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Implications of the CAP Reform 2003 for Rural Development in Austria

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Abstract

The aim of this paper is to analyse the question whether the recent Common Agricultural Policy (CAP) reform is counter-productive to the objectives of the rural development programme or alleviating the attainment of its objectives. Austria is chosen as a case study because i) the rural development programme is more important than commodity policies as measured by total transfers, and ii) agricultural services and inseparable secondary activities have a relatively large share on total agricultural sector output. An agricultural sector model is presented that captures core features of the rural development programme including: a) broad regional, structural and activity differentiation, b) sufficient coverage of programme components (in particular agri-environmental measures), and c) secondary activities addressed by the programme. Simulation results show that the recent CAP reform will reduce the cost of production, lessen environmental harm and make the programme for rural development more attractive for farmers.

Keywords: rural development, CAP reform 2003, agricultural sector model

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1. Introduction

The programme for rural development has been implemented to enhance the coherence between measures of the first (market organisations) and second (rural development) pillars of the CAP (Article 33 of CR (EC) No 1257/1999). Under this umbrella are several sub-goals defined such as (i) providing sufficient and stabilised farm incomes, (ii) enhancing the competitiveness of the farm and food sectors (iii) improving food security and quality, (iv) promotion of sustainable agriculture, (v) compensation for natural disadvantages, and (vi) promotion of alternative farm income sources and job opportunities (European Commission, 1999).

The rural development programme consists of a wide range of measures in order to attain this divers set of objectives. The relative budget share of single measures can serve as an indicator for the importance of the programme objectives[2]: early retirement (2.9%), afforestation of agricultural land and other forestry measures (9.8%). A similar share is allocated to farms in less favoured areas and areas with environmental restrictions (12.5%). A larger share of programme funds is allocated for measures which focus on making the farm sector more productive: investments in farms (9.5%), setting up of young farmers (3.7%), investments in processing/marketing (7,7%), vocational training (0.7%). Agri-environmental measures (27,5%) and support for the adaptation and development of rural areas (25.8%) are the most important measures (European Commission, 2003a und 2003b).

The complexity of this programme provides computational and analytical challenges in evaluating its overall effects. Lack of detailed data on programme participation and adequate indicators are the most severe shortcomings. However, these problems are not present in each case. The effects of some of these measures are well understood and the availability of detailed data even allows to model them.

In this paper we present an approach to integrate rural development measures into an agricultural sector model. Traditionally, such models focus on commodity markets. Diakosavvas (2003) provides a quantitative assessment of agri-environmental policies for OECD countries, however, many of the employed models operate on national scale. In several EU countries, sector models have been developed which are capable of analysing a set of policies even at a regional scale e.g., Arfini et al. (2003), Julius et al. (2003), Jensen et al. (2001), Malitius (2000), Palva et al. (2001). We contribute to this literature by analysing agri-environmental measures and the role of payments for farms in less favoured areas at both, national and regional scales. In addition, we

[2] The planned EAGGF Guarantee and Guidance expenditures for rural development measures during the period 2000-2006 are 49.097 mil. Euros. The shares relate to this sum. Total expenditure under Community rural development programmes is approximately double this figure as on average each Community Euro is matched by a Member State Euro. The distribution of funds across measures is different among Member States.

account for farm incomes from forestry and services. Thus, we are able to cover a large set of aspects of the rural development policy in Austria, in particular recognizing farm income opportunities.

A major advantage of a sector model approach is that the interaction of different and sometimes conflicting policies can be evaluated simultaneously. The effects of a single policy can be put into context and therefore estimation biases can be minimized. Among the model deficiencies is that not all measures of the rural development programme can be accounted for, mostly because of their complexity and the difficulty to find adequate indicators. We are presenting an approach by which measures that represent 85 % of transfers are accounted for in behavioural equations explicitly. We are applying the model to address the question whether the CAP reform 2003 is counter-productive to selected objectives of the rural development programme or alleviating the attainment of its objectives.

The remainder of the paper is structured as follows: in the next chapter a comparison is made between EU Member States in order to show the relative importance of different support programmes. In this comparison the Austrian situation is accounted for in more detail. After a brief summary of the CAP 2003 reform we describe the agricultural sector model which is used for the quantitative analysis. Conclusions are drawn after the presentation of model results.

2. Rural development: a birds eye view at the EU agricultural sector

Even if the weight of the policy for rural development seems to be minor, its importance should not be under-estimated. In some countries support from this policy is already equally or even more important as support which is linked to commodity output. The reform of the CAP - to be implemented in 2005 onwards - will leave the programme for rural development as the only major policy available for political discretion. This policy requires co-financing from Member States. The funds from national budgets are quite significant in some Member States and therefore domestic agricultural policy design will become more important. Quantitative farm policy analyses need to account for these facts. This chapter provides various views on the importance of rural development for the agricultural sector in the EU.

