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Conservation, the Farm Bill, and U.S. Agri-Environmental Policy

Erik Lichtenberg

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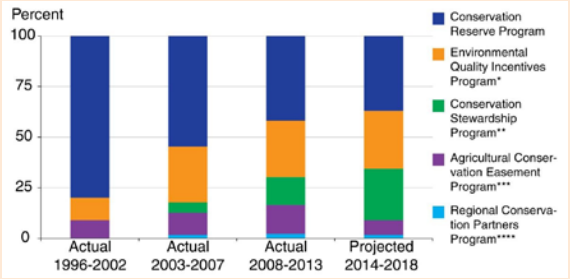
Conservation programs have been a component of U.S. farm legislation from its beginnings in the 1930s. And from the beginning, those conservation programs have had multiple goals. Paid diversion of erodible land into conservation uses, introduced in the 1936 Soil Conservation and Domestic Allotment Act, was enacted largely as an alternative means of providing financial assistance to farmers by controlling supply after the 1933 Agricultural Adjustment Act was declared unconstitutional by the Supreme Court. Suspended during World War II and its aftermath, when commodity prices were high, paid diversion of cropland into a Soil Bank was reintroduced by the 1956 Agricultural Act. The Soil Bank consisted of both fallowed cropland and a conservation reserve on which the government paid for measures that reduced erosion, enhanced wildlife habitat, and addressed water quality and other concerns. Similar provisions were contained in farm bills but were abandoned in the early 1970s, when commodity prices spiked because of Soviet grain purchases.

Paid diversion of erodible farmland into conservation uses, combined with government financial support for conservation investments, returned in the form of the Conservation Reserve Program (CRP) in 1985, at the time of a farm financial crisis caused by overexpansion during the high price years of the 1970s (Cain and Lovejoy, 2004; and Lubben and Pease, 2014). The CRP was publicized as ushering in a new era in agricultural conservation that stressed environmental protection. However, from the beginning, supply control and protection of agricultural productivity were also explicit CRP goals (Reichelderfer and Boggess, 1988).

Federal cost-share financing for conservation investments, together with technical assistance for planning on-farm conservation, also dates back to the 1935 Soil Conservation Act (Cain and Lovejoy, 2004). Until recently, spending on subsidies for conservation on working farmland was small relative to expenditures on paid land diversion programs. Since 2002, however, working farmland

Figure 1: Shifts in Conservation Spending Toward Working Farmland and Away from Diversion of Land to Noncrop Uses



*Includes EQIP and the Wildlife Habitat Incentives Program for 1996-2013.

**Includes the Conservation Security Program for 2002-2007.

***Includes the Wetland Reserve Program, Farmland Protection Program, and Grassland Reserve Program (easement portion) for 1996-2013.

****Includes the Agricultural Water Enhancement Program, Chesapeake Bay Watershed Program, Cooperative Conservation Partnership Initiative, and Great Lakes Basin Program for 1996-2013.

Source: USDA Economic Research Service and ERS analysis of Office of Budget and Policy Analysis data on actual expenditures for 1996-2013; spending levels provided in the 2014 Farm Act and Congressional Budget Office estimates for 2014-2018.

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conservation subsidies have become a growing share of federal farm conservation expenditures. They now represent about half of all conservation spending authorized by the 2014 Agriculture Act (Figure 1).

Why Subsidies for Conservation?

Why do we subsidize conservation? The original argument was that these subsidies are needed to protect the nation's capacity to produce food and fiber in the face of threats from erosion and other forms of land degradation. The question that arises in this context is, where's the market failure? Private ownership combined with well-functioning land and capital markets, as in the United States, create incentives for farmers and landowners to invest in conservation to protect land productivity (McConnell, 1983). Land and capital markets may not have functioned well in the 1930s, as the Dust Bowl experience suggests, but ought to function well today. Information about prices, productivity, and conservation is readily available. The U.S. farm credit system, whose purpose is serving agriculture, provides institutional infrastructure for financing conservation investments should private financial institutions prove incapable of that task. There's a clear public good rationale for publicly provided technical assistance, but it's hard to see a market failure rationale for spending public money to protect private farmland.

