

Impact assessment of the CAP reform using mathematical programming methods: an application to arable farms in Thessaly.

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Abstract

Mathematical programming models have been extensively used for assessing the impacts of agricultural policy especially in case of radical shifts. Although mathematical programming (MP) was first introduced as a farm management tool, regional bottom-up models have been implemented as an instrument of policy analysis. Regional models include classical normative linear programming (LP) models and Positive Mathematical Programming (PMP) ones.

PMP was first introduced in 1995 to calibrate LP models and relies upon the assumption that the economic agent's observed behavior is in fact optimal. The main advantage over the classical LP approach, besides the ability to calibrate against the base year observations is that it can use a limited data set (just the observed activity levels), without facing the risk of overspecialization.

The aim of this paper is to compare LP and PMP methodology on their ability to predict crop mix changes due to the decoupling and cross-compliance measures. For this purpose, a sample of 56 tobacco farms from Thessaly is used by means of a survey. Both models are validated against base year observations (2005) and predictions of farmers' reactions for the following years (new CAP implementation in Greece) are compared with the actual observations (2006-2008), revealing the strengths and the weaknesses of the examined methodologies.

Keywords : Linear Programming, Positive Mathematical Programming, Agricultural Policy, arable farming, Thessaly

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