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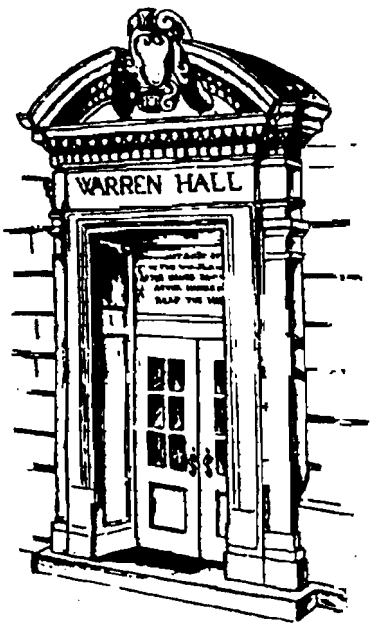

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Department of Agricultural, Resource, and Managerial Economics
Cornell University, Ithaca, New York 14853-7801 USA

Taxation and Participation in Federal Easement Programs: Evidence from the 1992 Pilot Wetlands Reserve Program

by

Gregory L. Poe

Property Taxation and Participation in Federal Easement Programs: Evidence from the 1992 Pilot Wetlands Reserve Program

Gregory L. Poe
Assistant Professor, ARME Cornell

Abstract: This paper argues that higher property taxes and uncertainty about post-easement tax levels create a disincentive for landowners to participate in federal conservation easement programs such as the Wetland Reserve Program. This hypothesis is supported by exploratory econometric analyses using state level data from the 1992 Wetlands Reserve Pilot Program. If this conjecture is supported by additional research, then such disincentives should be accounted for in the bid acceptance process of future Federal conservation easement programs, or other policies should be developed to reduce the effects of property tax differentials and post-easement tax uncertainty on enrollment decisions.

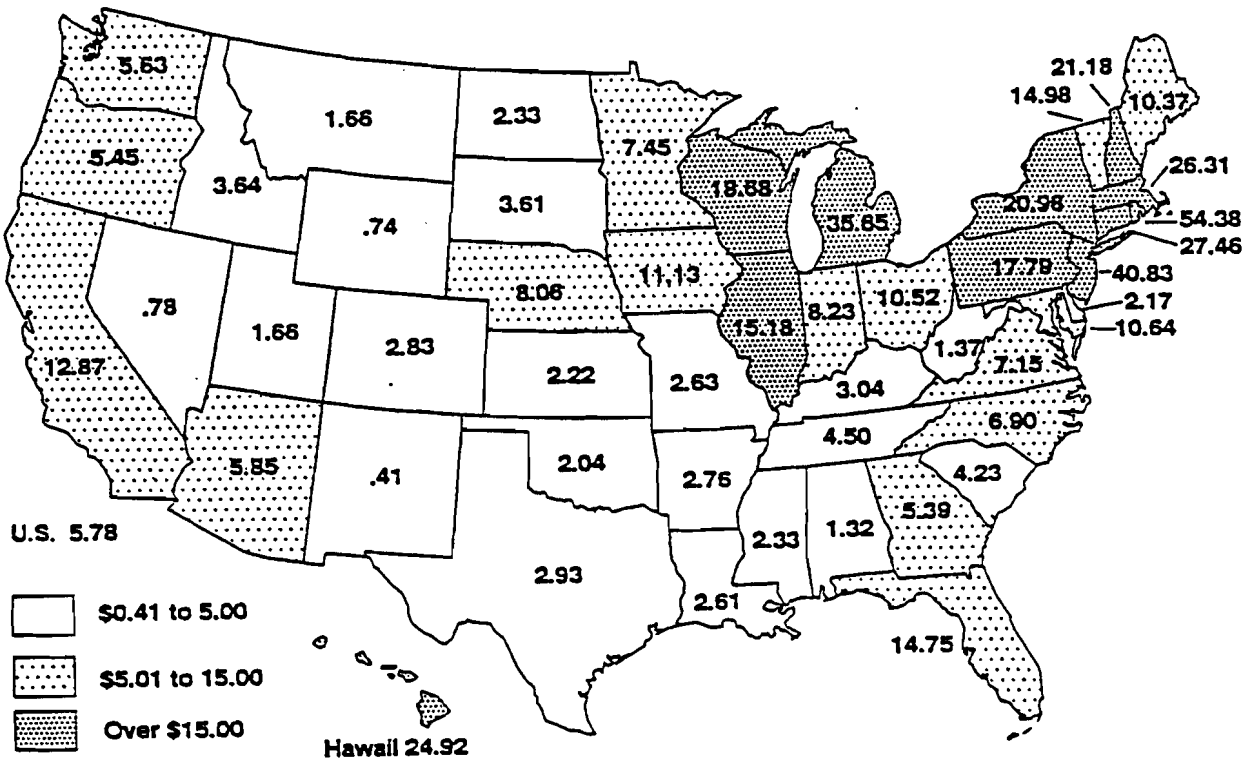
Property Taxation and Participation in Federal Easement Programs: Evidence from the 1992 Pilot Wetlands Reserve Program