The relative weight of the rural development programme varies substantially among EU Member States. Detailed data will be available when the mid-term evaluation reports of the programme are published. In the meantime, the comparison of 'subsidies on products' and 'other subsidies' of the Economic Accounts of Agriculture (EAA) can serve as a proxy to show the importance of rural development programmes. The EAA are national satellite accounts and allow for a detailed look on the agricultural sector (Eurostat, 2000). Most of the expenditures in the

position 'other subsidies' result from the programme for rural development and this sum is clearly an upper bound of total programme transfers.

Other subsidies according to EAA are accounting for approximately 50 % of factor income in Austria and even more in Finland (58 %). Other countries with a significant share are Sweden (35 %), Luxembourg (29%), and Ireland (27 %). At the EU-15 level, this position was equivalent to 10 % of factor income in 2002 (Tab. 1). This shows that the 'second pillar' of the CAP is of major importance in many Member States.

Most subsidies on products will be abolished from 2005 on. The funds will then be used for a single farm payment which is decoupled from output. Consequently, the rural development programme will be the most important support programme with discretionary incentives. Approximately 70 % of subsidies will be granted in a way that have in principle no effects on production decisions at the EU-15 level. However, this share will be much lower in some countries (Finland, Austria, Luxembourg, Sweden, Ireland).

The relative importance of this programme will therefore increase substantially, because the single farm payment may be primarily used to achieve stabilized income support of entitlement holders. However, cross compliance standards need to be met as well. For quantitative analysis the programme for rural development and its instruments will therefore become most important even if its current absolute level seems to be low.

Tab. 1: Subsidies to the agricultural sector according to the Economic Accounts of Agriculture in the year 2002 and the annual rural development plan (RDP) budget

	support to the agricultural sector 2002				RDP[1)]	share of factor income 2002			
		EAA subsidies			annual		EAA subsidies		RDP[1)]
	total	on products	other		budget	total	on products	other	budget
	mill. €	mill. €	mill. €	%	mill. €	%	%	%	%
EU15	39,560	28,088	11,472	29	14.014	34	24	10	12
BE	539	410	129	24	139	23	18	6	6
DK	885	752	133	15	123	39	33	6	5
DE	5,500	4,015	1,485	27	2,145	56	41	15	22
GR	2,811	2,530	281	10	868	32	29	3	10
ES	5,797	3,710	2,087	36	2,030	25	16	9	9
FR	9,090	7,272	1,818	20	1,973	38	31	8	8
IE	1,642	903	739	45	629	60	33	27	23
IT	4,619	2,864	1,755	38	2,046	21	13	8	9
LU	55	25	30	54	55	54	25	29	55
NL	581	430	151	26	164	9	7	2	3
AT	1,715	532	1,183	69	968	73	23	50	42
PT	745	425	320	43	783	26	15	11	28
FI	2,013	785	1,228	61	857	96	38	58	41
SE	987	543	444	45	402	77	42	35	31
UK	4,297	3,352	945	22	830	49	38	11	9

[1)] Rural development plan

Source: own calculations based on Economic Accounts of Agriculture, Eurostat, NewCronos, Theme 5, Cosa, EAAE_01, EAA 97; Rural development plans (RDP) according to Regulation (EC) n° 1257/1999 (EAGGF Guidance and Guarantee plus national funds), http://europa.eu.int/comm/agriculture/rur/countries/index_en.htm

A comparison between the sums of other support and the budget of the programme for rural development (derived from the rural development plans RDP in Tab. 1) reveals two findings: a) in some countries only parts of the budgeted funds have been paid to farmers (e.g., Greece, Portugal, Germany, Italy) and b) some Member States (Finland, Austria) support the farm sector considerably beyond the rural development programme. These facts show that the Common Agricultural Policy is not at all identical when looked upon with scrutiny. Deviations among countries can be explained by different absorption capacities of the farming community, budgetary difficulties in co-financing EU-funds, and national discretion to account for specific targets according to the subsidiarity principle.

Apart from data on the main output of agriculture (plant and animal products) Eurostat is collecting information on agricultural services and (inseparable) secondary activities. The latter include the transformation of agricultural goods, direct sales to consumers and farm tourism. When put in relation to the Agricultural Goods Output (including crop and animal output) we can observe that these two sources of revenue have become ever more important during the last decade. In countries like Austria, The Netherlands, United Kingdom, Finland, and Sweden farm income from these sources is significant (Tab. 2).

