has at least a minor affect on payments. Due to only one president being in power during the time series, and the lack of variation in governor party affiliations in the more heavily agricultural states, it is difficult to estimate the effect of a change in gubernatorial party affiliation on changes in SURE payment allocation.

Conclusion

From these results, two major implications are clear. First, the transition from ad-hoc disaster programs to a permanent disaster program has not reduced politically motivated allocations of disaster payments. During both the 2005-2007 Crop Disaster Program and the SURE program, farmers in counties represented by members of the House appropriations subcommittee with USDA funding oversight authority and the Senate agricultural subcommittee with USDA FSA oversight authority received more per acre in disaster subsidies than farmers not represented by members of these subcommittees. During both programs, the effect of gubernatorial party affiliation on payments has a positive impact in each case, with the effect being statistically significant in some cases. This suggests that not only did gubernatorial partisanship have at least some impact on payments during the SURE program, but that it had some effect on ad-hoc disaster payment allocation too. The fact that political allocation of disaster payments persists provides more impetus to cancel agricultural disaster programs in the future Farm Bill, especially considering how heavily subsidized federal crop insurance has become. It should be noted that the SURE payment program was phased out with the passage of the 2014 Farm Bill. However, the other permanent disaster payment programs implemented at the same time as the SURE program remain active, and there is no telling what programs the next farm bill, currently under debate, will bring.

Appendix

Table 1. Annual disaster subsidy disbursement under the 2005-2007 Crop Disaster Program.

Year	N	Mean	Std. Dev.	Min	Max
2007	42,051	$7,509.68	$12,812.19	$1.11	$531,520.18
2008	301,656	$5,959.89	$11,473.07	$1.07	$713,380.97
2009	7,744	$8,088.92	$15,977.12	$1.07	$342,421.55
2010	2	$575.18	$711.07	$72.38	$1,077.98
2011	32	$405.49	$854.99	$2.04	$4,677.26
2012	6	$35.08	$34.83	$3.46	$78.00

Table 2. Annual disaster subsidy disbursement under the SURE program.

Year	N	Mean	Std. Dev.	Min	Max
2010	140,765	$19,985.18	$30,341.34	$0.00	$947,471.21
2011	73,521	$14,548.60	$25,406.88	-$173,760.80	$836,794.10
2012	52,742	$16,264.52	$28,238.95	-$100,001.31	$500,006.53
2013	117,047	$17,977.34	$30,408.19	-$188,696.47	$1,519,671.71
2014	3,139	$11,635.04	$29,488.90	-$193,987.71	$434,173.59

Table 3. Summary statistics for model variables used in the 2005-2007 Crop Disaster Program estimations.

Variable	Min.	Max.	Mean	Std. Dev.	Sum.
Acres	0.00	6,101,943.00	289,906.01	369,994.98	989,449,204.00
Farming Operations	0.00	6,687.00	707.70	557.44	2,415,372.00
Loss Ratio 2005	0.00	34.49	1.86	2.81	5,566.89
Loss Ratio 2006	0.00	51.23	2.45	3.36	7,332.30
Loss Ratio 2007	0.00	926.42	2.79	17.25	8,303.78
Income	$0.00	$9,940,000.00	$2,580,579.29	$2,204,356.32	$8,807,517,100.00
Indemnity 2005	$0.00	$132,690,122.00	$887,466.69	$3,295,543.68	$2,660,625,144.00
Indemnity 2006	$0.00	$83,182,573.00	$1,273,713.90	$3,325,558.48	$3,804,583,406.00
Indemnity 2007	$0.00	$37,977,277.00	$1,326,872.65	$2,815,442.93	$3,954,080,499.00
Liability 2005	$0.00	$566,617,402.00	$16,066,420.48	$27,834,035.38	$48,167,128,595.00
Liability 2006	$0.00	$616,661,129.00	$18,181,913.30	$31,119,952.28	$54,309,375,029.00
Liability 2007	$0.00	$631,084,252.00	$24,549,262.70	$39,230,982.19	$73,156,802,854.00
Number of Recipients	0.00	1,587.00	124.40	181.06	384,020.00
Disaster Sub.	$204.80	$16,631,375.28	$788,660.29	$1,419,370.42	$2,434,594,325.40

Table 4. Summary statistics for model variables used in the SURE Program estimations.

Variable	Min.	Max.	Mean	Std. Dev.	Sum.
Acres	0	6,044,665.80	295,819.14	391,859.67	5,672,331,958.20
Farming Op.	0	6,496.00	690.60	547.54	13,242,296.80
Loss Ratio	0	280.25	1.90	3.91	42526.50
Income	0	$9,972,000.00	$2,773,181.30	$2,153,535.84	$53,175,751,450.00
Indemnity	0	$153,951,863.00	$2,785,931.28	$7,386,052.42	$62,307,352,967.00
Liability	0	$1,397,596,039.90	$27,244,359.21	$52,110,002.56	$609,320,093,831.00
Num. Recip.	0	1,614.00	45.48	100.52	460,034.00
Disaster Sub.	0	$32,747,123.58	$813,059.90	$2,106,020.63	$8,224,913,964.10

Table 5. Tobit regression results for the 2005-2007 Crop Disaster Program. *,,*** denote statistical significance at the 10%, 5% and 1% levels, respectively.**

