Disaggregate Slippage Effects in the U.S. Conservation Reserve Program

メリーランド大学農業資源経済学科　博士課程
内田　真輔

Introduction

Programs that pay landowners for reductions in erosion, preservation of wildlife habitat, avoided deforestation or afforestation, and the like are seen as an equitable and efficient way to obtain ecosystem services. But the effectiveness of the programs is open to question, since they may induce some offsetting behavior that crowds out the targeted environmental benefits of the program. This unwanted effect, known as 'slippage', arises from multiple channels due to reallocation of outputs and inputs:

(a) Within-a-farm land substitution from uncultivated land to cropland;
(b) More intensive crop production on the rest of cropland;
(c) Between-farms land substitution through the local farmland market; and
(d) Price feedback effect through the commodity market;

While some empirical studies have attempted to estimate the aggregate effects of all these slippage effects, this study rather attempts to disaggregate those slippage effects to examine the unique contribution of one source of slippage. Specifically, I examine the slippage defined above in (a) caused by participants in the U.S. Conservation Reserve Program (CRP). Knowledge about the mechanisms through which slippage occurs should help policymakers devise programs with features designed to avoid or mitigate slippage incentives by pinpointing the sources of slippage.

Estimation Strategy

The mechanism and the testable hypothesis of within-a-farm slippage at the extensive margin were illustrated by Wu (2000). By using the quinquennial U.S. Census of agriculture micro file data from 1982 to 1992, I can utilize cross-sectional and time variation of detailed farm production and demographic characteristics to identify the causal relationship of CRP enrollment and subsequent slippage at the extensive margin. The rich farm-level panel data also provides an opportunity to further examine farm's heterogeneous response to the CRP program across region, farm production type, and the timing of CRP enrollment.

Estimation Results

(a) The mean slippage effect during the 1982-1992 period is 15% to 25%;
(b) A rate of slippage incidence varies not only across region but across time;
(c) A slippage rate increases for participants who accumulate more CRP acres over time, suggesting that the slippage problem got worse as farmers became more familiar with the program and accumulated rents from the policy.
(d) A higher slippage is caused by farms with price and income support subsidy payments (i.e., more price inelastic crop acreage supply);

Reference

Wu, J. J. 2000. "Slippage Effects of the Conservation Reserve Program." *American Journal of Agricultural Economics* 82(4): 979-92.