Environmental protection provides a stronger rationale. Agriculture is a major contributor to many environmental problems in the United States. Arguably, the major concern is water pollution: agriculture accounts for an estimated 70% of the nitrogen and phosphorus creating the dead zone in the Gulf of Mexico, and 40-50% of nitrogen phosphorus pollution in the Chesapeake Bay, as well as in numerous other waterways (Alexander et al., 2009; and U.S. Environmental Protection Agency, 2010). Farming is also responsible for the destruction of wildlife habitat in many areas and is seen as a major threat to habitat for some endangered species. In addition, farming practices such as confined animal feeding operations (CAFOs) may also be important sources of air pollution in some areas.

In fact, agriculture is largely exempt from most environmental regulation—notable exceptions being pesticides, endangered species, and, for water pollution, CAFOs, which are required to have permits for discharges into waterways in compliance with the Clean Water Act. Instead, subsidized conservation is the main way we address most environmental problems in agriculture. Taxpayers pay to place environmentally sensitive croplands into conservation uses via the CRP, Wetlands Reserve Program, Grasslands Reserve Program, and the new 2014 Farm Bill's Agricultural Conservation Easement Program. And we share the costs of adopting conservation measures on working farms via the Environmental Quality Incentives Program (EQIP) and Conservation Stewardship Program (CSP). The implicit assumption is that these conservation activities and environmental protections are close complements so that these conservation subsidy programs help protect the environment.

There are several reasons to expect that addressing environmental problems through the conservation programs authorized in the farm bill may not work so well. Viewed strictly through an environmental lens, these programs suffer from significant problems with their design and in how they are implemented that make them less than fully effective.

Problems of Design: Slippage and Additionality

Subsidy incentives for reductions in environmental damage have two kinds of effects (Baumol and Oates, 1975). They do create incentives for agents to cut back on activities that have negative environmental effects. For instance, providing cost-share assistance for adopting conservation practices that reduce nutrient runoff makes it more likely that farmers will adopt those practices, leading to less runoff and improved water quality. However, cost-sharing subsidies for conservation practices and payments for taking highly erodible land out of production make farming more profitable, creating incentives for farmers to expand their operations in ways that, at least partially, offset any pollution reductions. In other words, programs such as the CRP, EQIP, and CSP are prone to what is called "slippage."

The available empirical evidence indicates that slippage effects have been fairly substantial. Econometric studies have found that for every 100 acres enrolled in the CRP, 20 acres were converted from non-crop to crop use (Wu 2000, 2005; Roberts and Bucholz, 2005; and Uchida, 2014). Slippage has not been confined to CRP. Receipt of cost sharing by Maryland farmers was associated with large reductions in areas of vegetative cover, consistent with conversion to crop use (Lichtenberg and Smith-Ramirez, 2011). Federal programs that provide cost sharing for conservation practices make it profitable for farmers to convert some grazing land to crop production because those practices reduce or prevent erosion. Nutrient runoff from the land converted to crops will increase because runoff from cropland is greater than runoff from vegetative cover. In a similar vein, using data from a later period, Fleming (2014) finds that cost sharing of cover crops in Maryland reduces acreage on which stripcropping and contour plowing are used. This suggests that reductions in nutrient runoff due to the use of cover crops are at least partially offset by increases in soil erosion and runoff because of reductions in stripcropping and contour plowing.

A closely related question concerns the issue of "additionality"—how much extra environmental protection we get from conservation subsidy payments above and beyond what farmers would have done without them. For example, how much of the land enrolled in the CRP would have been put into conservation uses if not enrolled in CRP? How many EQIP- or CSP-funded projects would farmers have undertaken anyway? And are there screening mechanisms in place that ensure we get what we pay for?

It seems likely that additionality would be greatest with EQIP and least with CSP. The U.S. Department of Agriculture (USDA) exercises substantial oversight of projects funded under EQIP. For example, only projects approved by Natural Resource Conservation Service (NRCS) technicians are eligible for EQIP funding, a screening process that may weed out projects that have little merit. To be eligible for CRP enrollment, parcels must have been cropped in at least two of the preceding five years—a less stringent criterion than technical approval by NRCS but nonetheless providing some assurance that some cropland is diverted into conservation uses. CSP, in contrast, explicitly allows funding for measures that farmers are already using. In such cases, the subsidy results in no additional environmental protection for the money.