Model	Levels		Per Capita		Per Acre	
Variable	Parameter	Std. Error	Parameter	Std. Error	Parameter	Std. Error
Intercept	-3.651	(0.798)***	8.133	(0.284)***	-0.601	(0.171)***
House Ag. Com.	-0.100	(0.131)	-0.091	(0.041)**	-0.062	(0.026)**
House Ag. Subcom.	0.133	(0.151)	-0.039	(0.052)	0.087	(0.032)***
House App. Com.	-0.411	(0.132)***	0.025	(0.042)	-0.042	(0.026)
House App. Subcom.	-0.050	(0.208)***	0.009	(0.068)	0.093	(0.041)**
Senate Ag. Com.	0.616	(0.155)***	-0.148	(0.048)***	0.149	(0.029)***
Senate Ag. Subcom.	-0.010	(0.041)	0.208	(0.060)***	0.025	(0.037)
Senate App. Com.	-0.395	(0.156)***	0.062	(0.049)	0.027	(0.030)
Senate App. Subcom.	0.097	(0.047)***	-0.034	(0.057)	-0.043	(0.035)
Governor Party	0.071	(0.141)	0.161	(0.044)***	0.039	(0.027)
Log Acres	0.346	(0.080)***	0.543	(0.022)***	0.086	(0.014)***
Log Number Recip.	0.168	(0.037)***	-0.003	(0.012)	0.088	(0.008)***
Log Farm Operations	0.442	(0.088)***	-0.879	(0.012)***	-0.255	(0.017)***
Log Farmer Income	0.075	(0.029)***	-0.170	(0.014)***	-0.017	(0.013)
Log Liability 2005	0.067	(0.039)*	0.061	(0.023)***	0.106	(0.035)***
Log Indemnity 2005	0.135	(0.025)***	-0.030	(0.015)*	0.104	(0.021)***
Loss Ratio 2005	0.001	(0.022)	0.050	(0.007)***	0.013	(0.004)***
Log Liability 2006	-0.010	(0.044)	0.058	(0.026)**	0.013	(0.038)
Log Indemnity 2006	0.212	(0.028)***	-0.038	(0.016)**	0.194	(0.020)***
Loss Ratio 2006	0.044	(0.018)**	0.032	(0.006)***	0.020	(0.003)***
Log Liability 2007	-0.018	(0.031)	-0.105	(0.018)***	-0.095	(0.022)***
Log Indemnity 2007	0.175	(0.025)***	0.116	(0.013)***	0.302	(0.015)***
Loss Ratio 2007	0.005	(0.003)*	0.001	(0.001)*	0.001	(0.001)**
Appalachian	0.326	(0.347)	0.424	(0.111)***	0.183	(0.068)***
North East	2.511	(0.415)***	0.855	(0.129)***	0.750	(0.080)***
South East	0.573	(0.396)	0.441	(0.122)***	0.090	(0.075)
Delta	-0.628	(0.363)*	-0.049	(0.115)	-0.192	(0.069)***
North Plains	-0.388	(0.319)	-0.446	(0.097)***	-0.275	(0.060)***
South Plains	0.441	(0.414)	0.244	(0.128)*	0.022	(0.079)
Mountain	0.049	(0.355)	-0.411	(0.111)***	-0.295	(0.067)***
Great Lakes	0.530	(0.315)*	-0.038	(0.097)	0.200	(0.061)***
Pacific	0.182	(0.438)	0.300	(0.141)**	-0.140	(0.085)
σ	2.441	(0.034)***	0.757	(0.010)***	0.480	(0.006)***
Loglike	-6731.000		-3437.000		-2327.000	

Table 6. Tobit regression results for the 2005-2007 Crop Disaster Program continued. *,,*** denote statistical significance at the 10%, 5% and 1% levels, respectively.**

Model	Levels		Per Capita		Per Acre	
Variable	Parameter	Std. Error	Parameter	Std. Error	Parameter	Std. Error
January PDSI 2005	-0.109	(0.049)*	-0.003	(0.016)	-0.007	(0.009)
February PDSI 2005	0.063	(0.064)	-0.008	(0.020)	0.028	(0.012)**
March PDSI 2005	0.055	(0.086)	0.014	(0.027)	-0.006	(0.016)
April PDSI 2005	0.048	(0.091)	0.002	(0.028)	-0.012	(0.017)
May PDSI 2005	-0.291	(0.100)***	0.021	(0.032)	0.000	(0.019)
June PDSI 2005	-0.168	(0.105)	0.119	(0.034)***	-0.073	(0.020)***
July PDSI 2005	0.341	(0.105)***	-0.051	(0.033)	0.083	(0.020)***
August PDSI 2005	0.139	(0.077)*	-0.103	(0.023)***	-0.004	(0.015)
September PDSI 2005	-0.158	(0.067)**	0.054	(0.021)***	0.002	(0.013)
October PDSI 2005	0.086	(0.086)	0.017	(0.027)	-0.007	(0.016)
November PDSI 2005	-0.320	(0.192)*	-0.001	(0.061)	-0.105	(0.037)***
December PDSI 2005	0.433	(0.178)**	-0.148	(0.056)***	0.138	(0.034)***
January PDSI 2006	-0.510	(0.157)***	0.289	(0.049)***	-0.006	(0.029)
February PDSI 2006	0.157	(0.157)	-0.110	(0.049)**	-0.055	(0.029)*
March PDSI 2006	0.266	(0.104)**	0.029	(0.032)***	0.064	(0.020)***
April PDSI 2006	-0.132	(0.075)*	-0.073	(0.023)	-0.077	(0.014)***
May PDSI 2006	0.065	(0.080)	0.015	(0.024)	0.031	(0.015)**
June PDSI 2006	-0.274	(0.087)***	-0.017	(0.027)	-0.034	(0.016)**
July PDSI 2006	0.108	(0.073)	0.023	(0.023)	-0.006	(0.014)
August PDSI 2006	0.046	(0.067)	0.036	(0.021)*	-0.014	(0.013)
September PDSI 2006	-0.029	(0.088)	-0.140	(0.027)***	0.035	(0.016)**
October PDSI 2006	0.166	(0.081)**	0.038	(0.026)	-0.018	(0.015)
November PDSI 2006	-0.044	(0.081)	0.024	(0.026)	0.019	(0.015)
December PDSI 2006	0.237	(0.107)**	0.216	(0.033)***	0.138	(0.020)***
January PDSI 2007	-0.242	(0.115)**	-0.069	(0.036)*	-0.129	(0.022)***
February PDSI 2007	0.011	(0.103)	-0.084	(0.031)***	-0.014	(0.019)
March PDSI 2007	0.163	(0.122)	0.030	(0.038)	0.053	(0.023)**
April PDSI 2007	-0.167	(0.113)	-0.023	(0.035)	-0.031	(0.022)
May PDSI 2007	-0.192	(0.110)*	-0.111	(0.035)***	-0.087	(0.021)***
June PDSI 2007	0.153	(0.131)	-0.110	(0.041)***	0.011	(0.025)
July PDSI 2007	-0.019	(0.108)	0.117	(0.034)***	0.065	(0.020)***
August PDSI 2007	-0.107	(0.069)	0.009	(0.022)	-0.035	(0.013)***
September PDSI 2007	0.127	(0.057)*	-0.012	(0.017)	0.000	(0.011)
October PDSI 2007	0.333	(0.116)***	0.228	(0.035)***	0.127	(0.022)***
November PDSI 2007	-0.351	(0.133)***	-0.117	(0.041)***	-0.114	(0.025)***
December PDSI 2007	-0.167	(0.072)**	-0.118	(0.023)***	-0.029	(0.014)**

Table 7. Wald statistics for farm demographic, crop insurance, drought and regional indicator variables for the 2005-2007 Crop Disaster Program.

