The Austrian Programme for Rural Development: Effects on Employment and Growth in Rural, Urban and Integrated Regions

Das österreichische Programm für die Entwicklung des Ländlichen Raums 2007-2013: Beschäftigungs- und Wachstumseffekte in ländlichen, urbanen und integrierten Regionen

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Summary

The article analyses environmental and economic consequences of the Programme for Rural Development in Austria in rural, urban and integrated regions. In an ex-ante model analysis, the programme for the period 2007 to 2013 is compared to a scenario with a programme similar to the one implemented during 2000 and 2006. The results show economic benefits for the agricultural sector and the regional economy as a whole, mainly due to an expansion of programme funds.
Keywords: rural development, Common Agricultural Policy, CAP

Zusammenfassung

Die Studie untersucht für die Periode 2007 bis 2013 Auswirkungen des österreichischen Programms für die ländliche Entwicklung auf ausgewählte Indikatoren von Wirtschaft und Umwelt in ländlichen, urbanen und integrierten Regionen. Verglichen wird dieses Programm mit einer unveränderten Fortsetzung des Programms der Periode 2000 bis 2006. Die Ergebnisse einer ex-ante Modellanalyse zeigen wirtschaftliche Vorteile des aktuellen Programms, die vor allem auf die Ausweitung der Programmmittel zurückzuführen sind.
Schlagworte: ländliche Entwicklung, Gemeinsame Agrarpolitik, GAP

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1. Motivation and topic

The Austrian Programme for Rural Development (PRD) plays an eminent role in domestic agriculture and even at EU-27 level, where Austria accounts for 1.7% of total agricultural output but receives 4.4% of the total PRD funds until 2013. The volume of the Austrian programme is € 8.02 bn for the period 2007-2013 (BMLFUW, 2011). Despite the considerable EU and national public funds spent on PRD, little is known on welfare effects on a regional level. This analysis evaluates the economic consequences of the PRD for both rural and non-rural regions in Austria. Inter-regional spill-overs and their impacts on the development of the two types of regions are taken into consideration explicitly.

There are several general equilibrium models available, which analyse CAP issues at national or EU levels (e.g. GTAP). However, most regional models for agricultural policy analyses are either limited to the agricultural sector (e.g. CAPRI) or to selected sub-national regions (PSALTOPOULOS et al., 2006). Here, a multi-regional model of the whole Austrian economy is presented which captures, both, the agricultural sector and agricultural policies, specifically PRD, in a very detailed manner. The study attempts to evaluate the regional consequences of the PRD for the whole country such as KILKENNY (1993) did for the US based on a computable general equilibrium (CGE) model. Here, we combine a regionally disaggregated econometric input-output model of the whole economy and a regional model of the agricultural sector at NUTS 3 level. The article is structured as follows:

- a regionally differentiated programming model of the Austrian agricultural sector is presented, which builds on NUTS 3 levels and represents Austrian PRD in detail,
- a regional input-output model of the Austrian economy is presented which represents the downstream and upstream linkages of the agricultural sector in a very detailed manner; measures of the PRD that are not addressed in the agricultural model are taken account of in this model,
- the link between both models and the procedures to handle cross-sectoral issues are explained,

- finally, economic consequences of the programme in rural and non-rural regions consistent with the OECD territorial definition are presented based on a scenario analysis.

2. A toolkit for the ex-ante evaluation of effects of the Programme for Rural Development

2.1. PASMA

PASMA (positive agricultural sector model of Austria) is a tool that has been developed for policy analysis (SINABELL and SCHMID, 2006). It is a regionally disaggregated formal representation of the Austrian agricultural sector. Compared to single farm models (e.g. KIRNER, 2002), PASMA results hold for the whole sector and not for a representative number of farms only. For Austria, there exists another farm sector model, FAMOS (SCHMID, 2004). The difference between both is that PASMA models regions as one representative farm whereas in FAMOS the results of different farm types are aggregated to the regional level.

The core of PASMA is the decision module (see Figure 1). A representative farmer decides on production activities in a region by allocating land to various crops, setting the level of livestock activities and deciding on the type of management. Decisions are constrained by historically observed management options and resource endowments. In the scenario module of the model various variables affecting the decisions can be set: input and output prices (see block *markets* in Figure 1), premiums of agricultural programmes (block *CAP*) and resource constraints (block *resource endowments*).