Figure 2a: Relationship between CRP Enrollment and EBI by State

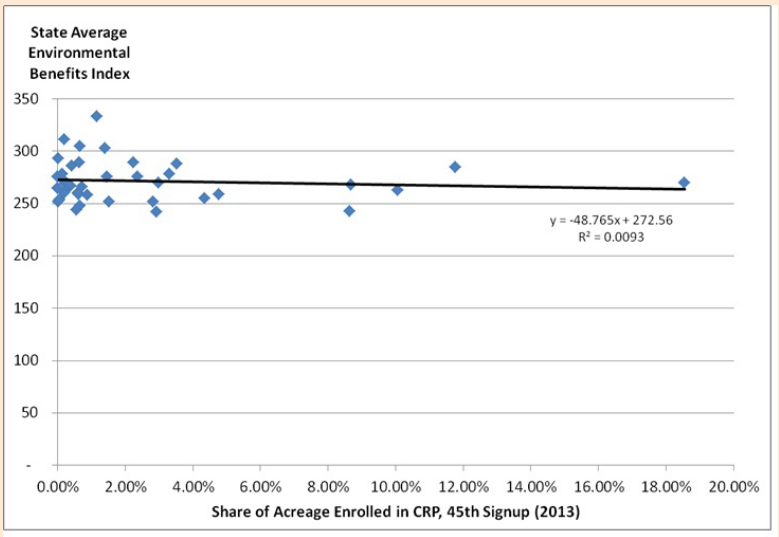
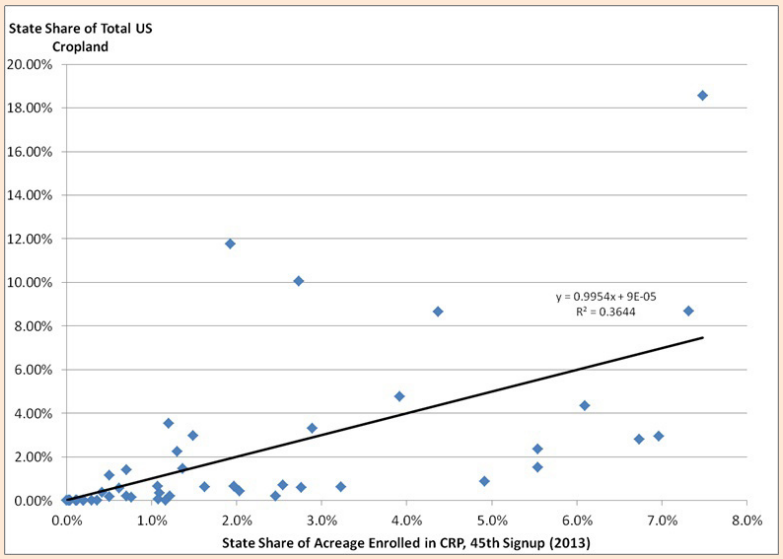


Figure 2b: Relationship between CRP Enrollment and Cropland by State



The limited empirical evidence we have is consistent with that characterization. Cost sharing under the EQIP program made farmers substantially more likely to install many conservation practices (Lichtenberg and Smith-Ramirez, 2011; Mezzatesta, Newburn, and Woodward, 2013; Fleming, 2014; and Claassen et al., 2014). Substitution between practices due to differences in cost-share rates and eligibility, however, suggests a need to adjust estimated additionality downward (Lichtenberg, 2004; and Fleming, 2014). Studies of CRP suggest that additionality could be quite low, especially once slippage is taken into account (Roberts and Lubowski, 2007; and Lubowski, Plantinga, and Stavins, 2008). Additionality in the CSP has not, to my knowledge, been studied.

Problems of Implementation: Single Instruments, Multiple Objectives, and Institutional Structure

Economic theory indicates that policies using a single instrument in pursuit of multiple objectives are bound to be inefficient unless those objectives are perfect complements (essentially, perfectly linked), not just related to one another. Federal conservation programs have always had multiple objectives: protecting farm productivity by reducing erosion, preserving wildlife habitat, protecting water quality, and supporting farm incomes. These objectives are not perfect complements on any farm.