This recent development shows that many agricultural enterprises are successfully diversifying their incomes over a broad range of activities which are not limited to the production of livestock and crop outputs. The programme for rural development is actively promoting the diversification of farm incomes. Article 33 of CR (EC) No 1257/1999 lists a variety of measures (basic services for the rural economy and population, diversification of agricultural activities and activities close to agriculture to provide multiple activities or alternative incomes, encouragement for tourist and craft activities) that may be employed to enhance such a development.

The Austrian programme for rural development takes account of these issues and offers finely tuned measures to address the needs of farmers who want to diversify their operations. The programme as a whole is of major importance for Austrian farms. In 2002, more than 60 % of total public expenditures in agriculture and forestry were transferred within this programme (BMLFUW, 2003). The biggest budget shares had the Austrian agri-environmental programme (616 million Euros) and compensatory allowances for farmers in less-favoured areas (280 million Euros).

Tab. 2: Relation between the sum of agricultural services and secondary activities and total agricultural commodity outputs in percent

	1990	1995	1996	1997	1998	1999	2000	2001	2002
BE	0.3	0.4	0.3	0.4	0.5	0.5	0.5	0.6	0.1
DK	3.3	3.3	3.1	3.4	3.8	4.1	3.8	4.0	4.5
DE	-	3.0	3.0	3.0	3.2	3.4	3.5	3.5	3.7
GR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ES	3.2	3.6	3.5	3.5	3.4	2.7	2.5	2.5	2.7
FR	3.3	3.9	4.1	4.1	4.3	4.4	4.5	4.6	4.8
IE	3.8	3.5	3.9	4.2	4.1	4.7	4.9	5.2	5.0
IT	2.4	2.8	2.5	3.1	3.2	3.2	3.4	3.5	3.7
LU	1.1	1.2	1.3	1.6	1.8	3.8	3.9	3.8	1.6
NL	6.4	6.5	6.6	7.0	7.2	8.0	8.2	8.9	8.8
AT	5.8	9.9	10.0	10.6	10.8	11.4	11.2	10.5	11.8
PT	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FI	3.9	5.2	5.8	6.0	7.1	7.2	7.1	7.5	7.8
SE	2.8	4.0	4.4	4.8	5.3	6.0	6.2	6.7	7.0
UK	4.3	4.7	5.2	5.6	6.5	7.1	7.4	8.5	7.7
Euro Zone[1)]	-	3.5	3.6	3.7	3.8	3.9	3.9	1.1	3.4

[1)] official EU-15 figures are not available

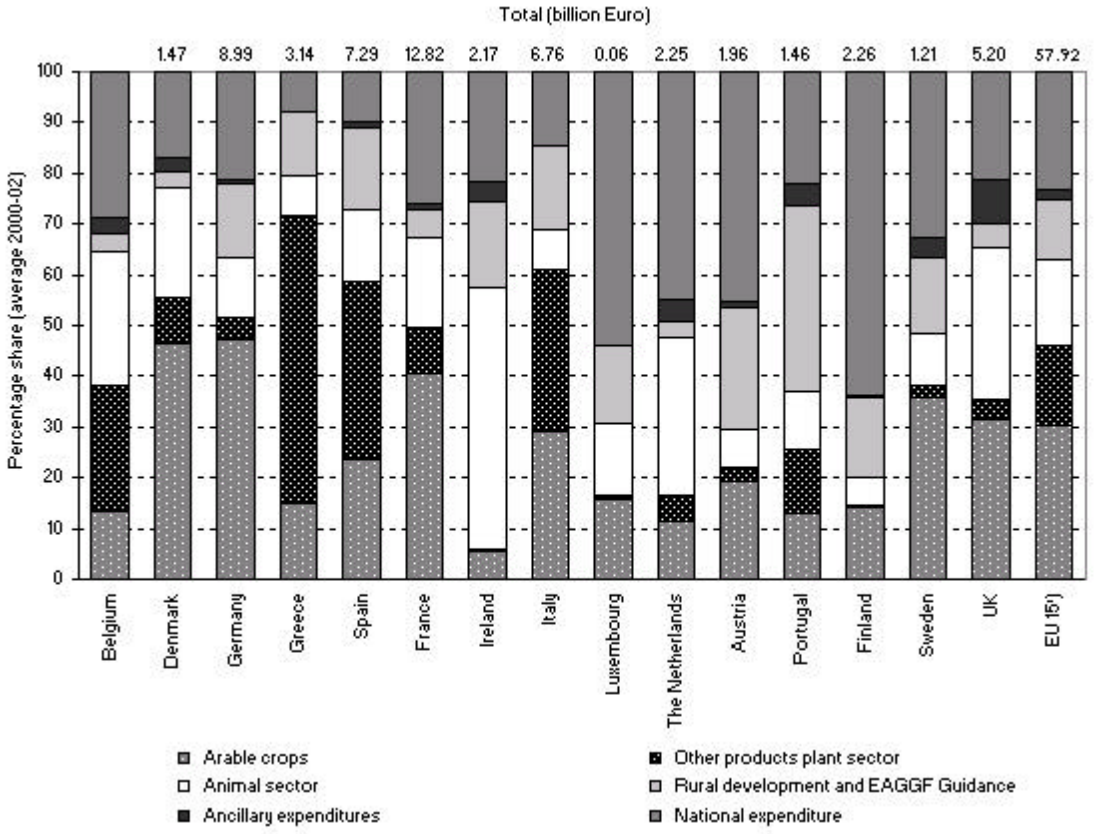
Note: figures are calculated as follows: 100 * [agricultural services output + inseparable secondary activities] / [crop output + livestock output]. 'Agricultural services output' comprises the position 'renting of milk quota' which is likely to be high in some countries. Due to a lack of detailed data, we could not account for this potential bias.

