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What Kind of Incentives Matter for Farmers’ Adoption of Sustainable Soil Practices?

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Abstract

Agriculture is key to the livelihoods of the population in developing countries and investments in this sector are often seen as effective mechanisms for economic growth and food security. However, increased agricultural production puts additional pressure on natural resources.

Agri-environmental policies can contribute to a paradigm shift towards more sustainable agricultural systems, thus minimising the trade-offs between agricultural production and environmental conservation. Previous studies analysed the effects of diverse policy mechanisms on land use and on the adoption of sustainable agricultural practices. Yet, how different incentives are perceived by farmers and how they affect the success of these policies remains largely under-researched. In this paper, we analyse whether farmers’ point of reference regarding their potential losses/gains (i.e. the context from which they face the incentive) and whether their “present bias” (i.e. preference for short-term gains) affect their compliance with a command-and-control policy.

Our empirical analyses build on data from Uruguay’s soil conservation policy. Under this policy, farmers must submit land-use plans for each harvest season. These policies can create trade-offs between agricultural outcomes and environmental goals. In the short term, these constraints lead to profit losses, as a less intensive soil use is promoted. In the longer term, a healthier soil can increase productivity and income gains. These data constitute a unique database for the assessment of decision-making on land use at the farmer level.

The objectives of this paper are (i) assess how the “point of reference” influences the willingness of farmers to accept a profit loss; (ii) assess to what extent the “present bias” can prevent the effective implementation of the policy; and (iii) identify the implications of these findings on the agri-environmental policies. Using General Algebraic Modelling System (GAMS), we build models in different scenarios that represent different points of reference and time distributions of losses and gains. We expect to obtain results on how the context of crop prices can be used as an adequate point of reference and attenuate the “present bias” to promote higher incentives of the farmers to comply with the policy.

Keywords: Environmental sustainability, incentives, soil conservation, trade-offs