Null Hypothesis	Levels	Per Capita	Per Acre
Log Acres & Num Recip & Log Income = 0	162.46***	0.24	24.48***
Log Liability 2005 & Log Indemnity 2005 & Loss Ratio 2005 = 0	23.98***	27.59***	33.55***
Jan.-Dec. 2005 PDSI = 0	1.51***	0	4.46**
Log Liability 2006 & Log Indemnity 2006 & Loss Ratio 2006 = 0	29.08***	8.26***	29.95***
Jan.-Dec. 2006 PDSI = 0	0.19	2.97*	9.36***
Log Liability 2007 & Log Indemnity 2007 & Loss Ratio 2007 = 0	33.42***	3.64*	75.44***
Jan.-Dec. 2007 PDSI = 0	16.37***	14.19***	73.83***
Regional Indicators = 0	2.51	0.01	0.6

Table 8. Participation component of the type two Tobit estimation results for disaster payments under the SURE program. *,,*** denote statistical significance at the 10%, 5% and 1% levels, respectively.**

Model	Levels		Per Capita		Per Acre	
Variable	Parameter	Std. Error	Parameter	Std. Error	Parameter	Std. Error
Intercept	-1.240	(0.256)***	-2.605	(0.293)***	-2.433	(0.267)***
House Ag. Com.	0.023	(0.046)	0.047	(0.048)	0.027	(0.043)
House Ag. Subcom.	-0.085	(0.057)	-0.142	(0.059)**	-0.088	(0.054)
House App. Com.	-0.050	(0.045)	-0.092	(0.048)*	-0.030	(0.043)
House App. Subcom.	0.031	(0.071)	0.027	(0.076)	-0.029	(0.070)
Senate Ag. Com.	0.161	(0.059)***	0.145	(0.063)**	0.154	(0.057)***
Senate Ag. Subcom.	-0.107	(0.053)**	-0.114	(0.057)**	-0.144	(0.051)***
Senate App. Com.	0.020	(0.050)	0.028	(0.053)	0.030	(0.048)
Senate App. Subcom.	-0.003	(0.059)	0.037	(0.062)	0.071	(0.056)
Governor Party	0.025	(0.071)	-0.016	(0.075)	0.052	(0.072)
Log Acres	-0.025	(0.026)	0.036	(0.028)	0.089	(0.025)***
Log Number Recip.	0.470	(0.008)***	48.990	(0.848)***	45.156	(0.843)***
Log Liability	0.023	(0.005)***	0.066	(0.009)***	0.054	(0.015)***
Log Indemnity	-0.004	(0.006)	0.002	(0.011)	-0.090	(0.024)***
Loss Ratio	-0.005	(0.006)	0.000	(0.004)	0.003	(0.004)
Log Farm Op.	0.096	(0.026)***	0.166	(0.029)***	0.093	(0.025)***
Log Farmer Income	0.001	(0.014)	0.036	(0.020)*	0.000	(0.023)
January PDSI	0.007	(0.014)	0.013	(0.015)	0.011	(0.014)
February PDSI	-0.010	(0.022)	-0.008	(0.023)	-0.030	(0.022)
March PDSI	-0.024	(0.021)	-0.006	(0.023)	-0.013	(0.021)
April PDSI	0.001	(0.024)	-0.034	(0.026)	-0.006	(0.023)
May PDSI	0.027	(0.022)	0.038	(0.024)	0.043	(0.022)
June PDSI	-0.005	(0.026)	-0.005	(0.028)	-0.017	(0.026)
July PDSI	-0.036	(0.022)	-0.029	(0.023)	-0.029	(0.022)
August PDSI	0.002	(0.017)	0.001	(0.018)	0.000	(0.016)
September PDSI	-0.021	(0.020)	-0.033	(0.021)	-0.026	(0.019)
October PDSI	0.020	(0.020)	0.016	(0.022)	0.024	(0.019)
November PDSI	0.009	(0.024)	0.005	(0.026)	0.009	(0.023)
December PDSI	-0.001	(0.019)	0.023	(0.021)	0.012	(0.019)
%Δ Barley Yield	-0.029	(0.073)	-0.005	(0.076)	-0.014	(0.065)
%Δ Corn Yield	-0.104	(0.046)**	-0.141	(0.055)*	-0.076	(0.044)*
%Δ Cotton Yield	-0.052	(0.074)	-0.044	(0.067)	-0.078	(0.073)
%Δ Peanuts Yield	0.123	(0.089)	0.192	(0.102)	0.092	(0.089)
%Δ Rice Yield	0.041	(0.231)	-0.012	(0.232)	0.037	(0.216)
%Δ Sorghum Yield	-0.063	(0.062)	-0.118	(0.063)	-0.100	(0.058)*
%Δ Soy Yield	0.046	(0.034)	-0.017	(0.040)	0.038	(0.033)
%Δ Wheat Yield	0.022	(0.028)	-0.001	(0.030)	0.019	(0.027)
Year 2011	-0.062	(0.060)	-0.221	(0.063)***	-0.034	(0.059)
Year 2012	-0.156	(0.077)**	-0.110	(0.075)	-0.143	(0.063)*
Year 2013	-0.113	(0.074)	-0.037	(0.073)	-0.138	(0.059)***
Year 2014	-0.928	(0.061)***	-1.512	(0.067)***	-0.962	(0.060)***
ρ	-0.845	(0.010)***	-0.230	(0.020)***	-0.854	(0.008)***

Table 9. State indicator coefficients for the participation component of the type two Tobit estimation results for disaster payments under the SURE program. *,,*** denote statistical significance at the 10%, 5% and 1% levels, respectively.**