Figure 3a: Relationship between EQIP Spending and Water Quality by State

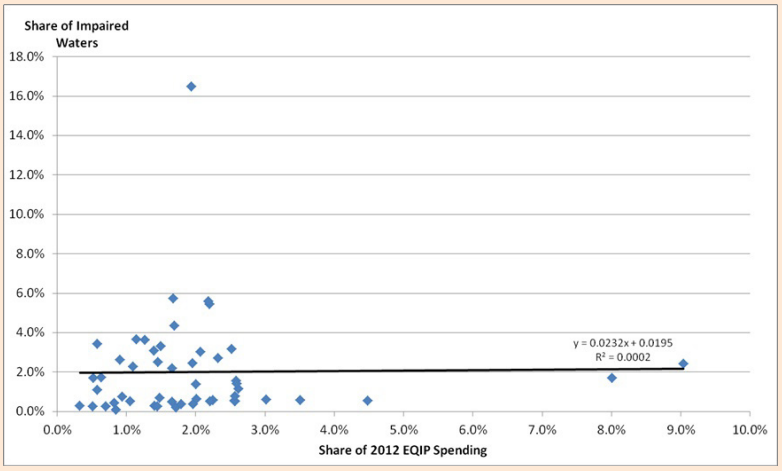
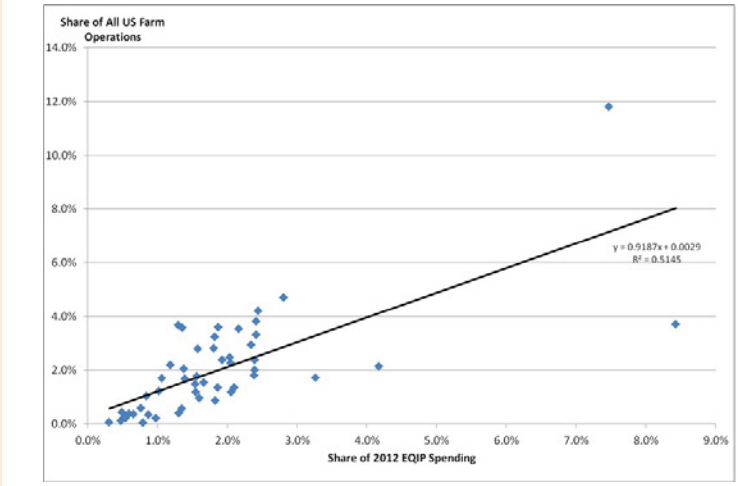


Figure 3b: Relationship between EQIP Spending and Number of Farm Operations by State



From a broader perspective, they are not necessarily even closely related; that is, accomplishing one objective does not move the farm very far forward with respect to the other objectives. Parcels that provide significant wildlife habitat benefits, for instance, may provide few benefits in terms of water quality protection, so that optimal selection of parcels for CRP enrollment to maximize wildlife habitat will be very different than optimal selection of parcels to maximize water quality protection (Wu, Zilberman, and Babcock, 2001). And, of course, complementarity between environmental quality and supply control/income support objectives on the other is far from assured.

Empirical analyses of CRP suggest that the allocation of conservation funds has not come close to getting the most social value for the money. Early CRP enrollment decisions were more consistent with getting as much land as possible into the program rather than maximizing environmental benefits (Reichelderfer and Boggess, 1988). As a result, CRP enrollment was heavily oriented towards the High Plains, where land was cheap but social damage from erosion was small. The CRP budget could have generated much greater social benefits had it been oriented towards the Corn Belt and Eastern Seaboard states, where water quality problems are more pressing and affect a much larger share of the U.S. population (Ribaudo 1986, 1989). In 1991, USDA introduced an explicit Environmental Benefits Index (EBI) to be used to weight CRP enrollment bids as a means of reorienting sign-ups toward environmental goals. As a result, enrollment in the Corn Belt and Lake States increased, suggesting greater water quality benefits. But even today, wildlife viewing and recreational hunting—concentrated in the Plains states—account for almost 60% of the estimated environmental benefits of the CRP (Hansen, 2007).

In fact, the extent to which the EBI steers enrollment to the most environmentally sensitive areas is by no means clear. Figures 2a and 2b compare the share of acreage enrolled in the 45th CRP signup in 2013 by state with each state's average EBI and share of total U.S. cropland. There is no apparent relationship between the share of acreage enrolled and the average EBI. There is, however, an almost perfect correlation between a state's share of acreage enrolled in the CRP and that state's share of total U.S. cropland, a pattern more suggestive of formula funding than of funding allocated in accordance with environmental benefits.

