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SCHRIFTEN DER GESELLSCHAFT FÜR WIRTSCHAFTS- UND SOZIALWISSENSCHAFTEN DES LANDBAUES E.V.

Schmid, E., Sinabell, F.: Regional Effects of the 2003 CAP Reform and the Supply of Organic Products in Austria. In: Bahrs, E., von Cramon-Taubadel, S., Spiller, A., Theuvsen, L., Zeller, M.: Unternehmen im Agrarbereich vor neuen Herausforderungen. Schriften der Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaues e.V., Band 41, Münster-Hiltrup: Landwirtschaftsverlag (2006), S. 447-456.

Schriften der Gesellschaft für Wirtschafts- und Sozialwissenschaften des Landbaues e.V., Bd. 41, 2006: 447 - 456

REGIONAL EFFECTS OF THE 2003 CAP REFORM AND THE SUPPLY OF ORGANIC PRODUCTS IN AUSTRIA

Erwin Schmid, Franz Sinabell[*]

Abstract

In 2003, the Common Agricultural Policy (CAP) was reformed and by 2007 a new program for rural development will be implemented. We estimate the likely responses of farmers in Austria to these policy changes at regional and national levels. Special attention is given to the consequences for organic farming. Assuming that support for organic production will be maintained in future, our results suggest that organic farming will become more attractive.

Keywords

agricultural sector model, agricultural policy reform, organic farming

Kurzfassung

Im Jahr 2003 wurde die Gemeinsame Agrarpolitik (GAP) reformiert und 2007 wird voraussichtlich ein neues Programm der ländlichen Entwicklung implementiert. Mit einem regional und strukturell differenzierten Agrarsektormodell schätzen wir die Anpassungen der österreichischen Landwirte an diese Politikänderung ab. Im Besonderen werden die Konsequenzen für die biologisch wirtschaftenden Betriebe aufgezeigt. Bleibt die Unterstützung für die biologisch wirtschaftenden Betriebe unverändert, dann wird unseren Ergebnissen zu Folge diese Art der Bewirtschaftung in der Zukunft für die Landwirte attraktiver werden.

Schlagwörter

Agrarsektormodell, GAP-Reform 2003, Bio-Landbau

1 Introduction

The 2003 reform of the Common Agricultural Policy (CAP) will change the policy framework of farming significantly from 2005 on. Thus, we expect that supply of organic products will be affected, because opportunity cost will change. It is relatively unknown to what extent such a change may take place at sector level. We use an agricultural sector model to evaluate regional supply responses of organic products after the 2003 CAP reform in Austria and we consider likely changes of the program of rural development which will be implemented in 2007. Austria is chosen as a case study, because it has a heterogeneous set of agri-environmental measures in place, and a broad collection of farm management data has been made available for such an analysis.

The topic of the paper is (i) to analyse whether the 2003 CAP reform will reduce or boost the acreage used for organic production, (ii) how crop land acreage and the sizes of livestock herds are going to be affected, (iii) what implications are to be expected from financial reallocations due to the new program for rural development, and (iv) which efforts are likely to become necessary to meet policy goals concerning organic farming.

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2 Policies for the promotion of organic farming in the EU-15

2.1 Development of organic farming and policy environment in the EU-15

For decades, organic farmers have been a small group of producers with a strong commitment to their special way of production against a mainstream of high input/output farming. Motivations of these farmers are environmental concerns, philosophies of life, traditions of extensive farming systems, and pure economic considerations, in particular cost saving arguments (VOGEL AND BICHLBAUER, 1992).

In EU-15 organically farmed land has doubled between 1985 and 1990 and significantly grown during the 1990s (table 1). Part of this boom is due to the decision on the legal framework (CR (EEC) No 2092/91) of organic crop production which established trust among food processors and consumers. In addition, growth is supported by the agri-environmental program. It aims at reducing farm output, stabilizing farm incomes and improving environmental quality. It has been introduced by CR (EEC) No 2078/92 and was part of the 'accompanying measures' of the 1992 CAP reform. The promotion of organic farming in the EU was reinforced after the follow up farm policy reform, decided upon at the Berlin Council in 1999. The Agenda 2000 reform established the 'Second Pillar' of the CAP, the program for rural development (implemented by CR 1257/1999 spanning over a period from 2000-2006).