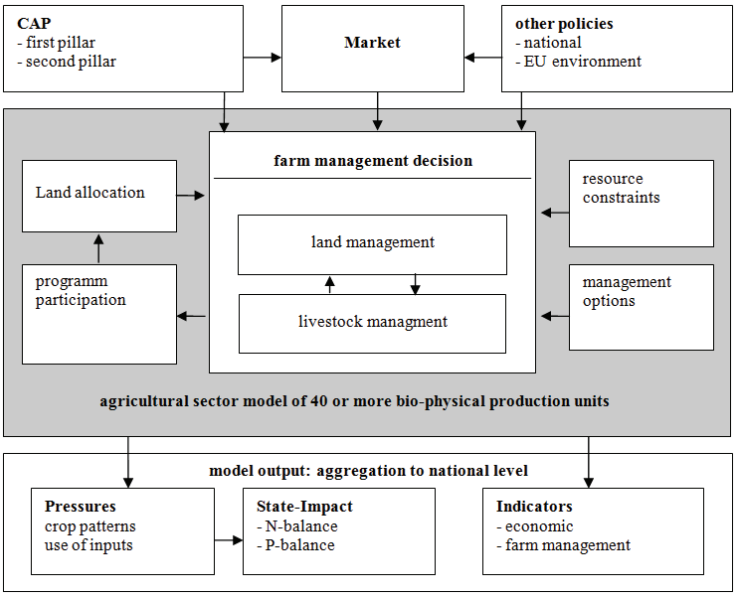

Figure 1: Model structure of PASMA
Source: SINABELL and SCHMID, 2008

PASMA is employed to estimate the effects of PRD on farm income, crop and livestock production, and farm labour at regional and national scales. Data from 'Allgemeines Land- und Forstwirtschaftliches Informationssystem' (ALFIS), the Integrated Administration and Control System (IACS), the Economic Agricultural Account (EAA) at NUTS 3 level, the latest agri-structural survey, the standard gross margin catalogue, and standard farm labour estimates provide necessary information on regional resource and production endowments. Data from the PRD period 2000 to 2004 were used to calibrate the model. Assumptions on the implementation of the programme and forecasts of agricultural product prices are based on publicly available programme information and OECD-FAO (2010).

2.2. MultiREG – A multi-regional, multi-sectoral model of the Austrian economy

Austria is a small open economy but some of its regions are characterized by a higher degree of openness than others. This limits the usefulness of models for single regions (e.g. the rural economy) since economic impacts from changes in policy or public investment projects mostly emerge not within one region, but have spill-overs to other regions due to factor and trade flows. Therefore the multi-regional model of the Austrian economy MultiREG has been developed. It differentiates between 32 activities and commodities and has been frequently applied to regional impact assessments (FRITZ et al., 2005).

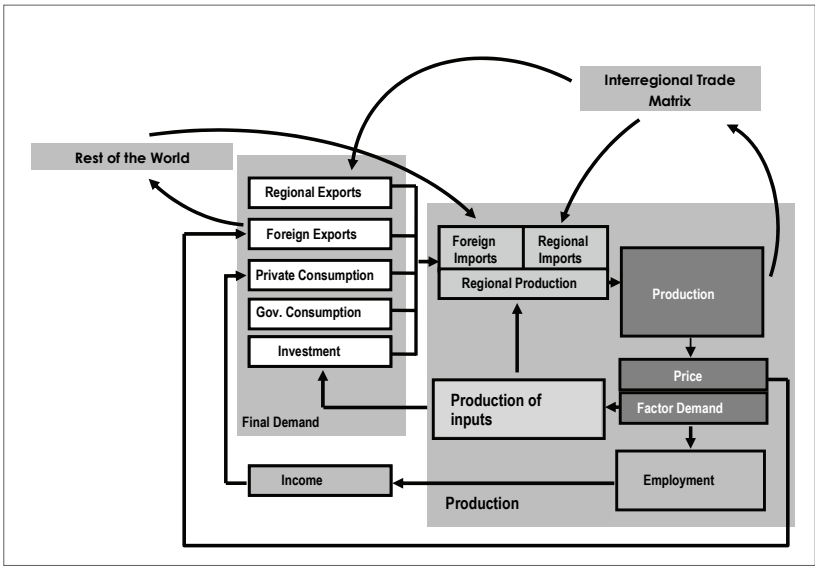

Figure 2: The structure of MultiREG, a multi-regional and multi-sectoral model of the Austrian economy
Source: FRITZ et al., 2005

MultiREG is a structurally linked set of modules:

- for each Austrian province input-output tables are integrated in the model,

- input-output tables represent the flows of goods between the sectors of each province,
- an inter-regional trade matrix represents the flows of goods and services between the provinces; exports and imports to foreign countries are included in this module, as well,
- parameters of behavioural equations for production, consumption, household income, and employment are based on empirical estimates.

The model structure of MultiREG is illustrated in Figure 2 with the arrows indicating monetary flows. The model starts out with solving total final demand, which is composed of private and public consumption, investment, and regional and foreign trade. This demand can be met either by importing commodities from other regions in Austria, by commodities produced by firms in the region or by imports from abroad.