One aspect of the relationship between property taxes and conservation easements has long been recognized by state and local authorities: conservation easements reduce the taxable land base and thus shift the local tax burden to other properties. With the recent Congressional recommitment to using voluntary federal easement programs as a national resource conservation tool (as demonstrated in the Federal Agricultural Improvement and Reform (FAIR) Act), attention must also be given to the converse relationship that differences in property taxes across states and localities might affect enrollment rates. If differential property tax rates are found to affect landowners' willingness to participate in programs like the Wetlands Reserve and Wildlife Incentive Programs, then enrollments could diverge from the Congressional intent that these programs "maximize the environmental benefits for each dollar expended" [Sec. 331, H.R. 2854]

With supporting evidence from state level enrollment in the 1992 Wetlands Reserve Pilot Program (WRPP) conducted in nine states, this paper argues that higher property taxes and uncertainty about post-easement tax levels may create a disincentive for landowners to participate in agricultural land retirement programs. To the extent that such a relationship exists, then the divergent agricultural land tax rates depicted in Figure 1 may cause deviations from optimal geographical participation in federal easement programs in which enrollment efforts are targeted towards regions

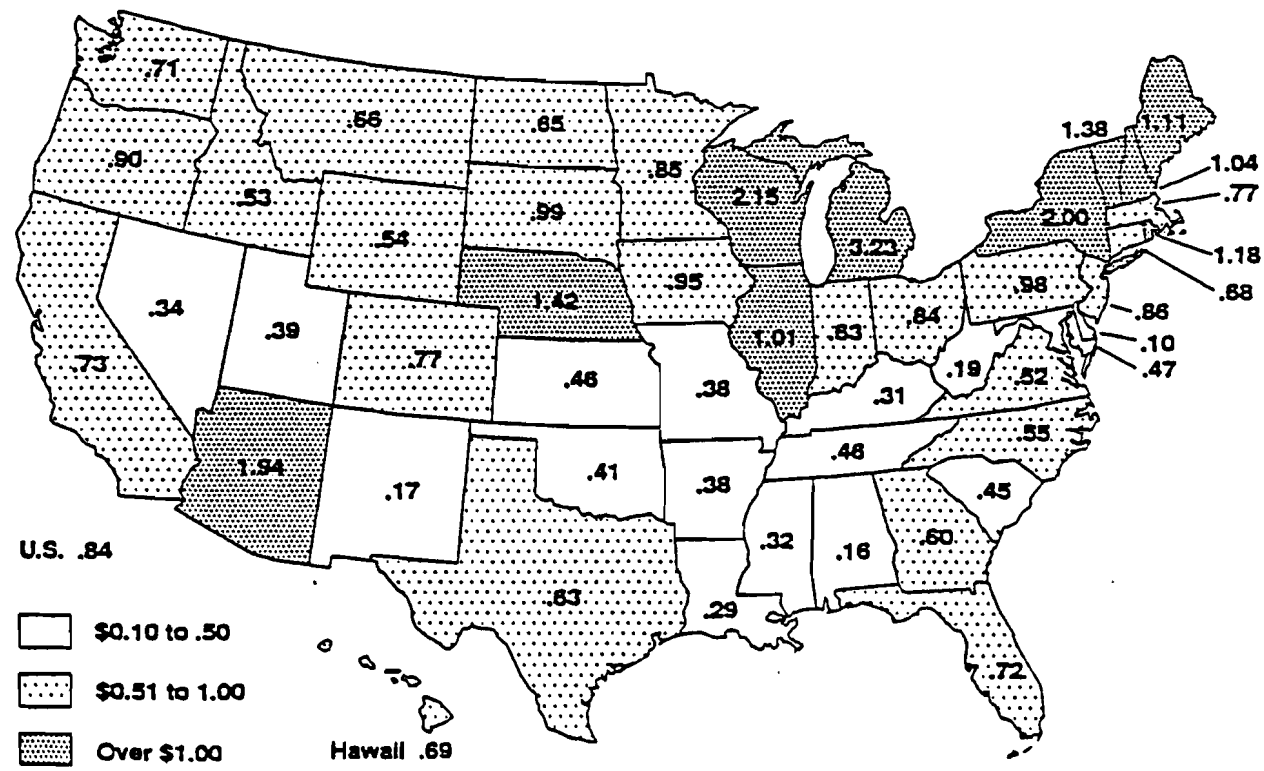
Figure 1

A. Agricultural real estate taxes, average per acre, 1992



Source: Economic Research Service.

B. Agricultural real estate taxes per $100 of full market value, 1992



Source: Economic Research Service.

and sites that generate high environmental benefits. Notably, regions such as the Northeast and the Upper Midwest that tend to have higher absolute and relative tax rates would be expected to experience relatively low participation rates, in spite of evidence that these areas derive the greatest benefits from resource conservation and environmental protection [e.g. Ribaudo]. While the notion of taxation affecting choice is standard fare in economics, this factor has yet to be incorporated into analyses that simulate participation in wetlands reserve programs [e.g. Heimlich; Parks and Kramer; Parks, Kramer and Heimlich].

Particular attention will be given to factors affecting land use decisions in New York. This state had the lowest bid submission levels in the WRPP, raising genuine concern among national and state conservation agencies and organizations [American Farmland Trust, 1993a]. New York also had the highest property tax rates of the states that participated in the 1992 WRPP.