Model	Levels		Per Capita		Per Acre	
Variable	Parameter	Std. Error	Parameter	Std. Error	Parameter	Std. Error
AZ	-0.743	(0.253)***	-1.033	(0.264)***	-0.848	(0.240)***
AR	-0.229	(0.159)	-0.262	(0.169)	-0.274	(0.155)*
CA	-0.338	(0.162)**	-0.422	(0.174)**	-0.380	(0.158)**
CO	-0.399	(0.177)**	-0.129	(0.184)	-0.053	(0.164)
CT	-0.385	(0.304)	-0.459	(0.314)	-0.303	(0.305)
DE	-0.629	(0.435)	-0.232	(0.422)	-0.561	(0.422)
FL	-0.337	(0.140)**	-0.285	(0.147)*	-0.248	(0.141)*
GA	-0.001	(0.121)	0.176	(0.129)	0.128	(0.121)
ID	-0.447	(0.149)***	-0.541	(0.157)***	-0.371	(0.147)**
IL	-0.060	(0.155)	0.061	(0.163)	0.055	(0.155)
IN	-0.422	(0.145)***	-0.261	(0.150)*	-0.396	(0.149)***
IA	-0.553	(0.155)***	-0.473	(0.158)***	-0.414	(0.150)***
KS	-0.240	(0.145)***	-0.355	(0.154)**	-0.096	(0.139)
KY	-0.306	(0.152)**	-0.105	(0.160)	-0.236	(0.151)
LA	-0.518	(0.135)***	-0.590	(0.144)	-0.394	(0.133)***
ME	-0.288	(0.216)	-0.475	(0.228)**	-0.141	(0.214)
MD	-0.194	(0.177)	-0.137	(0.186)	-0.192	(0.180)
MA	0.085	(0.241)	0.418	(0.260)	0.022	(0.261)
MI	-0.147	(0.147)	-0.049	(0.155)	-0.024	(0.146)
MN	-0.361	(0.156)**	-0.375	(0.164)**	-0.262	(0.154)
MS	-0.564	(0.136)***	-0.639	(0.142)***	-0.514	(0.133)***
MO	-0.434	(0.156)***	-0.293	(0.164)*	-0.381	(0.152)**
MT	-0.126	(0.176)	-0.080	(0.187)	0.095	(0.167)
NE	-0.347	(0.149)**	-0.450	(0.157)***	-0.144	(0.144)
NV	-1.012	(0.276)***	-0.991	(0.298)***	-0.946	(0.259)***
NH	-0.389	(0.229)*	-0.366	(0.245)	-0.357	(0.231)
NJ	-0.289	(0.204)	-0.372	(0.225)*	0.191	(0.196)
NM	-0.052	(0.177)	-0.185	(0.186)	-0.117	(0.163)
NY	-0.245	(0.163)	-0.322	(0.173)*	-0.152	(0.162)
NC	-0.235	(0.134)*	-0.101	(0.141)	-0.067	(0.136)
ND	0.080	(0.199)	0.118	(0.217)	0.176	(0.187)
OH	-0.314	(0.139)**	-0.239	(0.148)	-0.252	(0.138)*
OK	-0.203	(0.153)	0.098	(0.157)	0.230	(0.139)*
OR	-0.557	(0.180)***	-0.618	(0.189)***	-0.444	(0.171)***
PA	-0.782	(0.147)***	-0.959	(0.155)***	-0.688	(0.145)***
RI	0.189	(0.302)	0.264	(0.320)	0.819	(0.303)***
SC	-0.417	(0.147)***	-0.316	(0.154)**	-0.178	(0.141)
SD	-0.270	(0.165)	-0.325	(0.173)*	-0.032	(0.157)
TN	-0.252	(0.119)**	-0.306	(0.125)**	-0.212	(0.118)*
TX	-0.590	(0.118)***	-0.502	(0.126)***	-0.289	(0.113)**
UT	-0.800	(0.214)***	-0.936	(0.228)***	-0.874	(0.213)***
VT	0.215	(0.212)	0.283	(0.229)	0.220	(0.217)
VA	-0.373	(0.129)***	-0.333	(0.135)**	-0.228	(0.127)*
WA	-0.508	(0.193)***	-0.617	(0.217)***	-0.477	(0.187)**
WV	-1.137	(0.190)***	-1.113	(0.198)***	-1.097	(0.188)***
WI	-0.489	(0.146)***	-0.453	(0.152)***	-0.388	(0.145)***
WY	-0.438	(0.191)**	-0.734	(0.206)***	-0.364	(0.179)**

Table 10. Subsidy allocation component of the type two Tobit estimation results for disaster payments under the SURE program. *,,*** denote statistical significance at the 10%, 5% and 1% levels, respectively. Coefficients for state indicator variables are omitted.**

Model	Levels		Per Capita		Per Acre	
Variable	Parameter	Std. Error	Parameter	Std. Error	Parameter	Std. Error
Intercept	6.575	(0.388)***	7.288	(0.269)***	3.243	(0.134)***
House Ag. Com.	0.011	(0.051)	-0.034	(0.033)	-0.009	(0.017)
House Ag. Subcom.	-0.033	(0.060)	0.007	(0.038)	0.022	(0.020)
House App. Com.	-0.151	(0.056)***	-0.057	(0.037)	-0.040	(0.019)**
House App. Subcom.	0.293	(0.087)***	0.164	(0.057)***	0.100	(0.029)***
Senate Ag. Com.	-0.174	(0.067)***	-0.095	(0.043)**	-0.113	(0.022)***
Senate Ag. Subcom.	0.204	(0.058)***	0.067	(0.037)*	0.108	(0.019)***
Senate App. Com.	-0.021	(0.057)	-0.078	(0.037)**	-0.019	(0.019)
Senate App. Subcom.	-0.079	(0.064)	-0.056	(0.042)	-0.031	(0.021)
Governor Party	0.108	(0.072)	0.077	(0.047)*	0.041	(0.024)*
Log Acres	0.227	(0.035)***	-0.019	(0.024)	-0.187	(0.012)***
Log Number Recip.	0.010	(0.000)***	0.091	(0.012)***	0.500	(0.007)***
Log Liability	0.075	(0.008)***	0.127	(0.008)***	0.062	(0.007)***
Log Indemnity	0.029	(0.009)***	0.004	(0.009)	0.097	(0.010)***
Loss Ratio (Farmer Paid).	0.020	(0.008)**	0.011	(0.006)**	0.004	(0.003)
Log Farm Operations	-0.177	(0.032)***	0.099	(0.024)***	-0.095	(0.011)***
Log Farmer Income	0.152	(0.023)***	0.105	(0.018)***	0.066	(0.011)***
January PDSI	-0.031	(0.019)	-0.004	(0.012)	-0.020	(0.006)***
February PDSI	0.125	(0.028)***	0.059	(0.019)***	0.051	(0.009)***
March PDSI	-0.025	(0.026)	-0.027	(0.017)	0.015	(0.009)*
April PDSI	-0.090	(0.028)***	-0.041	(0.018)**	-0.044	(0.009)***
May PDSI	0.012	(0.027)	0.016	(0.018)	-0.018	(0.009)**
June PDSI	0.101	(0.027)***	0.020	(0.018)	0.056	(0.009)***
July PDSI	-0.040	(0.021)*	-0.012	(0.014)	-0.008	(0.007)
August PDSI	-0.046	(0.018)***	-0.035	(0.011)***	-0.019	(0.006)***
September PDSI	0.088	(0.021)***	0.054	(0.014)***	0.026	(0.007)***
October PDSI	-0.080	(0.022)***	-0.045	(0.014)***	-0.033	(0.007)***
November PDSI	0.071	(0.027)***	0.055	(0.018)***	0.028	(0.009)***
December PDSI	-0.075	(0.023)***	-0.062	(0.015)	-0.027	(0.007)***
%Δ Barley Revenue	-0.011	(0.023)	-0.011	(0.015)	-0.006	(0.008)
%Δ Corn Revenue	-0.020	(0.016)	0.000	(0.010)**	-0.003	(0.005)
%Δ Cotton Revenue	0.065	(0.018)***	0.025	(0.012)	0.012	(0.006)***
%Δ Peanuts Revenue	0.023	(0.026)	0.007	(0.017)	0.006	(0.009)
%Δ Rice Revenue	-0.479	(0.184)***	-0.395	(0.121)***	-0.176	(0.060)***
%Δ Sorghum Revenue	-0.020	(0.014)	-0.015	(0.009)*	-0.014	(0.005)***
%Δ Soy Revenue	-0.025	(0.010)**	-0.008	(0.008)	-0.014	(0.003)***
%Δ Wheat Revenue	0.002	(0.010)	0.008	(0.007)	-0.010	(0.003)***
Year 2011	-0.575	(0.062)***	-0.311	(0.040)***	-0.218	(0.021)***
Year 2012	-0.094	(0.122)	-0.031	(0.068)	0.053	(0.027)**
Year 2013	0.051	(0.120)	0.060	(0.067)	0.106	(0.024)***
Year 2014	-1.091	(0.090)***	-0.880	(0.061)***	-0.208	(0.029)***
σ	1.687	(0.012)***	1.042	(0.008)***	0.560	(0.004)***
Loglike		-21567.000		-18046.000		-11141.000