Table 1: Development of organically managed land in EU-15 in hectares and average premiums per hectare in 2001

	1985 ha	1990 ha	1995 ha	2000 ha	premiums €/ha
EU-15	100,310	292,561	1,250,867	3,778,144	186
Belgium	500	1,300	3,385	20,263	269
Denmark	4,500	11,581	40,884	165,258	199
Germany	24,940	90,021	309,487	546,023	163
Greece	0	150	2,401	24,800	445
Spain	2,140	3,650	24,079	380,838	195
France	45,000	72,000	118,393	371,000	188
Ireland	1,000	3,800	12,634	32,355	n.a.
Italy	5,000	13,218	204,494	1,040,377	318
Luxembourg	350	600	571	1,030	173
Netherlands	2,450	7,469	11,486	27,820	156
Austria	5,880	21,546	335,865	271,950	286
Portugal	50	1,000	10,719	50,002	111
Finland	1,000	6,726	44,695	147,423	117
Sweden	1,500	28,500	83,326	171,682	162
UK	6,000	31,000	48,448	527,323	45

Source: CEC (2001; based on NICOLAS LAMPKIN, Welsh Institute of Rural Studies, University of Wales, Aberystwyth, GB-SY23 3AL), and CEC (2003).

In 2000, EU Member States with a percentage of utilized agricultural area (UAA) higher than or equal to the EU-15 average (3%) were Austria and Italy (both 8%), Finland (7%), Denmark and Sweden (both 6%), the United Kingdom (4%) and Germany (3%). All Member States, except Austria, have seen a more or less pronounced increase in the UAA percentage over the period 1998-2000 (EUROSTAT, 2003).

2.2 The Austrian Action Program for Organic Farming

In Austria, a support program for organic farms was established in 1990. Five years later, when Austria accessed the EU, about 16,000 organic farms were counted (table 2). This increase was accompanied by the establishment of organic farmer associations. After a success-

ful boost of organic production, deficiencies in the supply chain and a mismatch between supply and demand for some products (in particular beef and milk) became evident. Farm policy makers became aware of the problem and implemented counter-measures.

Table 2: Development of organically farmed land and farm holdings in Austria

region	farms			acreage			premiums		
	1995	2000	2003	1995	2000	2003	1995	2000	2003
	farm holdings			in 1,000 ha			in mio. €		
Burgenland	175	312	569	3.0	7.4	18.3	1.04	2.52	6.25
Kärnten	1,094	1,353	1,262	14.7	20.1	21.1	3.61	4.98	5.92
Niederösterreich	2,522	2,799	3,739	46.2	56.9	81.5	11.84	16.38	26.09
Oberösterreich	2,007	2,500	2,944	30.0	38.5	49.8	7.58	10.59	14.74
Salzburg	2,940	3,335	3,263	32.8	44.8	45.0	7.38	9.51	11.60
Steiermark	2,979	3,096	3,015	38.5	46.0	46.1	9.16	10.94	12.67
Tirol	3,956	3,769	2,989	31.0	36.0	28.8	6.91	7.85	7.52
Vorarlberg	167	349	365	1.7	4.0	4.0	0.38	0.89	1.09
Wien	4	8	11	0.1	0.2	0.3	0.04	0.08	0.12
Austria	15,844	17,521	18,157	198.0	253.9	294.9	47.93	63.74	86.00

Source: BMLFUW; several issues.

In 2001, the first **Austrian Action Program for Organic Farming** was established, a co-operation between the Ministry of Agriculture and accredited organic farmer associations.

In 2003, an follow-up program has been launched. Among the objectives are an additional increase of organically farmed arable land, and a further penetration of the catering sector with organic food. A broad set of measures is employed to reach these goals (BMLFUW, 2003b):

- promotion of extension and education, of both producers and consumers;
- support for better marketing including public relations;
- more research efforts specifically addressing organic farming;
- further improving the control and certification system and extending it to the feed sector.