Sources: own calculations based on EUROSTAT, NewCronos, Theme 5, Cosa, EAAE_01, EAA 97: values at current prices; Austrian data from Statistik Austria, 2003

To our knowledge, agricultural sector models which are available in the EU do not or only in a limiting way account for agricultural services, forestry, and secondary activities, so far. For the EU as a whole and for most of the EU Member States this is probably not necessary (and most likely not even possible). Austria is the only country in which agricultural services and secondary activities account for more than 10 % of total crop and livestock output. Neglecting these outputs would severely bias agricultural policy analyses. However, compared to crop and livestock production statistics data on these positions are very rudimentary and therefore quantitative assessments are difficult and general in most cases.

The eminent role of national agricultural policies can also be seen when we look at the sources of farm support in a broader definition and compare the payments of the EU with the national expenditures for agriculture. More than 25 % of all transfers in the EU are from additional national budgets (Fig. 1). This share is above 50 % in Finland and Luxemburg and almost as high in Austria and The Netherlands. In some countries (e.g., The Netherlands, Germany) these expenditures exceed the value of subsidies to agriculture according to EAA by far. Obviously, other sectors are beneficiaries of agricultural expenditures as well.

Fig. 1: EAGGF expenditures plus national expenditures for agriculture in the EU Member States (average of 2000-2001)



Source: European Commission, Directorate-General for Agriculture, Agriculture in the European Union, Statistical and Economic Information; –[1]) Including CAP Expenditures.

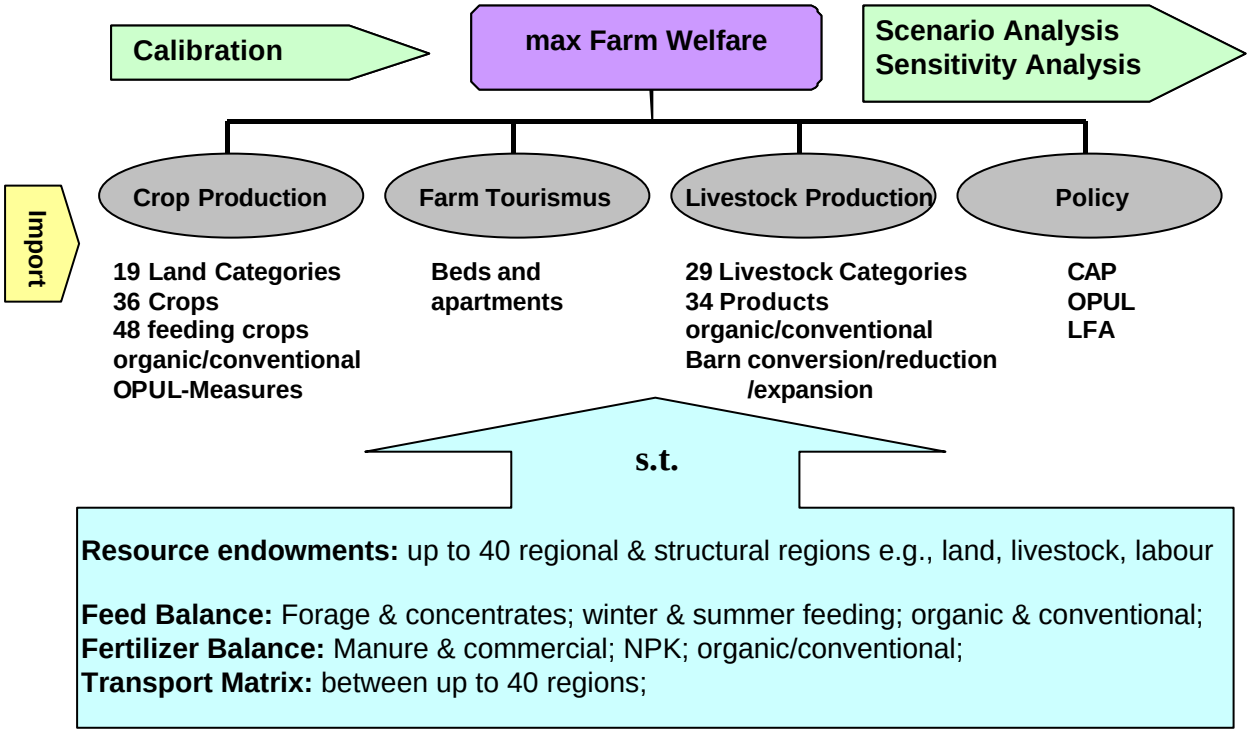
This overview shows that the role of Member States' budget shares needs to be accounted for when a policy reform is to be evaluated. Given the political commitment to strengthen rural development it can be foreseen that analyses of the EU farm sector at the aggregate level will become more difficult unless information systems and research tools are developed which allow the inclusion of national policies.