Table 11. State indicator coefficients for the subsidy allocation component of the type two Tobit estimation results for disaster payments under the SURE program. *,,*** denote statistical significance at the 10%, 5% and 1% levels, respectively.**

Model	Levels		Per Capita		Per Acre	
Variable	Parameter	Std. Error	Parameter	Std. Error	Parameter	Std. Error
AZ	0.542	(0.453)	0.478	(0.324)	0.343	(0.147)***
AR	-0.067	(0.191)	-0.088	(0.125)	-0.014	(0.063)
CA	0.159	(0.192)	-0.010	(0.125)	-0.009	(0.063)
CO	-0.301	(0.194)	-0.366	(0.125)***	-0.088	(0.064)
CT	0.962	(0.323)***	0.397	(0.207)*	0.519	(0.107)***
DE	-0.119	(0.337)	-0.790	(0.213)***	-0.059	(0.112)
FL	0.334	(0.174)*	0.217	(0.114)*	0.071	(0.058)
GA	-0.122	(0.149)	-0.388	(0.097)***	-0.130	(0.049)***
ID	-0.064	(0.196)	-0.453	(0.129)***	0.133	(0.065)**
IL	-0.190	(0.157)	-0.387	(0.101)***	-0.265	(0.053)***
IN	0.218	(0.156)	-0.301	(0.101)***	0.058	(0.052)
IA	0.031	(0.165)	-0.385	(0.107)***	0.048	(0.055)
KS	-0.278	(0.157)*	-0.565	(0.101)***	-0.090	(0.052)*
KY	-0.164	(0.176)	-0.163	(0.114)	-0.041	(0.058)
LA	0.487	(0.183)***	0.275	(0.121)**	0.152	(0.061)**
ME	-0.874	(0.352)**	-0.793	(0.243)***	-0.238	(0.117)**
MD	-0.210	(0.215)	-0.387	(0.140)***	-0.182	(0.072)**
MA	0.264	(0.255)	0.015	(0.164)	0.147	(0.085)*
MI	0.077	(0.176)	-0.069	(0.114)	-0.056	(0.058)
MN	0.005	(0.177)	-0.071	(0.115)	-0.061	(0.059)
MS	0.126	(0.182)	0.019	(0.121)	0.065	(0.060)
MO	-0.057	(0.170)	-0.472	(0.109)***	-0.066	(0.056)
MT	-0.401	(0.198)**	-0.225	(0.128)*	-0.066	(0.065)
NE	-0.344	(0.168)**	-0.431	(0.109)***	-0.159	(0.056)***
NV	0.293	(0.410)	0.028	(0.277)	0.080	(0.134)
NH	-0.773	(0.341)**	-0.711	(0.232)	-0.318	(0.113)***
NJ	0.789	(0.254)***	0.222	(0.165)	0.520	(0.084)***
NM	-0.314	(0.229)	-0.216	(0.150)	0.164	(0.074)**
NY	-0.323	(0.214)	0.033	(0.142)	-0.132	(0.071)*
NC	0.054	(0.158)	-0.388	(0.103)	0.008	(0.053)
ND	0.418	(0.180)**	0.025	(0.116)	0.097	(0.059)
OH	-0.348	(0.160)**	-0.514	(0.104)***	-0.133	(0.053)**
OK	-0.497	(0.156)***	-0.642	(0.100)***	-0.129	(0.052)**
OR	-0.286	(0.238)	-0.219	(0.158)	0.068	(0.078)
PA	0.390	(0.224)*	0.347	(0.156)**	0.064	(0.074)
RI	-0.835	(0.437)*	-0.792	(0.293)***	-0.116	(0.146)
SC	-0.339	(0.174)*	-0.507	(0.112)***	-0.187	(0.057)***
SD	-0.150	(0.182)	-0.207	(0.118)*	-0.105	(0.060)*
TN	0.012	(0.150)	0.069	(0.099)	-0.020	(0.050)
TX	0.044	(0.133)	-0.329	(0.086)***	0.058	(0.044)
UT	-0.142	(0.363)	-0.160	(0.254)	0.068	(0.120)
VT	-0.068	(0.232)	-0.372	(0.150)**	0.014	(0.077)
VA	-0.324	(0.161)**	-0.521	(0.105)***	-0.018	(0.053)
WA	0.250	(0.219)	-0.095	(0.141)	-0.058	(0.072)
WV	0.219	(0.355)	0.072	(0.272)	0.229	(0.116)**
WI	0.125	(0.173)	-0.101	(0.113)	0.001	(0.058)
WY	-0.768	(0.286)***	-0.290	(0.194)	0.159	(0.093)*

Table 12. Wald statistics for farm demographic, crop insurance, yield, revenue, drought and state indicator variables for the SURE program.

Null Hypothesis	Equation	Levels	Per Capita	Per Acre
Log Acres & Num Recip & Log Farm Op. & Log Income = 0	Particip.	479.58***	3369.5***	2894.4***
Log Liability & Log Indemnity & Loss Ratio = 0	Particip.	4.91**	53.02***	2.9*
Jan.-Dec. PDSI = 0	Particip.	1.83	0.66	1.3
%Δ Yields = 0	Particip.	0	0.25	0.1
States Indicators = 0	Particip.	11.67***	9.52***	5.53***
Log Acres & Num Recip & Log Income = 0	Disburse	37.18***	66.49***	239.7***
Log Liability & Log Indemnity & Loss Ratio = 0	Disburse	149.45***	242.98***	436.88***
Jan.-Dec. PDSI = 0	Disburse	2.76*	15.07***	2.51
%Δ Revenue = 0	Disburse	6.1**	9.7***	10.98***
States Indicators = 0	Disburse	0.19	7.24***	0.03

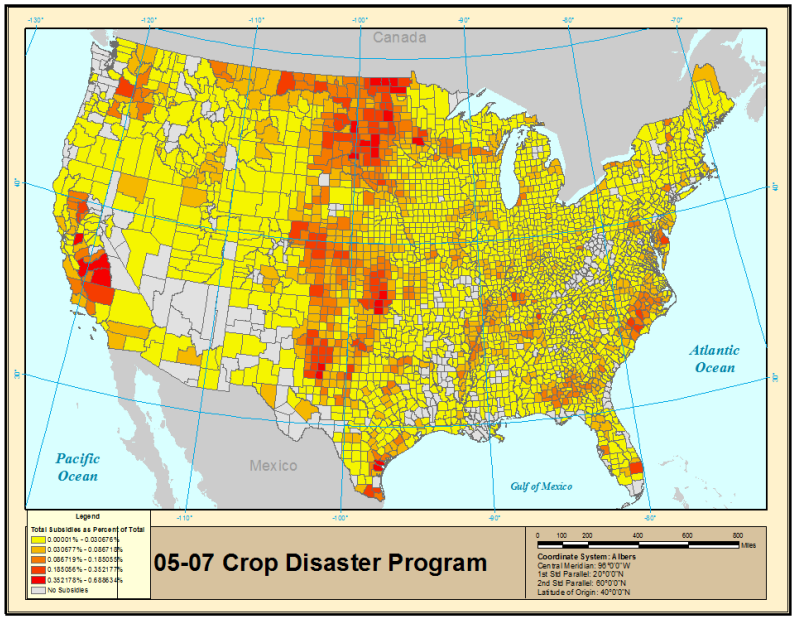

Figure 1. Total disbursement of payments under the 2005-2007 Crop Disaster Program.