In January 2005, 19 organic farmer associations established 'Bio Austria', a national umbrella organisation. One of the goals is to promote organic food in new distribution channels like factory canteens and schools. In addition, the new organisation tries to establish a uniform label for organic products and puts an emphasis on stringent quality certification procedures.

2.3 The EU Action Plan for Organic Farming

In June 2004, the European Commission (CEC, 2004a) presented an **Action Plan for Organic Farming**. It was initiated by the Agricultural Councils of June 2001 and December 2002 and is a follow-up of a previous study (CEC, 2002), which provided a basis to analyse the development of organic farming in Europe and identified elements for actions. Its aim is to identify the requirements that ensure the ongoing development of the organic sector in the community. In addition, imports of organic products from developing countries should be facilitated. It provides policy measures designed to encourage such a development:

- better information and improved transparency with a focus on consumers to establish demand induced growth;
- position organic products as GMO free and thus communicate an important attribute for consumers who may be indifferent towards organic products but are concerned about GMOs;
- further standardisation of methods and procedures covering certification, and auditing;

- efforts to guarantee international recognition of EU standards and improved procedures for recognition of foreign certification schemes.

The COUNCIL OF FARM MINISTERS (2004) supports the Commission's proposals of 21 actions. Their rapid and consistent implementation is seen to be an important contribution to the removal of impediments to growth and thus to the strengthening and expansion of the organic sector. The direct support of organic food production is not directly addressed on the list of actions to be taken under this plan. However, a reference to the maintenance of support provided in the program for rural development is made, therefore the action plan does not only focus on demand side issues.

3 Model, policy reform, scenarios, and results

3.1 The Positive Agricultural Sector Model Austria - PASMA

The Positive Agricultural Sector Model Austria (PASMA) is employed to estimate the impact of farm policy measures on the supply of organic farming in Austria. PASMA depicts the political, natural, and structural complexity of Austrian farming in detail. The model structure ensures a broad representation of production and income possibilities that are essential in comprehensive policy analyses at regional scales. Data from the Integrated Administration and Control System (IACS), Economic Agricultural Account (EAA), Agricultural Structural Census (ASC), Farm Accountancy Data Network (FADN), the Standard Gross Margin Catalogue, and the Standard Farm Labour Estimates provide necessary information on resource and production endowments for 40 regional and structural (i.e. alpine farming zones) production units in Austria. Consequently, PASMA is capable to estimate production, labour, income, and environmental responses for each single unit. Most production activities are consistent with EAA, IACS and ASC activities to allow comparable and systematic policy analyses with official, standardised data and statistics.

The model maximises farm welfare and is calibrated to historic crop, forestry, livestock, and farm tourism activities by using the method of Positive Mathematical Programming (HOWITT, 1995). This method assumes a profit-maximizing equilibrium (e.g. marginal revenue equals marginal cost) in the base-run and derives coefficients of a non-linear objective function on the basis of observed levels of production activities. In PASMA, linear approximation techniques are utilized to combine the PMP calibration method with an aggregation method that builds convex combinations of historical crop mixes (SCHMID AND SINABELL, 2005). Other model features such as convex combinations of feed mixes, expansion, reduction and conversion of livestock stands, a transport matrix, and imports of feed and livestock are included to allow reasonable responses in production under various policy scenarios.

The model differentiates between conventional and organic production systems (crop and livestock) by separate feed and fertilizer balances at regional and structural scales. Transfers between these two production systems are not allowed in the model, however, they compete for the same resources (i.e. land and labour). Consequently, linear marginal cost curves are derived for all activities of both production systems for the base period. Non-separated historical crop mixes (twelve observations) are only available at aggregate levels (Bundesländer).

Both production systems can be combined with other agri-environmental measures (e.g. winter cover crops or erosion control measures) following the method suggested by RÖHM (2001). This approach allows an higher substitutive relationship within variations of a given production system than between different production systems.