3. PASMA – an agricultural sector model for Austria

Development means change. Consequently, policy analysis must track changes in the sector. Therefore, analytical tools should cover all relevant policy instruments and be flexible enough to account for various needs. In this chapter, we present an approach that strives to meet these model challenges. The Positive Agricultural Sector Model Austria (PASMA) is employed to estimate the impact of the CAP reform 2003 on selected agricultural and environmental indicators to measure rural/agricultural development. PASMA depicts the political, natural, and structural complexity of Austrian farming in a very detailed manner (Fig. 2).

Such model construction ensures a broad representation of production and income possibilities that are essential in comprehensive policy analyses, i.e., development analysis. Data from Allgemeines Land- und Forstwirtschaftliches Informationssystem (ALFIS), 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.

Fig. 2: Structure of the agricultural sector model PASMA



Source: own graph.

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 considers conventional and organic production systems (crop and livestock), all other relevant management measures from the Austrian agri-environmental programme ÖPUL, and the support programme for farms in less-favoured areas (LFA). Thus the two most impor-

tant components of the programme for rural development are covered on a measure by measure basis. Future model development will focus on farm investment aid and additional diversification measures. Apart from major components of the programme for rural development the complete set of CAP policy instruments is accounted for as well. Both, the set of instruments before and after the 2003 reform are modelled explicitly.

The model maximises sectoral farm welfare[3] and is calibrated to historic crop, forestry, livestock, and farm tourism activities by using the method of Positive Mathematical Programming (PMP). Howitt (1995) has initially published PMP and since then it has been modified and applied in several models e.g., Lee and Howitt (1996), Paris and Arafini (1995), Heckelei and Britz (1999), Cypris (2000), Röhm (2001), Röhm and Dabbert (2003). 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.

Two major conditions need to be fulfilled: (i) the marginal gross margins of each activity are identical in the base-run, and (ii) the average PMP gross margin is identical to the average LP gross margin of each activity in the base-run. This conditions imply that the PMP and LP objective function values are identical in the base-run. Another important assumption needs to be made by assigning the marginal gross margin effect to either marginal cost, marginal revenue or fractional to both. In PASMA, the marginal gross margin effect is completely assigned to the marginal cost and consequently coefficients of linear marginal cost curves are derived.

In PASMA, linear approximation techniques are utilized to mimic the non-linear PMP approach. Thus large-scale models can be solved in reasonable time. In combination with an aggregation procedure, i.e., building convex combinations of historical crop and feed mixes (Dantzig and Wolfe, 1961; McCarl, 1982; Önal and McCarl, 1989, 1991), the model is robust in its use and results.