Background

The Wetlands Reserve Program was established in the Food, Agriculture, Conservation, and Trade Act of 1990 (the 1990 Farm Bill). The intent of the program is to use a voluntary permanent easement approach to restore and protect up to one million acres of converted and farmed wetlands. In 1992, the United States Department of Agriculture initiated a nine-state pilot program to enroll 50,000 acres in California, Louisiana, Iowa, Minnesota, Mississippi, Missouri, New York, North Carolina, and Wisconsin. The final regulations documenting this program were

published by the Agricultural Stabilization and Conservation Service (ASCS) on June 4, 1992. A two week window for expressing interest by submitting a non-binding "Intention to bid" was established for late June, and the deadline for submitting actual bids and restoration plans was September 24, 1992. In January 1993, ASCS made offers on 46,888 acres on 265 farms, at a cost of about $46 million.

As demonstrated in Table 1, intentions to bid, actual bid submissions, and acceptance rates in the WRPP varied widely across states. Defining eligibility in

Table 1: Absolute and Relative Participation Rates in 1992 WRP Pilot By State in ,000 Acres

State	Hydric Cropland[a] (HC)	Wetland Acres Intended for Bidding[b] (% of HC)	Wetland Acres Submitted[b] (% of HC)	Wetland Acres Accepted[b] (%of HC)	Cost Per Acre[b] ($)
California	3,268.2	78.5 (2.40)	34.3 (1.05)	6.0 (0.18)	1,787
Iowa	6,714.7	45.1 (0.67)	27.9 (0.42)	5.1 (0.08)	1,168
Louisiana	2,441.2	119.3 (4.89)	69.9 (2.86)	14.1 (0.57)	702
Minnesota	9,545.2	33.3 (0.34)	13.1 (0.14)	0.7 (0.01)	1,082
Mississippi	2,225.1	115.7 (5.20)	65.0 (2.92)	14.9 (0.67)	723
Missouri	4,123.8	28.7 (0.69)	14.6 (0.35)	2.7 (0.06)	1,032
New York	415.9	3.0 (0.72)	0.5 (0.12)	0.1 (0.02)	2,934
North Carolina	1,175.0	25.6 (2.18)	15.3 (1.30)	4.7 (0.40)	780
Wisconsin	1,127.5	12.9 (1.14)	8.5 (0.76)	1.6 (0.15)	782

[a] Source: 1987 NRI as adjusted by SCS (Colacicco), [b] USDA, ASCS 1993.

terms of total acres of hydric cropland [Colacicco], Louisiana and Mississippi had the highest acre submitted/acre eligible ratio, and New York and Minnesota had the lowest acre submitted/acre eligible ratio. Whereas the decision to submit bids for such programs is likely attributed to a number of diverse factors such as constraints imposed by the timing of the sign up period, the agricultural systems and land returns in the region, and topographical features of agricultural land and wetlands [American Farmland Trust, 1993b], it is also likely to be affected by the financial ramifications of enrolling in the programs.

