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IMPACT OF DIRECT PAYMENTS AND THE MTR PROPOSAL ON AGRICULTURAL ENTERPRISES IN POLAND

*Edward Majewski**, *Adam Was**, *Ludger Hinners-Tobrägel***, *Krisztián Keszthelyi****

Abstract

The aim of this paper is to examine the impacts of various methods of direct payments on the production structures and farm incomes of Polish family farms after EU accession. The analyses have been made for 2005, using linear programming farm optimisation models. 15 farm types, differentiated by soil quality, have been selected for the study. The modelling results show that, depending on the respective policy scenario, i.e., the rate and the scheme of direct payments, the introduction of the Common Agricultural Policy (CAP) in Poland may cause some shifts in farm production and will result in a measurable increase of farm incomes for all farm types, mainly due to direct payments and LFA subsidies. However, not all types of farms will benefit from the accession.

1 Introduction

During the negotiations on EU-accession, the integration of the agricultural sectors of the Central and Eastern European countries (CEECs) with those of the member states was a major issue. One of the most sensitive questions was the extent of direct payments the European Union will pay to farmers in the new member states. The purpose of this paper is to add to understanding of the implications of the agreement on the EU enlargement by presenting up-to-date calculations of likely farm level impacts from introducing the CAP to the Polish agricultural sector.

2 Methodology

2.1 Applied research method

Linear Programming farm models were used to assess the impact of different policy scenarios on farm incomes and production structures in selected types of Polish farms. The method is based upon a farm income, static optimisation model (MAJEWSKI et al., 2002, 1996; BERG et al., 1999). Analyses have been made for 30 typical Polish farms. In view of the short time period between the base year (2002) and the target year (2005) any changes in farm organization were constrained by up to 20% of the existing resources of farm land and size of activities in the production structure. Although not fully optimized, the model solutions indicate possible reactions of farmers to the policies introduced through accession.

2.2 Sample

There are many features of Polish agriculture which make analyses related to the farming sector very complex. These include spatially-differentiated farming conditions in terms of climate and soil quality, a large number of farms within a wide range of farm size and varied technologies, all of which contribute to high heterogeneity of farm types. It was estimated that the 210 farm types in the sample represent about 90% of the whole agricultural sector in Po-

* Edward Majewski and Adam Was, Agricultural University, Nowoursynowska 166, 02-787 Warsaw, Poland.

** Ludger Hinners-Tobrägel, Institut für Agrarentwicklung in Mittel- und Osteuropa (IAMO), Theodor-Lieser-Str. 2, 06120 Halle.

*** Krisztián Keszthelyi, Szent István University, 2103 Gödöllő, Hungary.

land [MAJEWSKI et al., 2002]. According to those estimates, the 30 farm types selected for this study represent about 18% of all the farms above two hectares of agricultural land, and about 40% of total land.

Given this partial representation, it was decided to illustrate the widest impact of policy changes by conducting analyses for two sets of farms with extreme farming conditions and intensity of production. The sample therefore consists of 15 intensive farms with good quality soils on the one hand, and 15 extensive farms with poor quality soils on the other. It should be emphasized that poor quality soils (5th and 6th class in the six-class scale) constitute more than 30% of agricultural land [RADECKI et al., 1999, p. 31], whilst good quality soils amount to about 10% of land.

The 30 farm types differ widely from each other in terms of size, ranging from 7 ha up to 700 ha, as well as in technology used and intensity of production. Farms in the sample represent four basic types of production: arable farming, cattle and pig production and mixed farming.

Models constructed for all selected farm types were based mainly on detailed descriptions of real farms from a sample of over 700 commercial farms surveyed in 1998 [MAJEWSKI 2001]. For model simplification reasons, some adjustments were made in the base year production structure (e.g., removing activities of marginal importance). In order to achieve a greater level of uniformity of model assumptions, free of individual farm specific irregularities, the model parameters were compiled from surveyed farms as well as normative data. Therefore, model solutions are considered, to a large extent, to be representative of the respective farm types.

In the paper, the modeling results are presented as average values for each group of farms. In the aggregation procedure, results generated by the model were multiplied by the estimated number of farms represented by the respective farm type.