2.3. Implementation of the model link

The quantitative assessment of the PRD scenarios is carried out by coupling the agricultural sector model PASMA with MultiREG via output-, input- and price vectors at regional scales. Agricultural commodities are covered by MultiREG in general. However, for the purpose of this study, PASMA provides the changes in agricultural output and factor demand. Due to the small size of the Austrian economy, changes in many prices are taken from external sources (derived from OECD-FAO, 2006). The procedure to link the two models is the following:

- In a first step, baseline scenarios are defined. PASMA is calibrated to reflect the production and policy situation after the CAP reform in 2003 and before the implementation of the currently available PRD.
- The baseline of MultiREG reflects the Austrian economy during the period 2000 to 2005. Based on forecasts about the economic environment, results for 2008 and the following years are derived.
- In the second step, policy scenarios are implemented in each model.

3. Scenarios, results and discussion

3.1. Scenario description

The two scenarios differ from one another by the PRD budget and its scope of measures:

- The **baseline scenario** is a situation based on previous studies (SINABELL and SCHMID, 2005). It assumes an unmodified continuation of the 2000-2006 PRD with respect to the budget of € 1.02 bn per year and the scope of measures until 2013. Furthermore, it acknowledges the Health Check Reform of 2008 and agricultural market conditions as projected by OECD-FAO in 2010.
- In the **Green Pact scenario,** which represents the currently available PRD in Austria, the volume of the PRD is € 1.12 bn per year. Compared to the baseline scenario it includes a slight expansion of the PRD volume and some rearrangements among measures, most notably investment aid and agri-environmental measures. The volumes of the latter will be cut, but not proportionally among the different measures. Some measures, in particular support for training, education and LEADER initiatives are treated as lump sum payments, assuming that 50% of these funds will flow into the agricultural sector, while the remainder goes to other sectors according to their share of value added.

3.2. Scenario results and discussion

The major assumptions used for the scenario analysis are reported in Table 1 along with the results. Scenario results are presented as deviations from the base line scenario. In the first two lines, the sums of the agricultural policy transfers to the regions are listed for the reference period of 2000-2006. In the next lines the two scenarios are compared. The 'Green Pact Scenario' has a 9% higher volume and its major changes for the agricultural sector are an expansion of the investment aid programme and a reduction of the agri-environmental programme. Organic farming becomes more attractive, because support levels for this measure are maintained while they are cut for others in 'Green Pact Scenario' compared to the baseline scenario. Similar effects have been shown by SINABELL and SCHMID (2006).

Table 1: Results for the 'Green Pact Scenario' in Austria in 2007-2013 compared to a baseline scenario in predominantly rural, predominantly urban and integrated regions

	total	**pred. rural**	**Inte-grated**	**pred. urban**
			in Mio €	
policy variables in the baseline				
PRD funds Ø 2000-2006	1.020	819	184	17
non-PRD funds Ø 2000-2006	621	513	103	6
			change in % from baseline	
PRD funds Ø 2007-2013	9	8	9	8
investment aids	98	83	102	82
agri-environmental measures	-16	-16	-16	-2
non-PRD funds Ø 2007-2013	±0	±0	±0	±0
			change in % from baseline	
agriculture				
producer surplus	1.17	1.07	1.79	-0.13
agricultural output	1.23	1.10	1.95	-0.08
input demand	1.34	1.18	2.27	0.03
labour demand	0.04	0.00	0.22	0.29
total fixed costs	0.60	0.54	0.94	-0.03
arable land	0.33	0.35	0.28	-0.43
grassland	1.44	1.31	2.20	0.19
land organic farming	2.43	2.69	1.41	0.82
land conventional farming	0.67	0.56	1.29	-0.08
livestock units	±0	±0	±0	-0.03
all sectors				
gross value added of all sectors	+0.03	+0.03	+0.04	+0.03
employment	+0.04	+0.04	+0.05	+0.03

Legend: PRD (Programme for Rural Development)
Source: Own evaluation

The results for the agricultural sector show the benefits from the PRD through over-proportionally increasing producer surpluses compared to the labour demand. Labour demand is disproportionally related to output because production can shift from smaller units to larger more labour-efficient ones. In the analysis the assumption was made that farms will not get more productive due to higher investment aids provided by the 'green pact' programme. This assumption is based on

findings of DANTLER et al. (2010) who do not find clear evidence which would refute this assumption.

Not agriculture alone but the whole economy benefits from the programme, albeit at a lower scale. Even predominantly urban regions gain much more than would be expected given their minor role of agriculture within their economies. Its main reason is spill-over effects due to investments of the agricultural sector in rural regions that trigger production in integrated and predominantly urban regions.

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