One of the financial factors that should enter into the decision process is local property taxation, which impacts the price of participating in programs. *Ceteris paribus*, states or localities that have high property taxes on post-easement land would be expected to have lower participation rates because higher taxation indicates a greater subsidization to the program. The rationale for this statement proceeds from the concept of fair market capitalization, which suggests that the value of a property to the average or typical manager in "prior" agricultural uses will be given by

$$CV_{prior} = Capitalized\ Value = \frac{Gross\ Returns - Costs - Taxes}{i} \qquad (1)$$

where i is the relevant discount rate, and all components of the numerator on the right hand side are annual values. In calculating the capitalized value, it is important to realize that property taxes are accounted for in the formula.

In deciding whether to bid in an easement program, a landowner must compare this opportunity cost with other benefits and costs associated with enrollment.

Benefits might include explicit items such as easement price and possible post-easement returns, as well as "intangible" motives such as altruism and stewardship. Explicit costs of enrollment would include any costs associated with maintenance and restoration, and post-easement taxes associated with the new classification of land. Other "intangible" costs, such as the loss of sovereignty of land might also be important individual decision processes. In all, the decision to participate in an easement program could be characterized by the following comparison of returns and costs associated with participation in the program:

$$\begin{aligned} &\textit{Easement Price} + \textit{Restoration Payments} + \frac{\textit{Annual Post-Easement Returns}}{i} + \textit{Intangible Gains} \succeq \\ &CV_{prior} + \textit{Restoration Costs} + \textit{Intangible Losses} + \frac{\textit{Post-Easement Taxes} + \textit{Other AnnualCosts}}{i} \end{aligned} \tag{2}$$

To the extent that the gains as exhibited on the left-hand side of the equation exceed the losses defined on the right-hand side, the appropriate private decision is to participate. Alternatively, the decision to participate can be framed as a preference relationship of net intangible factors with the financial loss or gain associated with enrollment:

$$\begin{aligned} \textit{Net Intangible Factors} \succeq\ & (\textit{Capitalized Value} - \textit{Easement Price}) \\ & + (1-\gamma) * \textit{Restoration Costs} \\ & - \frac{(\textit{Post-EasementTaxes} + \textit{Other Annual Costs} - \textit{Post-Easement Return}}{i} \end{aligned} \tag{3}$$

In the above equation, net intangible factors refers to the individual weighing of non-financial benefits less costs. On the right-hand side, the first term reflects the

difference in the easement price and the capitalized value, which is technically bounded at zero from above by the requirement that "The total easement payment may not exceed the average fair market value of the same type of agricultural land in the county or parish." [Iowa State University Extension][1]; the second term reflects the amount of wetlands restoration cost sharing contributed by ASCS, which has an upper bound of $\gamma = 75$ percent; and the third term characterizes the post-easement capitalized value. Based on discussions with wetlands owners in New York, this latter term tends to be positive; i.e. taxes and, to a lesser extent, other maintenance costs exceed any financial remuneration. As such, the "fair market value of the land encumbered by the easement" is perceived to be less than zero [S. 2830, p. 933].

To the extent that the bid price equals capitalized value, the participation decision will simplify to a comparison of net intangible factors with the owners" share of the restoration costs and perception of the post-easement capitalization of land. Since post -easement taxes are a component of the post-easement capitalization of land, increases in these taxes will reduce the likelihood of participation. Under the assumption that restoration costs[2], post-easement uses, and the distribution of

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[1] This restriction imposes another possible disincentive to participate in regions, such as along urban fringes, where the development value greatly exceeds the agricultural use value. It should also be noted that the assumption that easement prices are bounded by capitalized values, removes any positive effect on participation associated with property tax levels prior to the easement. Such an argument has been used to justify why farmers enter conservation programs that provide property tax incentives [e.g. Smith].

[2] Heimlich (1994) suggests that wetlands restoration costs vary widely, but will largely be a function of drainage installed rather than inherent regional differences.

individual landowner willingness to subsidize a wetlands program are relatively constant across regions, the likelihood of participation across regions will simplify to a function of post-easement taxes.