PASMA is a set of three almost identical Linear Programming models. The purpose of the first one is to assign all farm activity levels i.e., crop, forestry, livestock, and farm tourism, and remaining cost shares from feed and manure balances. For instance, the area of meadows is recorded in various data sources listed above. However, information on which activities are actually carried out and to what extent are not available (e.g., grazing, hay, silage, or green fodder production activities). In the model, these activities and remaining cost shares (i.e., fertilizer and feed) are accordingly assigned using historical livestock records and detailed feed and fertilizer

[3] In the model farm welfare is a monetary measure and consists of the following components of farm-income: agricultural outputs (crops, forestry and livestock products), output-linked support (direct payments), payments for agri-environmental measures, payments for farms in less favoured areas, revenue from agricultural services and secondary activities.

balances (phase 1). Phase 2 is the second LP in which the perturbations coefficients (Howitt, 1995) are incorporated to compute the calibration coefficients of a linear marginal cost curve primarily following the approach of Röhm and Dabbert (2003). The third LP (phase 3) is the actual policy model. Calibration coefficients are built in using linear approximation techniques that allow calibration of crop, forestry, livestock, and farm tourism activities to observed and estimated shares. Other model features such as convex combinations of crop and feed mixes, expansion, reduction and conversion of livestock production, a transport matrix, and imports of feed and livestock are included to allow reasonable responses in production capacities under various policy scenarios. Product prices and other model assumptions are referenced in Sinabell and Schmid (2003a, 2003b, 2003c), and Schmid and Sinabell 2003.

In the model several indicators are used to measure the level at which policy and programme objectives are reached. In Austria, 85 % of all payments to the farms is coming from three sources: production linked subsidies (to be shifted to the single farm payment from 2005 on), the agri-environmental programme ÖPUL, and the programme for farmers in less favoured areas. Indicators measuring the effects of farm policies therefore are related to farm welfare (differentiated according to the source of income, including secondary activities), crop and animal production, land use, and environmental indicators (livestock densities, nutrient balances). The estimates are made at a regional scale and aggregated to NUTS-1 level.

About 15 % of subsidies to the Austrian farm sector are not accounted for at a measure by measure level, in the current version of PASMA. The reason for this deficiency is that the findings of the mid-term evaluation of the programme for rural development have not yet been integrated in the model.

4. Core elements of the Common Agricultural Policy reform in 2003

In mid 2002, the Commission published a mid-term review of the Agenda 2002 reform. A final compromise on the proposals of the reform was reached on 26th June 2003. The key element is the introduction of a single farm payment (Greek Presidency, 2003; Fischler, 2003). This payment will replace premiums formerly linked to output or land.

In 1992, many farm commodity prices that had been kept at high levels via government intervention were reduced significantly to control surplus production. In order to restrict effects on farm incomes, direct premiums were introduced which are coupled to the crop acreages and livestock heads. Additional premiums have been granted when specified animals were slaughtered (bulls, oxen, calves, cows, heifers) or reared on the farm (suckler cows and heifers) and an extensification premium has been paid when the number of livestock per hectare of land was

below a specified limit. The financial flows of these transfers (dubbed as "direct payments) have been equivalent to more than half of the EU funds spent on agriculture.

When the reform proposals were drafted, it was anticipated that decoupled premiums have considerable impact on production incentives. Farmers will not need to plant certain crops or raise bulls in order to obtain financial support. In future, production decisions are expected to be based on market signals (i.e., prices) and consequently resource allocations are likely to improve. The policy change will become effective on 1st January 2005. The decoupled single farm payment entitlements are calculated on the basis of direct payments received in the reference period 2000-2002. The single farm payment entitlements are transferable with or without land and between farmers within a region or a country. However, payment entitlements can be only received if accompanied by eligible hectares and agricultural land is maintained in good ecological conditions.

Member States may choose to introduce the single farm payment in full or they may opt to:

- retain up to 25 % of the payments for arable crops or up to 40 % of the special assistance for durum wheat,
- continue to couple up to 50 % of the premiums for sheep and goats,
- keep the slaughter premium, or 75 % of the special bull and steer premium,
- keep the suckler cow premium and up to 40 % of the slaughter premium (this option will be chosen by Austria),
- retain up to 10 % of direct payments for measures that have a positive environmental effect or improve the quality and marketing of agricultural products.

In addition, Member States may implement the single farm payment at regional level, for which they have a broad range of options at their disposal, including redistribution of money between farm enterprises, between and within regions (this option may be chosen by Germany).

Farmers receiving direct payments must set aside part of their land (organic farms are exempt) and will be subject to compulsory cross-compliance. Recipients of farm payments must abide by a list of 18 statutory European standards in the field of environment, food safety, and animal health and welfare.

For cereals (apart from rye), the intervention price remains the same, but the monthly increments will be cut by half. For other crops regulations were simplified, but not all production related premiums have been abolished (notably durum wheat, protein crops, and energy crops). A reformed milk quota system will be maintained until the 2014-15 marketing year. Prices of butter and skimmed milk powder will be cut asymmetrically in four stages. The quota will be moder-

ately expanded in 2006 and a decoupled milk quota premium will add up to the single farm payment.