The support program for farms in less-favoured areas (LFA) is also explicitly modelled with area payments that are stratified by region and structure (i.e. alpine farming zones). Thus the two most important components of the program for rural development are covered on a meas-

ure by measure basis. Product prices and other model assumptions are referenced in SCHMID AND SINABELL (2003). Most prices are exogenously given and based on OECD (2004) and FAPRI-Ireland-Partnership (2003). Prices for organic products are based on EDER ET AL. (2002), and FREYER ET AL. (2001).

3.2 Policy reform

The objectives of the CAP reform 2003 are:

- economic sustainability through increased competitiveness, stronger market orientation, and more efficient income support;
- social sustainability through more responsiveness to consumer demands, encouragement to improve food quality and safety, and a better balance of funding towards rural development;
- environmental sustainability through a clear framework for a more efficient application, and development of environmental and animal welfare standards.

In order to achieve these goals, the following measures were agreed upon in 2003 (GREEK PRESIDENCY, 2003; FISCHLER, 2003):

- to modify market regimes (reduction of administrative prices, special regulations for protein crops and durum wheat, prolongation of the milk quota system until 2014/15),
- to decouple direct payments, and
- to introduce several accompanying measures (e.g. degression, modulation, new instruments to enhance consumer trust, additional environmental and animal welfare standards).

Member states can fine-tune CAP-instruments according to their specific policy goals. They may choose to introduce the single farm payment in full or they may opt to retain part of the premiums coupled to the output. The funds saved by modulation will be used to reinforce the program for rural development. Via this new instruments, funds can be re-allocated among Member States (Austria will be among the beneficiaries).

3.3 The model scenarios

The **first scenario** analysed in this paper is a comparison between the situation in 2003 (with the Agenda 2000 in place) and the reformed CAP in 2008, when the introduction of a single farm payment will be fully implemented. The premium for suckler cows will remain coupled to production by 100 % and the slaughter premiums by 40 %. All other premiums apart from rural development payments will be decoupled. In this scenario we analyse whether we can expect a stimulation or a weakening of organic farming after the recent CAP reform at regional (NUTS 1) and national scales.

The **second scenario** is a comparison between a base-line towards 2008 with the Agenda 2000 in place and the reformed CAP in 2008. In the Agenda 2000 situation (no decoupling) a different set of prices is used (based on OECD, 2004) and direct payments are linked to outputs. In this scenario we analyse the consequences of the 2003 CAP reform on organic farming relative to a base-line situation with the Agenda 2000 in place.

In **both scenarios**, we assume that the budget for agri-environmental measures will be reduced by about 10 % to allow some redistribution to other measures in the new program for rural development (i.e. measures under axis 1 and 2; see CEC, 2004b). Funds saved by the reduction of the volume of agri-environmental payments are assumed to remain in the farm sector (modelled as lump sum transfers).

A moderate (exogenous) rate of technical progress and constant real input prices are further assumptions. We do not adopt exogenously given labour declines in order to isolate the policy effect on structural adjustment. As required by regulations, decoupled premiums must be

matched by eligible hectares and land must be maintained in good agricultural and ecological condition. Thus, afforestation is effectively prevented unless maintenance costs of agricultural land exceed decoupled premiums.

Three further assumptions have to be kept in mind when the scenario results are compared:

- Exogenously given prices (based on OECD, 2004) between the reference (2003) and the simulation period (2008) change (partly induced by the CAP reform).
- In 2008, premiums for organic farming are assumed to be at the same nominal levels as in 2000. An implication is that organic farming can expand at the cost of other agri-environmental measures even if the total for all axis-2 measures declines.
- Other conditions affecting organic farming (e.g. animal welfare requirements and restrictions on feed components) do not change between the scenarios.

3.4 Model results

The results reported in table 3 show a comparison between the (modelled) situation in the 2003 and outcomes in 2008 when the CAP reform is fully implemented (in the left pane). A comparison between the base-line of the Agenda 2000 scenario in 2008 and the situation after the 2003 CAP reform in 2008 is provided in the right pane.

Economic consequences

- Farm welfare (producer surplus of agricultural activities including direct payments and other subsidies) is likely to increase at national level in nominal terms when the situation in 2003 is compared to 2008 (first scenario). There is an uneven distribution of the income effect (farmers in Eastern Austria will lose). Compared to an Agenda 2000 scenario, farm welfare will decline at sector level after the reform (right pane) in all three regions.