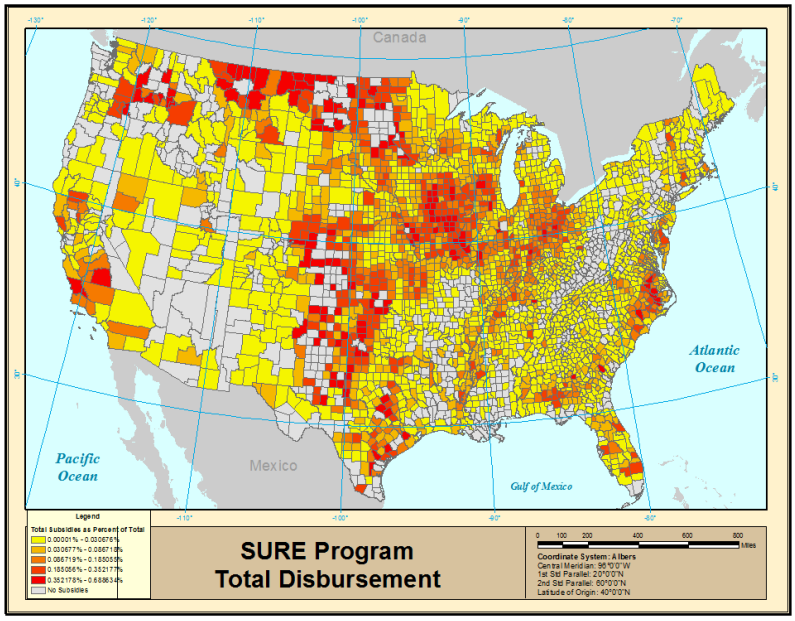

Figure 2. Total subsidy disbursement under the SURE program.

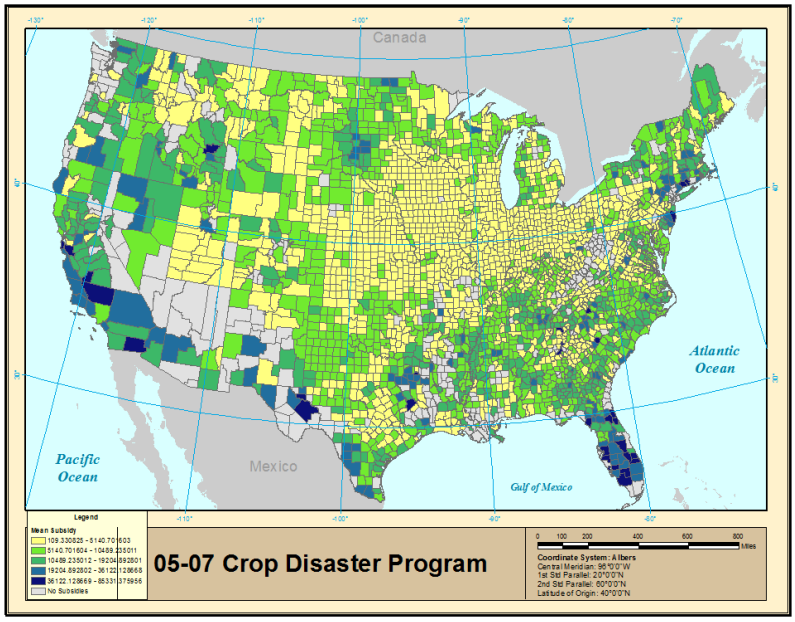

Figure 3. Per capita disbursement of payments under the 2005-2007 Crop Disaster Program.

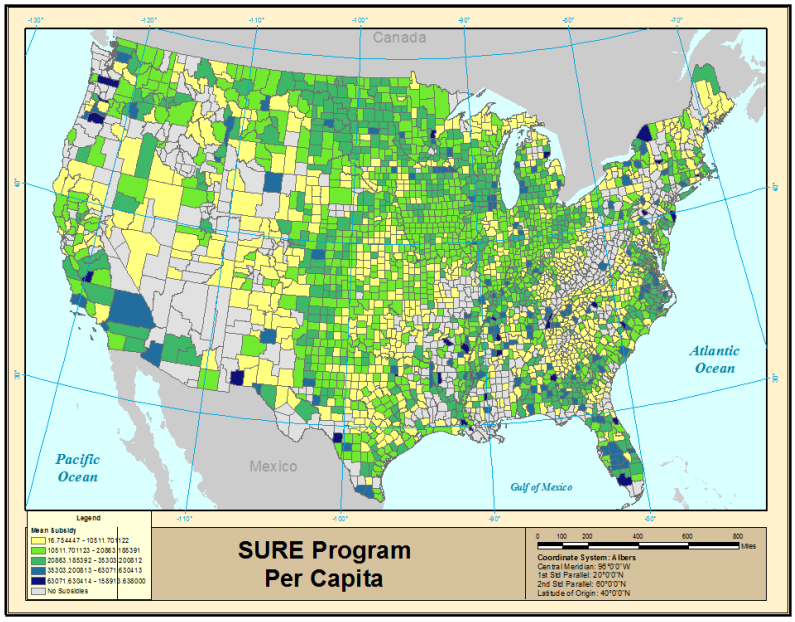

Figure 4. Per capita subsidy disbursement under the SURE program.