Direct payments to larger farms (above a threshold of € 5,000) will be reduced by 3 % in 2005, 4 % in 2006 and 5 % from 2007 to 2013. Despite this gradual phasing-in, channelling expenditure away from market policies will make more than € 1.2 billions available for rural development. The programme for rural development will be kept intact and new measures will extend its scope: food quality measures, meeting standards which are not yet introduced at Member State level, animal welfare measures, support for the implementation of Natura 2000.

5. The CAP reform from 2003: Scenario results for Austria

On 26 June 2003, the Greek Presidency achieved a compromise on the reform of the Common Agricultural Policy (CAP). The Council Regulations are already known, but many of the details (in particular the national implementation) have yet to be published. The available documents (Greek Presidency, 2003, Fischler, 2003B) are detailed enough to allow for an estimate of the likely effects of the reform.

The detailed assumptions underlying the simulations (Tab. 3) are reported in Schmid and Sinabell (2003) and Sinabell and Schmid (2003a and 2003b). In the simulation, two scenarios are compared: the situation in 2003 with the Agenda 2000 policy in place and the situation in 2008 when the reform is fully implemented. Commodity prices are exogenously given and their future values were taken from OECD (2003) and FAPRI-Ireland (2003) forecasts. The only element of the reform that has not been accounted for is the reduction in direct payments (modulation) of bigger farms to finance the new rural development policy. According to some guesstimates, Austria as a country will benefit from this regulation (Pröll, 2003), but it is not yet known to what extent. Therefore, we assume that the reduction will be equal to the newly introduced transfers of a similar size in a given region.

Due to the complexity of some measures and the lack of information on the participation we are only able to account for the most important components of the Austrian rural development programme including transfers for farms in less favoured areas and the agri-environmental programme which together account for 85 % of the total programme funds. The other 15 % of the funds are treated as a lump sum payment linked to the representation of regional and structural units in PASMA.

Two crucial assumptions were made: a) the components of the programme for rural development and its measures do not change between the base period (2003) and the simulation period (2008) and b) farmers can enter a new contract in the year 2006. These assumptions were made because we currently do not know if there will be more or less funds available in the new

programme period. In addition, we also do not know the details of the new programme for rural development (which will be designed in 2005) at this time. Therefore, our results show the following policy experiment: how may farmers adjust their activities to the current CAP reform given that the current programme for rural development does not change.

Tab. 3: Effects of the reform of the Common Agricultural Policy in Austrian regions (time horizon 2008)

	AT1 (East)	AT2 (South)	AT3 (West)
	Percentage change versus 2003 (Agenda 2000 Reform)		
economic indicators			
farm welfare at region level	-4.6	-2.9	-4.0
farm welfare per AWU[1)]	-2.8	-1.2	+1.6
variable cost for livestock products	-6,0	-2,1	-9,9
variable cost fro crops	-2,0	-3,1	-7,7
farm labour input	-1,9	-1,8	-5,5
programme indicators[2)]			
premiums for agri-environmental programme	-0.2	+0.7	+0.1
support for organic farming	+4,1	-0,1	+0,1
payments in less favoured areas[3)]	+4.3	+0.3	+0.8
land use indicators			
total arable land conventional management	-3,5	-3,3	-6.5
total arable land organic management	+0.7	-1.7	-1.9
total meadows	+7.2	+1.2	+2.0
output and input related indicators			
output of beef	-9,5	-5,5	-10,0
output of other meat and eggs	-1,4	0,1	-2,7
output of secondary activities[4)]	±0.0	±0.0	±0.0
environmental indicators			
manure nitrogen	-0,2	-1,0	-5,0
nitrogen balance	-3.4	-2.4	-6.8

1) full time working equivalent
2) the assumption is made that the programme for rural development does not change but farmers may change their participation (e.g., quit organic farming or sign a new five year contract; afforest land and thus change the basis for payments in less favoured areas)
3) these figures pertain to the programme which was in place until 2001; in the meantime the rules have changed but were not yet accounted for in the model
4) the output of secondary activities is not affected by the farm reform unless opportunity cost of labour are considered (which is not the case in the presented simulation run);

Note : Base-Period of calibration: 1999-2001; time horizon 2008, "medium price scenario" based on OECD (2004) and FAPRI-Ireland (2004) forecasts;
Assumptions: 50,000 additional suckler cow premium entitlements are shared among owners of heifers. Suckler cow premiums and 40 % of slaughter premiums remain coupled (this holds for Austria and not necessarily for other EU Member States). The supplementary refund is accounted for as the slaughter premium. Anticipated additional funds for the programme for rural development due to modulation (€ 17 million annually) are not accounted for in the total of transfers because the actual allocation of funds across Member States is not yet known.
Source: own simulation results.

