Incentives for sustainable land use considering cost heterogeneity among farmers: Results from a computerized framed experiment

Marie Ferré*[1], Stefanie Engel*[2], and Elisabeth Gsottbauer*[3]

[1]Institute for Environmental Decisions (IED) Professorship of Environmental Policy and Economics (ETH Zurich) – Sonneggstrasse 33, SOL F6, CH 8092 Zürich, Switzerland

[2]Alexander-von-Humboldt Professorship of Environmental Economics, Institute of Environmental Systems Research, University of Osnabrück, Osnabrück, Germany; (Osnabrück University) – Barbarastr. 12, 49076 Osnabrück, Germany, Germany

[3]Institute of Public Finance, University of Innsbruck, Innsbruck, Austria (Innsbruck University) – Institut für Finanzwissenschaft, Universitätsstraße 15 / 4, 6020 Innsbruck, Österreich, Austria

Abstract

Agri-environmental payments are increasingly used to incentivize sustainable land use. The design of these payments needs to overcome two principal challenges. First, cooperation among land users is often required to achieve environmental outcomes. Second, conservation costs of adopting sustainable land use usually vary among farmers. Agglomeration payments have been proposed to address the first issue, while differentiated payments have been proposed to address the second. In practice, uniform payments are most commonly used and set equal to average opportunity costs. Past empirical studies focus either on the first or on the second issue. In this paper we combine the two. Using the issue of cultivated organic soils in Switzerland as specific example, we test the effectiveness, efficiency and equity of differently designed conservation payments in a computerized and interactive framed economic experiment that we conducted with university students acting as farmers. The experimental setup allows for side payments between players. We also collected data on individual social preferences and a variety of socio-demographic characteristics. We find that agglomeration payments differentiated by players' opportunity costs and uniform agglomeration payments equal to average players' opportunity costs are equally environmentally effective. This is because group members use side payments to redistribute payoffs among different cost types. In terms of cost effectiveness, differentiated payments perform best. Nevertheless, differentiated payments lead to highest income inequalities among players. Finally, we find a strong link between individual social preferences and behavior in the experiment.

Keywords: heterogeneity, conservation costs, cooperation, peatlands

*Speaker