The influence of cost-sharing programs on Southern non-industrial private forests

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Abstract
This study was undertaken in response to concerns that the decreasing levels of funding for government tree planting cost share programs will result in significant reductions in non-industrial private tree planting efforts in the South. The purpose of this study is to quantify how the funding of various cost share programs, and market signals interact and affect the level of private tree planting. The results indicate that the ACP, CRP, and Soil Bank programs have been more influential than the FIP, FRM, FSP, SIP, and State run subsidy programs. Reductions in the CRP funding will result in less tree planting, while it is not clear that funding reductions in FIP, or other programs targeted toward reforestation after harvest, will have a negative impact on tree planting levels.

Keywords: Forest policy, Cost-sharing, Conservation Reserve Program, Random effects

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Introduction

Non-industrial private forest (NIPF) landowners hold about 115 million acres of forestland in the southern United States, and over the last 50 years they have planted about 27 million acres of forest. However, more timber is being harvested than is being grown on these lands (Pacheco et al., 1997; Cubbage et al., 1994; Kurtz et al., 1986). Additionally, reports indicate that only 25 to 35 percent of harvested lands are replanted. Various cost-sharing programs have existed over the last 50 years to address the lack of landowner tree planting effort or to encourage tree planting on agricultural land. Most program funding has been utilized the South as shown in figure 1. Recently, total federal cost sharing for private tree planting under all programs dropped from 419,000 acres in 1995 to 144,000 acres in 1997. Both the Stewardship Incentive Program and the Agricultural Conservation Program were terminated during this time, while the funding for the Forestry Incentives Program was cut in half and is to expire under the Farm Security Act of 2001. In light of these trends, the U.S. Forest Service is interested in evaluating how cost share program funding reductions affect annual NIPF tree planting in the South.

This study analyzes the effect of annual cost share program funding levels on NIPF tree planting in the South. Two models are used: an autoregressive time series model, and a random effects autoregressive time series cross-sectional model. The time series model evaluated thirteen cost share programs over the 1956 to 1999 period, where the six State programs are combined together. The cross-sectional time series model evaluated ten cost share programs for the 1979 to 1999 period, where each federal and State program funding level is separated by State. Three formulations of the cost share program variables were analyzed in each model: the effects of total cost sharing funding for all programs combined, the effects of programs grouped into either programs that encourage cutover land reforestation or programs that encourage farmland afforestation, and the effects of each program individually.

The annual total cost-share funding level was highly significant in both the time series and the cross-sectional time series models, positively affecting the acreage of annual tree planting. Further models revealed that the Agricultural Conservation Program (ACP), the Conservation Reserve Program (CRP), and the Soil Bank funding levels, either grouped together or modeled individually, were significant predictors of annual NIPF tree-planting. Each of these programs encourages tree planting on marginal farmland; however, of those three programs, only the CRP remains in existence. The models indicate that in any given year, a $1 million cut in CRP funding, in real terms, will reduce NIPF tree planting by 33,100 to 41,200 acres over three years, in addition to other policy or market changes which may take place during that time.

The funding for the Forest Incentives Program (FIP), the Stewardship Incentive Program, the Forest Stewardship Program, and State programs, whether grouped together or modeled individually, were not significant predictors of annual NIPF tree planting in any model. These programs cost-share with landowners to plant trees on forestland after harvest. The models cannot predict any reduction in tree planting if the funding for these programs is decreased. The effect may be negligible since these programs target reforestation on cutover land, which tends to occur at the same level regardless of cost-sharing.
Other significant predictors of tree planting were tree-planting costs, saw-timber stumpage prices, and average personal income levels. The models indicate that a $1 real increase in sawtimber prices across the South will increase tree planting by about 1,200 acres, while a $1 increase in planting costs will decrease tree planting by 8,000 acres.

Considering the margin between forest and agricultural land use, programs that cost share reforestation on harvested forestland (the FIP for example) should retard forestland conversion to agricultural land, while farmland afforestation cost-sharing (the CRP or Soil Bank) facilitates conversion from agricultural land to forestland. Cutover land reforestation cost sharing may be less effective because there is currently little to conversion from forest to agriculture. There are millions of acres of marginal and low productivity cropland that would earn higher returns in trees (USDA Forest Service, 1989). An explanation why the CRP, ACP, and Soil Bank were so effective may be that farmers lack the funds to invest in forestry, and these cost share programs lower the cost barrier that prevents many farmers from investing in forestry out of their own income. These programs may also promote awareness about the benefits of forest investment. Landowners who have recently harvested may be in a better position to incur tree-planting costs, and understand the financial returns since they have recently received money from a timber sale.

Literature cited


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Figure 1. Distribution of FfP payments (1974-2000).