Model results show that compared to a business-as-usual scenario (continuation of the Agenda 2000 Reform in the year 2003):

- the CAP reform will have moderate effects on the expected aggregate farm income per farmer, i.e., full time working equivalent;

- the programme for rural development will become more important: both components that are accounted for in the model (LFA and agri-environmental payments) are likely to increase;
- the reform will slightly accelerate structural adjustment (which means fewer farmers employed in agricultural production);
- decoupling will lead to a significant decline of the output of arable crops and beef – other farm commodities will not be significantly affected by the reform;
- the output reduction is reflected by a decline of input demand (some of them are potentially environmentally harmful);
- organic farming will be less affected by the output decline than conventional farming; in some regions even more organic arable crops and livestock will be produced;
- the nitrogen balance will improve at regional levels.

The model results show that the CAP reform 2003 is enhancing the achievement of several objectives of the rural development programme in some aspects, while in others it is more or less neutral. Farm incomes per AWU are increasing in one region (West) while they are decreasing in the other two regions (South, and East). According to the model results, we expect that farm employment (AWU) will be reduced due to the reform. One implication of this development is that the opportunity cost of farm labour will decline. This may result in an incentive to seek for income alternatives, among them secondary activities and thus contribute to the diversification of farm activities. Crop and livestock production is becoming less intensive, the average costs of production are decreasing and thus making farms more competitive.

6. Discussion

The programme for rural development will become more important as soon as the 2003 reform of the Common Agricultural Policy (CAP) will be implemented. The newly designed instrument of a single farm payment is likely to stabilize farm income without distorting commodity markets.

However, in order to achieve other objectives of the CAP as listed in Art. 33 of the Treaty, more instruments are necessary. One major instrument will be rural development programmes that are well suited to address a wide variety of goals. Because national programmes are fine tuned to specific natural and structural conditions there are better chances to meet these goals than by using commodity programmes (Buckwell, et. al., 1999).

In this paper we have presented an approach how to analyse farm policy under the new situation where the structure of traditional instruments has significantly changed. We developed a model that is capable to analyse both: commodity policies as well as rural development policies. The set of instruments that are explicitly accounted for are production incentives for commodities as implemented in the Agenda 2000 reform (acreage und livestock premiums, slaughter premiums, extensification premiums, production quota, set aside requirements) and the most important components of the programme for rural development (support for farms less favoured areas, and agri-environmental payments). The effects of these interventions are measured in a regional context and we provide estimates at NUTS1-level for Austria.

According to our model results, the CAP-2003 reform will make production more extensive in Austria. Thus the reform is compatible with some of the objectives of the rural development programme. The 2003 reform will induce more pressure on structural adjustments. This is counterproductive to the objective of rural employment but consistent with the goal to increase competitiveness. We therefore see the need to strengthen those measures that aim at diversification of farm activities and income opportunities.

There are several challenges for a further development of the modelling approach we have presented here. Currently, 15 % of the funds of the rural development programme are treated as regional lump sum payments. When the results of the mid-term review of the rural development programme will become available the remaining measures can be integrated in the model. The integration of investment measures will make it necessary to overhaul the model substantially to account for dynamic effects of policy instruments. Another direction of future development is to extend the coverage of the model to account for more parts of the rural economy beyond agriculture. A promising approach seems to be the integration of this model into a regional input-output model which accounts for down-stream and up-stream sectors, explicitly. Other components that should be included are farm administration and related private sector service firms.

Sector models are only a complementary tool to other approaches. Many aspects of a policy with such a breath as the rural development programme cannot be addressed by a model similar to the one presented here. Rural development means - or should mean, to economists - structural and institutional changes in the rural parts of the wider economy. This definition would include changes in all components, including production, consumption and trade, as well as economic processes such as new forms of marketing and policy delivery (Thomson, 2001). Given this definition it is evident that the research agenda is much broader than can be covered by a single tool, even if it is very detailed.

EU farm ministers are committed to strengthen rural development. Following the principle of subsidiarity this may involve more national expenditures. The role of Member States' budget shares

therefore needs to be accounted for when policy reforms are to be evaluated. Analyses of the EU farm sector at the aggregate level will therefore become more difficult unless information systems and research tools are developed which allow the inclusion of national policies.

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