2.3 Scenarios

In order to compare the effects of introducing different direct payments schemes, a number of policy scenarios were analysed (Table 1).

Table 1 Scenarios applied in the model

Name of the scenario	The year modelled	Payment rate (%)	Productivity growth rate	Optimised ?
Real 2002 (base)	2002	-	-	No
Optimal 2002 (base)	2002	-	-	Yes
Agenda	2005	40; 60	0; 1.5	Yes
Single Area Payment Scheme (SAPS)	2005	40; 60	0; 1.5	Yes
MTR (Reformed CAP)	2005	40; 60	0;1.5; 3	Yes

The "Real" scenario for the 2002 economic year reflects the real organization of model farms in the base year.

For the year 2002 an additional, optimised variant of the base scenario ("Optimal 2002") was constructed, based on the assumption that both fixed farm resources and productivity levels remain unchanged, and on optimisation results with adjustments in production structure. This scenario is used as a reference for comparisons with the 2005 optimal solutions.

The Agenda scenario is based upon the direct payment scheme (are and headage payments) as operated in the existing EU member states.

The Single Area Payment Scheme (SAPS) scenario, which will be introduced in Poland, differs from the present EU direct payments scheme. The total amount of subsidies coming from

the EU budget (25% of the EU rates in the accession year 2004) will be allocated evenly to each hectare of cultivated agricultural land. The complementary national payments may be added increasing direct payments up to 35% of the EU rates (by moving part of IInd pillar funds with adequate national contribution) or to 55% if additional funds were transferred from the domestic budget only. Complementary payments will be distributed between activities eligible for payments under the existing CAP - the *grandes cultures* (cereals, oil seeds, proteins crops) receive payments to a hectare of respective crops, and additional payments for livestock will be transformed into a single payment for a hectare of grassland and other fodder crops.

As agreed in the Copenhagen Treaty, accession countries will receive 25% of the EU payment level in the year 2004. The payments will be gradually increased by 5-10% annually until 2013, when they will reach the EU level. In addition to the EU payments, sums of up to 30% of current EU levels can be subsidised from national budgets (Table 2).

Table 2 Direct payments in the accession countries (as percentage of current EU level)

A	B	C	D
Year	Direct payments from EU	Upper bound of direct payments from national governments	Upper bound of total direct payments farmers may receive
2004	25	35	55
2005	30	30	60
2006	35	30	65
2007	40	30	70
2008	50	30	80
2009	60	30	90
2010	70	30	100
2011	80	20	100
2012	90	10	100
2013	100	0	100

Source: own calculations.

In the scenario based upon the proposals of the CAP Mid-Term-Review (MTR scenario) all payments (for crops and livestock) are transformed to a single payment for cultivated land. In this scenario, the price of rye was reduced by 10% due to the abandonment of intervention, prices of other cereals fell by 5%, and the price of milk was reduced by 7%. The price decrease was compensated by a 3% rise in direct payments for cereals. Such assumptions made for the year 2005 (presupposed first year of the CAP reform) were based on original Mid-Term-Review proposal, as available at the time of preparing parameters from modelling. They differ from the actual Luxembourg compromise.

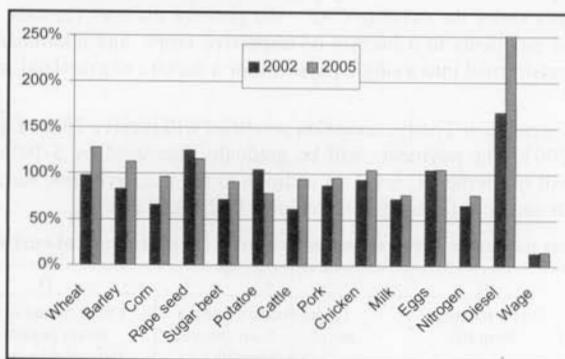
All scenarios for the year 2005 were also differentiated by total direct payment rates of 40% and 60% ("scenario 40" or "scenario 60") and rates of productivity growth - 0 and 1.5% ("scenario P"). In the MTR scenario, a 3% rate of productivity increase ("scenario 2P") was also modelled.