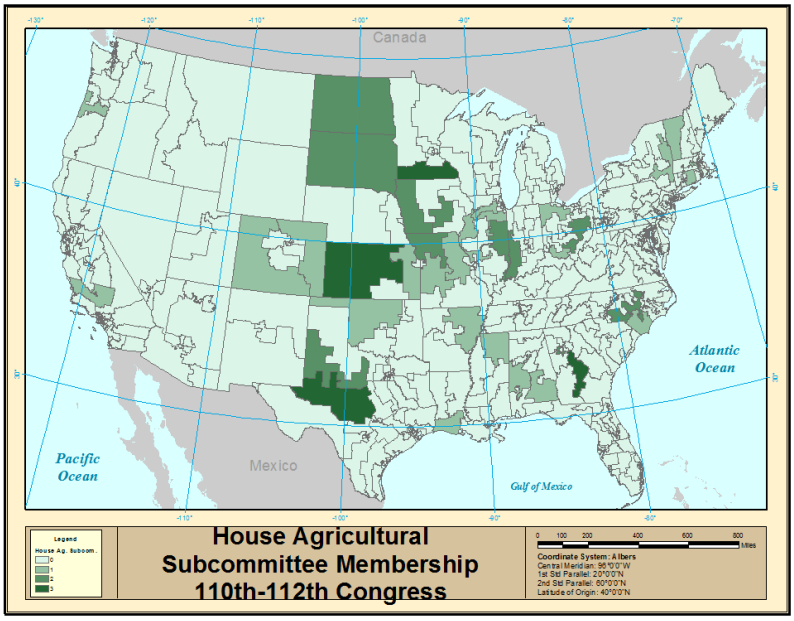

Figure 5. Membership on the House Agricultural Subcommittee on General Farm Commodities and Risk Management for the 110th through 112th congresses. This subcommittee oversees FSA programs.

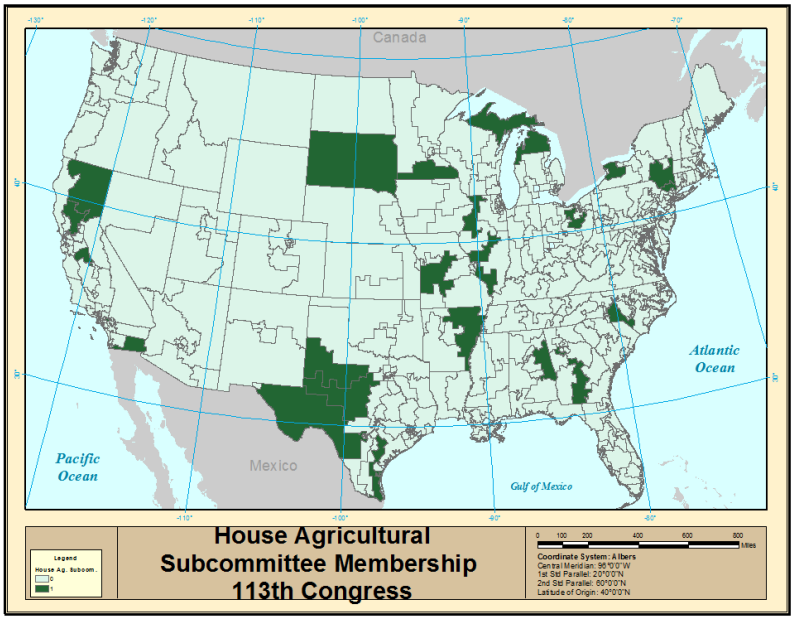

Figure 6. Membership on the House Agricultural Subcommittee on General Farm Commodities and Risk Management for the 113th congress. This subcommittee oversees FSA programs.

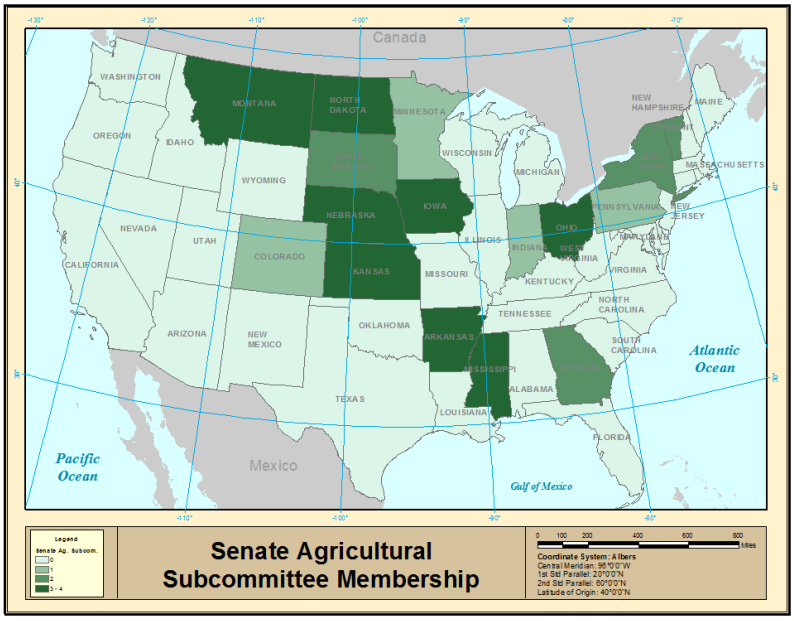

Figure 7. Membership on the Senate Agricultural Subcommittee on Commodities, Markets and Trade. This subcommittee oversees FSA programs.

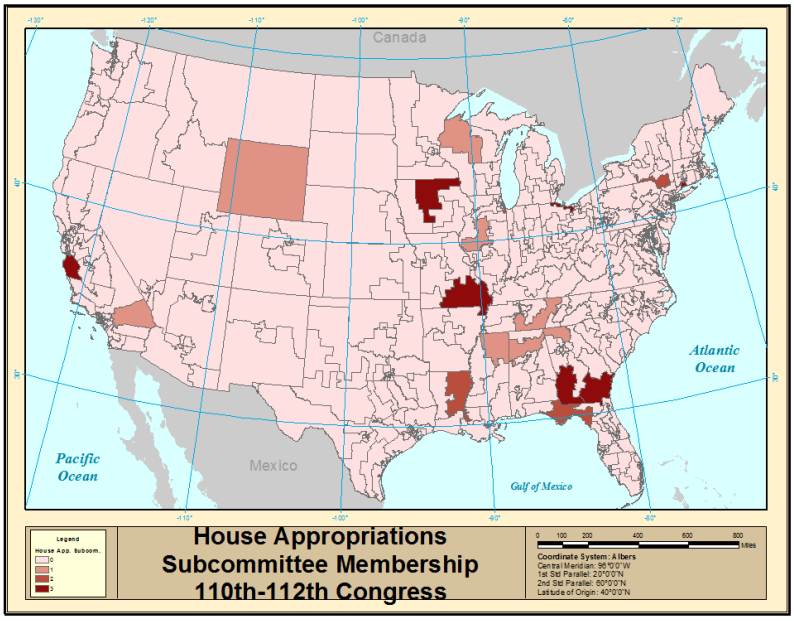

Figure 8. Membership on the House Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration and Related Agencies for the 110th through 112th congresses. This subcommittee oversees agricultural appropriations.

