Report

Spatial effects of alternative direct payment systems on Swiss Alpine regions poster presented at the XXIVth International Conference of Agricultural Economists Berlin 2000 - IAAE Triennial Conference, learning workshop on spatial data analysis, Berlin, August 13-19, 2000

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Spatial effects of alternative direct payment systems on Swiss Alpine regions

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Research issues

Differences in land productivity, input and technology requirements and production costs are functions of topographic, climatic, environmental, agronomic and infrastructural characteristics which lead to considerable variations in land use intensity. This contribution investigates the effects of different policy assumptions relating to land use payments on economic and ecological parameters. A spatial linear programming model is described and implemented for two Swiss Alpine regions with the following particular characteristics:

- Region 1: approx. 6500 hectares of agricultural land, important vertical extent of land use (fields from 600 to over 1800 metres above sea level), agrarian-touristic predominance.
- Region 2: approx. 1400 hectares of agricultural land, important vertical extent of land use (fields from 1200 to over 1800 metres above sea level), only touristic predominance.

Transportation and harvesting costs as a function of distance from fields to farms, slope and land use intensity are considerable. No mechanical harvesting is possible on very steep slopes (>51%) which increases the risk of fallow land. Fallow land is particularly hazardous from the point of view of avalanches and landslides. Special reference is therefore made to the effects of different types of direct payments on the prevention of fallow land. The study investigates the effects of abolition of base payments (a transitional measure which ensures farmers' incomes) amounting to CHF 1200.- per hectare and their substitution by slope payments with a view to preventing fallow land on the steepest category of slope. It is shown that efficient slope payments vary strongly between regions depending on their topographic characteristics.

Fallow land with base payments

Fallow land without base payments

Efficient slope payments to prevent fallow land on steepest slopes

Synthesis

- A comparison of the first and second columns for each region shows that fallow land more than doubles in Region 1 when base payments are no longer granted and it appears for the first time in Region 2.
- The elimination of base payments reduces the taxpayers' burden by more than 80% (by an overall CHF 8.5 million from CHF 10.4 million to CHF 1.8 million) at the cost of sectoral revenue (-38%) and the number of farms (-21%) in both regions.
- A comparison of the second and third columns for each region reveals a considerable overall reduction in fallow land when payments are granted which aim at the elimination of fallow land in the steepest, ecologically most sensitive category (<51%).
- The taxpayer pays for the provision of this public good with additional direct payments amounting to CHF 400 000.00, corresponding to an increase of 22%.
- Only a minor proportion of these additional payments contribute to an increase in the sectoral revenue and the number of farms because a substantial share is absorbed by the remuneration of the additional labour needed for the cultivation of steep land.

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