Uncertainty Regarding Post-Easement Taxation

To date, there is little evidence documenting how individual states and counties will value and tax wetlands conversions. In general, there is not a standard formula for assessing the value of wetlands, and valuation will proceed on a case-by-case basis varying by tax unit and the land-use and management practices on the converted land. An exception to this generalization is found in areas that have adopted uniform use value assessments for agriculture. For instance, in New York, some degree of uniformity is imposed by use value taxation requirements in agricultural districts. Under this system a wetland would be classified as a mineral soil group 10, with a value per acre of $30. Farm woodland, which may adjoin a wetland, would be valued at $223 per acre. It is important to note that, in spite of this taxation policy, only a portion -- about one-third -- of New York agricultural land is enrolled in agricultural districts. Thus this exception is likely to have limited consequences on statewide enrollment.

Other factors may act to increase the uncertainty regarding post easement taxes. Continuing with the New York example, the uncertainty with having the wetlands parcel revalued is compounded by the fact that assessors may offset any reductions in use value associated with wetlands by updating, and perhaps adjusting

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upward, the value of the assessment on the remaining property [New York Department of Environmental Conservation]. Finally, even if wetland values remained constant across tax units, differential rates of taxation based on equalization and mill rates would lead to widely divergent taxes on similar parcels -- thus creating differential incentives to participate within states and counties.

In lieu of precise knowledge about the level of post-easement assessments, it is assumed here that wetlands taxes will vary across states in proportion to the current level of agricultural land taxation. In other words, in making their enrollment decisions, landowners believe that their taxes will be a fixed proportion (d) of their current assessed value, regardless of region: regions with higher land tax rates will be assumed to have higher wetlands tax rates. As indicated in Figure 1a, the average agricultural taxation levels do vary substantially across states in absolute terms. Figure 1b demonstrates that there is also wide variation in tax rates relative to land values. In Michigan for instance, the average tax per hundred dollars of full market value (t) in 1991 was $3.21, as compared to $0.09 in Delaware during the same period. In capitalized terms, the respective values for Michigan and Delaware translate to $64.2 and $1.80 per hundred dollars of value (i = .05). Thus, based on the fixed proportion assumption, d, a wide variation in post-easement taxes is expected across states.

Do Differential Property Taxes Affect Participation?: Evidence from State Level Participation in the 1992 Pilot WRP

The data presented in Table 1 and Figure 2 suggests that there is indeed a relationship between acres accepted into the 1992 Pilot WRP and the average tax per acre on agricultural real estate. Using acreage and tax data provided in Table 1 and Figure 1, simple linear regressions relating the participation (as a proportion of hydric cropland) to property tax levels and total hydric acres further supports this hypothesis. As demonstrated in the first four rows of Table 2, 53 to 61 percent of the variation in landowners' decisions to register an intention to bid and to actually submit a bid by state is explained by these very simple models.

Figure 2: Tax Per Acre and Wetlands Acres Bids Submitted by State, Wetlands Reserve Pilot Project 1992

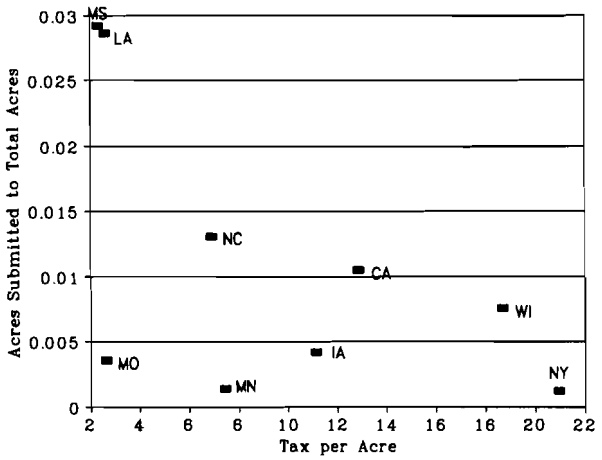

Table 2. Property Value Taxation and Participation in Federal Easement Programs: OLS Results for the 1992 Wetlands Reserve Pilot Program[a]