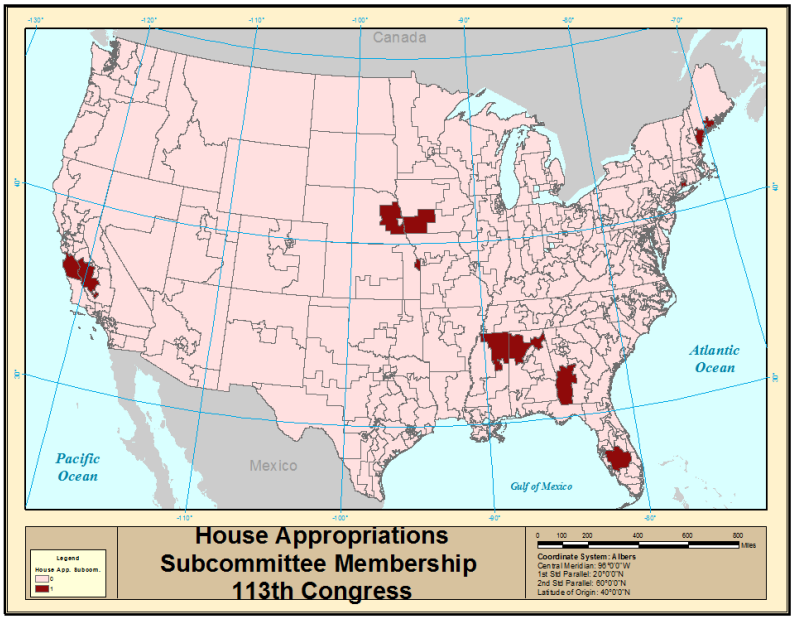

Figure 9. Membership on the House Agricultural Subcommittee on Agriculture, Rural Development, Food and Drug Administration and Related Agencies for the 113th congress. This subcommittee oversees agricultural appropriations.

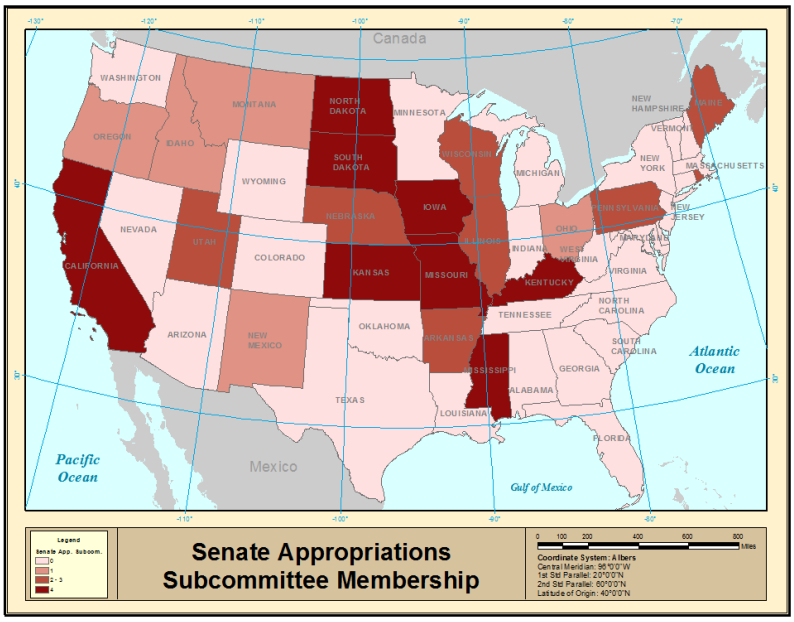

Figure 10. Membership on the Senate Agricultural Subcommittee on Agriculture, Rural Development, Food and Drug Administration and Related Agencies. This subcommittee oversees agricultural appropriations.

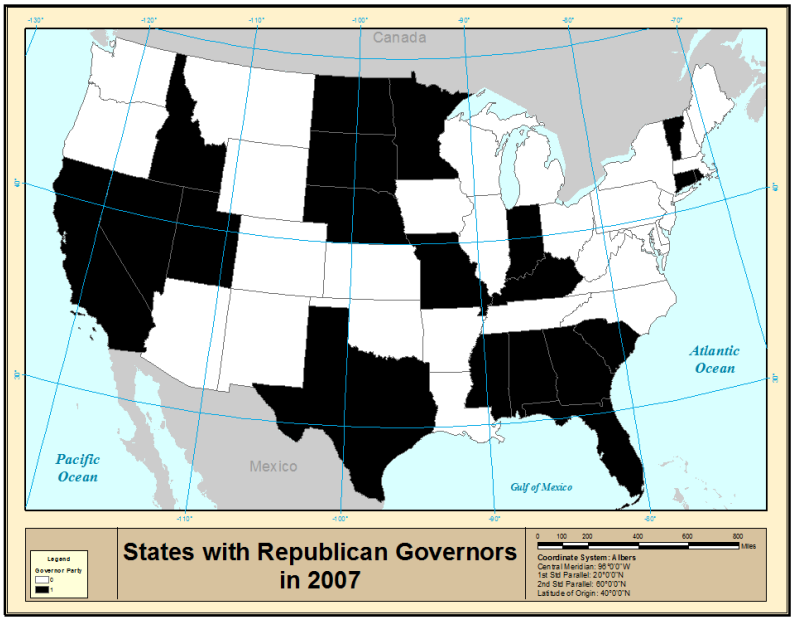

Figure 11. States represented by Republican governors when the 2005-2007 Crop Disaster Program was implemented.

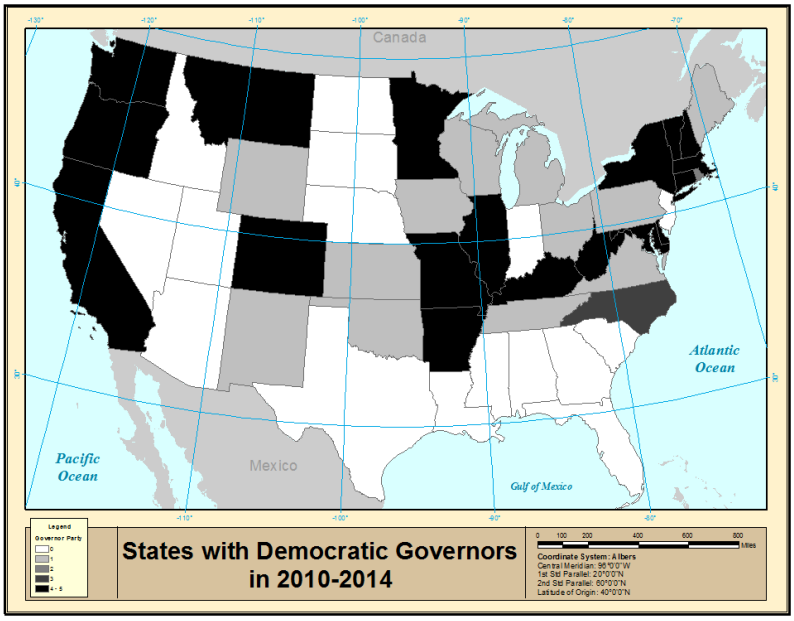

Figure 12. States represented by Democratic governors during the time span in which the SURE program was in effect.

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