2.4 Prices

Prices of the main agricultural commodities vary between countries, even within the EU, but it is assumed that prices in the candidate states will tend to reach EU levels due to convergence processes. For a number of products (such as wheat, eggs, chicken and potatoes) present prices in Poland do not significantly differ from those in the EU. It is expected, however, that the prices of some products will decrease even below intervention prices for eligible

commodities due to factors such as an unfavourable market situation (latent oversupply) or low product quality (Figure 1). In general, the prices of most products are expected to increase till 2005, with the exception of rapeseed and potatoes.

Figure 1 Producer prices in Poland (EU price = 100%)

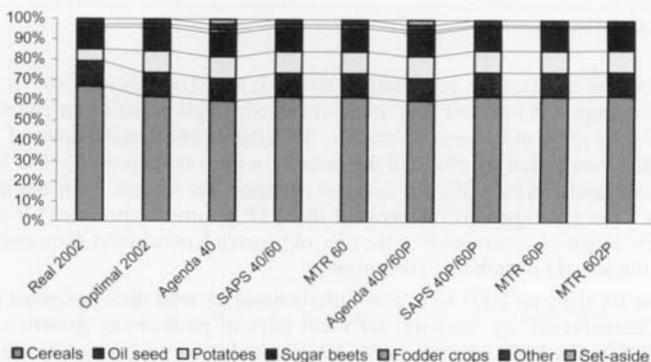


3 Modelling results

3.1 Production

The rate of direct payments and the method of application both influence the production structure. On farms with good soils, differences between scenarios in the cropping structure (Figure 2) are less significant than on farms with soils of poor quality (Figure 3).

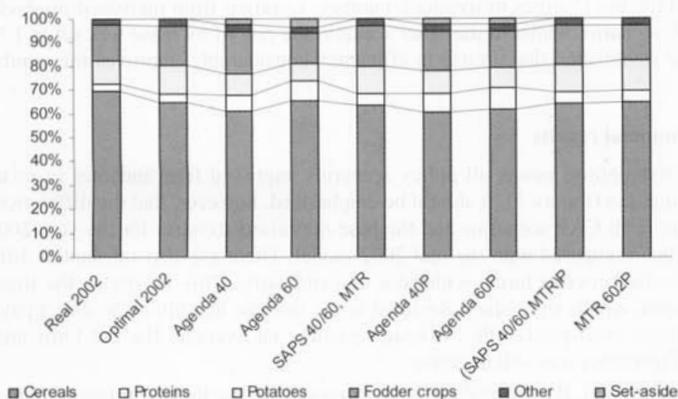
Figure 2 Changes in crop production structure in farms with good soils



The cropping structure on farms with good soils is changed visibly under the IACS scenario due to the introduction of a compulsory set-aside scheme. Protein crops will remain unattractive for farmers even under a standard scheme with an increased rate of payments. All optimal model solutions increase the share of the more profitable potatoes, at the expense of cereals, in comparison to the real structure of crop production in the Base Scenario.

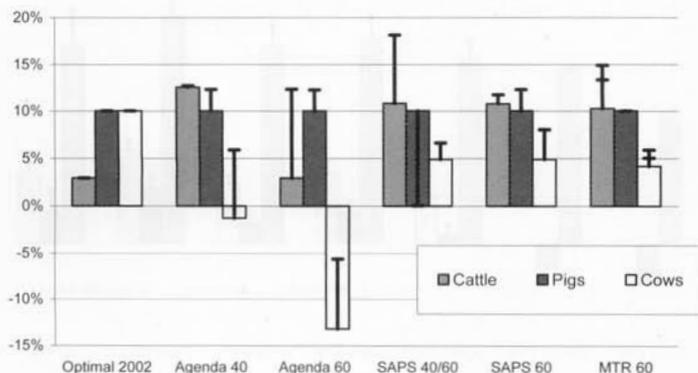
If a farm has poor soil, the optimal production structure varies depending on the policy scenario and payments scheme more noticeably, mainly regarding protein crops and potatoes. The mixed scheme, which is to be introduced in Poland, generates optimal solutions closest to existing production patterns. The sum of protein crops and potatoes is constant. Under IACS, where set-aside is compulsory, the area of cereals is reduced.