It is assumed that premiums for organic farming will not change in the new program for rural development. Therefore, the total volume for this measure will expand by 2.2 % (compared to 2003) or 1.2% (compared to Agenda 2000 in 2008).

Consequences for farm labour

- The demand for farm labour in 2008 will be lower by 1 % after the reform than in 2003. This figure is based on technical relationships between farm output and input requirements reflecting the observed structural situation. If the Agenda 2000 was maintained, more labour would be needed in the sector.
- Organic farming is more labour intensive, thus the decline of farm labour due to the CAP reform is cushioned.

Consequences for land use and crop production

- Total arable land will decline after the CAP 2003 reform, in particular conventional arable land. The acreage of organically managed arable land will be affected to a lesser extent. The acreage of arable land would be relatively unchanged in the Agenda 2000 scenario.
- The conditions of the single farm payments guarantee that farm land is not turned into forest, therefore the decline of arable land is mirrored by an increase of grassland, which is more extensively managed.
- The production of conventionally produced crops will almost evenly decline across all products. The results are mixed as far as organic crop production and protein crops are concerned.

Table 3: Percentage change of economic, land use, and production indicators in 2008 compared to AGENDA2000 in 2003 and 2008

	unit	Austria	Austria	East	West	South	Austria	East	West	South
		level 2003	% change versus Agenda 2000 in 2003				% change versus Agenda 2000 in 2008			
economic indicators										
farm welfare[1)]	bn Euro	3.78	+ 0.7	– 1.1	+ 1.3	+2.3	– 1.4	– 0.8	– 1.8	– 1.4
volume of agri-environmental program [2)]	mn Euro	628	– 10.6	– 11.5	– 10.0	– 9.9	– 10.5	– 11.0	– 10.2	– 10.2
organic farming premiums	mn Euro	86	+ 2.2	+ 6.0	+ 0.5	+ 0.7	+ 1.2	+ 4.5	– 0.4	+ 0.4
farm labour input	1000 AWU	172	– 1.0	– 0.8	– 1.4	– 0.5	– 0.1	– 0.2	– 0.3	+ 0.1
land use										
arable land	1000 ha	1380	– 3.5	– 3.3	– 3.9	– 3.8	– 1.5	– 1.9	– 0.8	– 1.0
– conventional	1000 ha	1260	– 3.7	– 3.5	– 4.0	– 4.0	– 1.5	– 1.9	– 0.7	– 1.0
– organic	1000 ha	120	+ 0.1	+ 1.3	– 1.3	– 0.9	– 1.0	– 0.9	– 1.2	– 0.8
grassland (without alpine grassland)	1000 ha	1101	+ 4.6	+ 16.8	+ 3.1	+ 3.5	+ 3.7	+ 13.4	+ 0.6	+ 1.9
crop production conventional (acreage)										
– cereals (without maize)	1000 ha	561	– 3.8	– 3.3	– 4.1	– 4.0	– 1.3	– 1.5	– 0.7	– 1.0
– protein crops	1000 ha	36	– 4.4	– 4.4	– 4.4	– 4.3	+ 1.2	+ 1.6	+ 1.4	– 1.9
– oilseeds	1000 ha	106	– 4.6	– 4.7	– 4.0	– 3.9	– 3.3	– 3.9	– 1.3	– 1.2
crop production organic (acreage)										
– cereals (without maize)	1000 ha	52	+ 1.8	+ 2.7	+ 0.5	+ 0.6	– 0.5	– 0.2	– 0.8	– 1.1
– protein crops	1000 ha	11	+ 7.9	+ 9.4	+ 5.3	+ 1.7	+ 1.1	– 0.6	– 2.9	– 0.9
– oilseeds	1000 ha	2	– 0.4	– 0.5	– 0.4	+ 0.0	– 1.1	– 1.3	+ 0.0	– 1.0
heads of conventional livestock										
cattle	1000 heads	1733	+ 1.4	+ 2.3	+ 0.7	+ 2.1	+ 0.5	+ 0.9	– 0.2	+ 1.4
male cattle	1000 heads	480	– 2.5	– 3.2	– 1.7	– 2.8	– 5.5	– 6.1	– 6.2	– 3.4
female cattle	1000 heads	1253	+ 2.3	+ 4.2	+ 1.1	+ 3.1	+ 1.9	+ 3.4	+ 0.9	+ 2.4
pigs	1000 heads	3209	+ 0.3	+ 0.1	+ 0.6	+ 0.2	+ 0.3	+ 0.1	+ 0.6	+ 0.2
heads of organic livestock										
cattle	1000 heads	319	+ 1.0	+ 1.7	+ 0.5	+ 1.6	+ 0.9	+ 1.6	+ 0.4	+ 1.3
male cattle	1000 heads	42	– 2.1	– 4.3	– 1.4	– 1.9	– 3.2	– 4.5	– 3.4	– 2.1
female cattle	1000 heads	277	+ 1.4	+ 2.6	+ 0.7	+ 2.2	+ 1.5	+ 2.6	+ 0.9	+ 1.8
pigs	1000 heads	36	+ 4.1	+ 0.0	+ 10.6	+ 0.0	+ 3.4	+ 0.0	+ 8.7	+ 0.0

