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Evaluating impacts of agricultural cost sharing on water quality: Additionality, crowding In, and slippage

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Evaluating Impacts of Agricultural Cost Sharing on Water Quality: Additionality, Crowding In, and Slippage

Abstract

We evaluate three farmer behavioral responses to incentive payments for ecosystem services, specifically a cover crop cost-share program aimed at reducing nitrogen loads in the Chesapeake Bay. Using farmer survey data in Maryland, we estimate a two-stage simultaneous equation model to correct for voluntary enrollment. Econometric model results are integrated with the Chesapeake Bay Program watershed model to estimate nitrogen abatement for the Bay and associated abatement costs. Estimated additionality for nitrogen abatement is 97% for enrolled farmers when only the direct treatment effect on cover crops is taken into account, but reductions in vegetative cover (slippage) and indirect effects on conservation tillage are consequential. Slippage is particularly large among farmers not currently enrolled in the program, indicating that loss of vegetative cover may substantially offset pollution abatement if cost sharing is extended to this group. These findings suggest that unenrolled farmers may not be a low-cost source of pollution abatement as is often assumed.

Keywords: nonpoint source pollution, Chesapeake Bay, endogenous selection, conservation practices, slippage, water quality, cost sharing, agri-environmental policy, EQIP, payment for environmental services

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