Figure 3 Changes in crop production structure in farms with poor soils



Regarding the animal production sector, different scenarios significantly influence the production structure only on farms with poor soils (Figure 4).

Figure 4 Changes in livestock numbers in farms with poor soils



Pork production isn't affected by EU accession at all in the models, and remains at the same level in all scenarios, to a large extent because of the specificity of the LP model. All the models tend to fully utilise existing stands for pigs and accessible labour. In practice, however, fluctuations caused by the pig cycle and price and profitability changes may influence farmers' decisions.

The IACS scheme and higher rates of direct payments increase the opportunity costs of fodder crops. This results in the reduction of total fodder crops area and in the number of cows. On the other hand, due to attractive Beef Special Premium, supported by slaughter premia, models tend to significantly increase the number of cattle for slaughtering.

Model solutions for Mixed and MTR scenarios generate a more balanced structure of animal production.

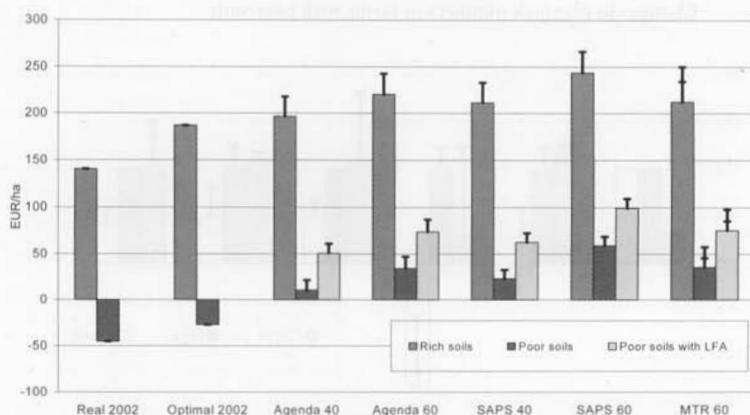
The black vertical lines on the diagram, which are normally used to illustrate standard deviation, here show the changes in livestock numbers resulting from increased productivity (3 % in the MTR scenario, whilst in the other scenario the rate of increase was set at 1.5%). It can therefore be established that a raise in efficiency considerably improves the number of livestock.

3.2 Financial results

Under the assumptions made, all policy scenarios improved farm incomes in relation to the base year situation (Figure 5). It should be emphasized, however, that the difference in the net farm income from CAP scenarios and the base optimised scenario for the year 2002 is much less than when compared with the real 2002 model. There are also substantial differences in financial results between farms with poor and rich soils. This illustrates the importance of LFA payments, which were also calculated in the models, in addition to direct payments, for extensive farms with poor soils. Although positive on average, the net farm income for a number of farm types was still negative.

In the case of Poland, the "Mixed 60" scenario results in the highest financial outcome for all farm types. The CAP reform with the Mid-Term Review proposals introduced would decrease farm incomes, which could, however, be compensated with a 3% productivity increase.

Figure 5 Average net farm income in €/ha



4 Conclusions

The main conclusions which may be drawn from the study are as follows:

- Policy scenarios influence production structure. This proves that subsidies for the agricultural sector have a distorting effect. To a lesser extent, the production structure, mainly in the livestock sector, is influenced by the productivity increase;

- Shifts in production structure occur mainly on farms with poor quality soils. Farms with rich soils are less sensitive to policy changes;
- Introducing direct payments under the scheme operated in member states (Agenda 2000) to Polish agriculture would result in the tendency towards more noticeable changes in production structure. In the models, compulsory set-aside reduces the share of cereals in the cropping structure. Further, headage payments strongly favour beef production, whilst reducing the number of dairy cows;
- The Single Area Payments Scheme of direct payments, which is to be introduced in Poland, generates optimal solutions which are closest to existing production patterns.
- Introducing the CAP in Poland will result, on average, with a measurable increase of farm incomes for all farm types, due to both direct payments and LFA subsidies. However, at the 40% rate of payments in the year 2005, the net farm income for a significant number of farms, especially small size farms and farms with poor quality soils, will still be negative.

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