Source: Own calculations based on price forecasts of OECD (2004). Note: 50,000 additional suckler cow premium entitlements are shared among owners of heifers. Additional funds for the program for rural development (17 million € annually from modulation) are not accounted for in total transfers. [1)] Farm welfare is producer surplus from agricultural activities including single farm payments and other program payments. [2)] The assumption is made that the volume of Axis-2 measures is reduced by 10% in 2007 while premiums per hectare for organic farming remain at 2003 levels.

Consequences for livestock production

- Non-beef meat production will become more competitive after the CAP 2003 reform. This is particularly true for organic pork production.
- We expect a larger herd of mother cows and heifers after the reform and relative to Agenda 2000 because premiums remain coupled to production in Austria. Less bulls will be fed, reflecting the fact that bull premiums will no longer be linked to production.

4 Discussion and conclusions

We analysed how output of organic farms will respond to changes after the 2003 CAP reform. In addition, we investigate the consequences of likely modifications of the new program for rural development at regional and sector level. Our model results capture the Austrian agricultural sector for which detailed farm data are available. The results suggest that organic farming will become more attractive to farmers after the 2003 CAP reform if some specific support is maintained.

Organic farms are affected by the abolition of production linked premiums as other farms are. However, production adjustments are slightly different in organic farms than in conventional farms. The overall reform effect is that organic output declines to a lesser extent than conventional output. Thus the 2003 CAP reform is likely to reach two goals, namely the reduction of outputs while simultaneously making farming less input intensive.

The new program for rural development, due to be implemented in 2007, will make several adjustments necessary. In Austria, we expect that the volume of axis-2 measures (agri-environment and transfers for less-favoured areas) will be reduced. We expect that premiums for those measures will be reduced where environmental goals are already reached after two program periods. Given that premiums for organic farming do not change, we expect that other modifications of the new program for rural development will not have a significant impact on organic farming. We assume this to be a likely scenario because the political commitment to strengthen organic farming is strong after the introduction of action programs in the EU and in Austria.

Our results are contingent upon the assumption that historically observed margins between conventional and organic crops will be paid in future. This assumption seems to be justified by two reasons:

- The Austrian and EU action programs for organic farming strive to boost demand for organic products. If demand side effects materialize then we expect prices at current levels.
- Organic products are free of GMOs. Thus consumers get an additional attribute for free when they buy organic food. This is likely to stimulate demand among consumers concerned about GMO food. Such an effect can only be realised if consumers are aware of this attribute.

To make organic farming more attractive was not explicitly among the 2003 CAP reform objectives but it is consistent with the goal of strengthening sustainable farming. However, observations in Austria show that the limiting factors of further market penetration with organic food are not essentially supply related, but demand driven including a lack of separate distribution channels, organised marketing and processing, standardized labelling, and information of consumers. The follow-up program for rural development should specifically address these demand gaps and not further stimulate the production of organic food.

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