Dependent Variable	R^2	Constant	Tax/$100 Value of Farmland[b]	Tax/Acre of Farmland[b]	Total Hydric Crop Acres[c] [,000,000]	Avg. State Cost/ Acre[b] [$,000]
Acres Intended/Total Hydric Acres	0.53	0.027** (0.009)	-0.009 (0.004)*		-0.0020 (0.0010)	
Acres Intended/Total Hydric Acres	0.58	0.050*** (0.014)		-0.0018** (0.0007)	-0.0036* (0.0017)	
Acres Submitted/Total Hydric Acres	0.58	0.028** (0.008)	-0.011** (0.004)		-0.0021* (0.0010)	
Acres Submitted/Total Hydric Acres	0.61	0.029*** (0.008)		-0.0011** (0.0004)	-0.0021* (0.0010)	
Acres Accepted/Total Hydric Acres	0.60	0.0062*** (0.018)	-0.0022** (0.0009)		-0.00058* (0.00027)	
Acres Accepted/ Total Hydric Acres	0.69	0.0067*** (0.0016)		-0.00027*** (0.00009)	-0.00052** (0.00056)	
Acres Accepted/Total Hydric Acres	0.75	0.0075*** (0.0016)	-0.0016* (0.0008)		-0.00053** (0.00019)	-0.015 (0.009)

[a] *,**,*** refer to significance levels of 10, 5 and 1 percent respectively. Numbers in () are standard errors.
[b] Source: DaBraal, 1994.
[c] Source: 1987 NRI as adjusted by SCS

More important, the estimated coefficients are significant and of the expected sign. The negative coefficient on absolute and relative levels of taxation correspond with the conceptual framework above. Similarly, the negative coefficient on hydric acres is consistent with the hypothesis that there are institutional limitations on the amount of land that can be submitted and processed by overburdened field offices in a short sign up period.

Similar regression results were obtained for the ratio of accepted acres to total eligible acres as the dependent variable. However, actual enrollment levels will

depend not only on landowners' decisions to bid, but also on the acceptance selection process, of which the bid price is instrumental in the ranking formula that divided a "wetland score" by the easement and restoration costs [Thompson]. Other things constant, the higher the bid, the lower the likelihood of acceptance. This result is born out somewhat by the negative, but not significant (with 5 degrees of freedom), coefficient on the average cost of parcels accepted. It is interesting to note that, in spite of the inclusion of this variable, the coefficients on the tax per $100 value and acreage variables remain significant. A separate regression with total taxes representing the tax variable were not evaluated due to the high collinearity with the cost variable.

While the graphical and statistical analyses relationships are suggestive, they are somewhat speculative. Correlation does not imply causation, and there may be many other factors not accounted for in this simple analysis. For example, standing crops in Iowa made site work relatively difficult in that state while the relatively high cost of surveying required to delineate wetlands was acutely felt in California [American Farmland Trust, 1993b]. Characteristics of wetlands themselves may also affect participation rates in the sense that wetlands in some states such as Louisiana might be of a more contiguous nature than wetlands in New York or Minnesota. Nevertheless, the current analysis does support the hypothesis that property taxes have a negative effect on participation decisions.

Discussion

The policy implications of these results are unclear, in part because of the exploratory nature of the analysis. Obviously this analysis suffers from limited data, or what Goldberger has termed "near micronumerosity" . Moreover, the assumptions used to create this analysis may be inappropriate: d may not be constant across states and the average state values used may not characterize the actual underlying distributions. Even supposing that the results herein are indicative of a relationship, it is still uncertain whether the degree of deviation from a program that would maximize net social benefits is large enough to warrant policy intervention. If, for example, the program objectives are to maximize enrollment at least cost regardless of regional distribution, then differential participation levels associated with taxation may only be of minor concern.

Even with these cautions, the regression results presented here are suggestive. From a policy perspective, the implication is that future policy design of federal easement programs should acknowledge that different property tax policies across states may influence participation levels. At the federal level, minimal regional enrollment levels might be established in order to assure interregional equity and to maximize environmental benefits. However, as Heimlich has suggested, this will have a substantial impact on per acre enrollment costs. A second, equally costly, federal alternative might be to explicitly account for post-easement taxation in evaluating and ranking bids. Finally, the federal agencies and the states might work together to establish more *a priori* certain levels of post-enrollment land values and

taxation levels. Reacting to both the differential enrollment levels as well as the local consequences of enrollment noted in the introduction, individual states might consider cost sharing property taxes to reduce enrollment uncertainty and to aid fiscally burdened localities.

This analysis also raises a challenge to future research in land use decision making and participation in easement programs. Rather than simply deducing an economic criteria for participation as has been done in various papers, efforts should be undertaken to better understanding actual factors that lead to participation decisions. Much policy relevant research is warranted in order to answer basic questions such as, What are actual post-easement tax rates?, Is there uncertainty about ex-post taxation levels?, and, Does uncertainty about post-easement taxation enter into decision making?

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