Similar patterns emerge when spending shares on EQIP and CSP are compared with measures of environmental quality versus farming activity. Figures 3a and 3b compare shares of 2010 EQIP spending by state with each state's share of impaired waterways (admittedly a crude measure of environmental quality problems) and, since EQIP targets both crop and livestock farms, its share of U.S. farm operations. Figures 4a and 4b compare shares of 2010 CSP spending with each state's share of impaired waterways and share of

Figure 4a: Relationship between CSP Spending and Water Quality by State

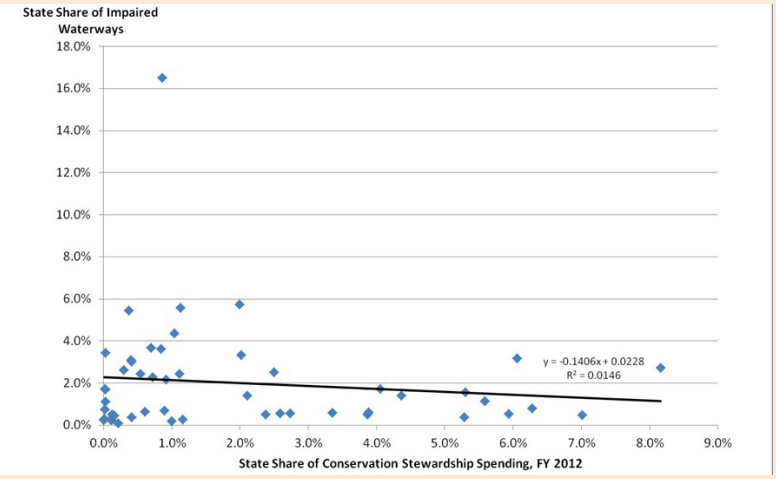
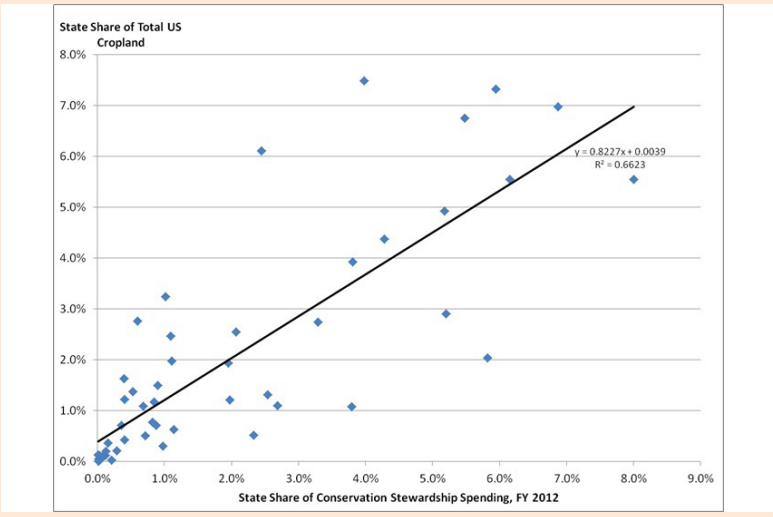


Figure 4b: Relationship between CSP Spending and Cropland by State



U.S. cropland. There is no apparent relationship between conservation expenditures in each state under each program and water quality problems. There is, however, a close relationship between conservation spending in each state and a measure of farming activity—as in the case of CRP, a pattern suggestive of funding allocated to support farm interests rather than improving environmental quality.

These spending patterns are consistent with an overarching outlook of an agency that exists to serve commercial farm interests, including siphoning money from the public purse into commercial commodity farmers' pockets. USDA has, in fact, been characterized as the archetype of an agency designed to use public power to serve private interests (McConnell, 1967; and Lowi, 1979). USDA's institutional structure reinforces that ethos. EQIP and CSP funds are allocated among states by formulas that primarily reflect the amount of farming in each state. The power to allocate EQIP and CSP funds within each state lies in the hands of county-level committees elected from and by local agricultural producers, who may be oriented largely toward supporting farm productivity and income (Bastos-Filho and Lichtenberg, 1991).

Final Remarks

This article has arguably been unduly harsh in its evaluation of the farm bill's conservation programs. It is certainly true that those programs have done a great deal of good in terms of promoting erosion and runoff control measures, protecting and expanding wildlife habitat, and improving the natural environment in other ways. It is also true that the environmental performance of the CRP has improved over time. Perhaps, too, the farm bill has been the only politically feasible way to provide any funding to address environmental problems in agriculture. Moreover, some of the evidence I presented is suggestive rather than dispositive. But the weight of the evidence indicates that, in principle, we could get more environmental protection for the money we spend under the farm bill's conservation titles. And the evidence, combined with what we've observed of USDA's institutional culture, suggests that will likely be the case as long as environmental problems in agriculture are addressed via the conservation titles of a farm bill.

For More Information

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Erik Lichtenberg (elichten@ umd.edu) is Professor, Department of Agricultural and Resource Economics, University of Maryland, College Park.