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FARMING AT THE EDGE

FARMING ON THE EDGE IN POLAND. OPTIONS FOR IMPROVING FARM INCOMES FOR THE MAIN TYPES OF FARMS AFTER JOINING THE EU

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Abstract

The aim of the paper is to examine the financial impacts of introducing the Common Agricultural Policy into the Polish farming sector after the accession to the EU. Aggregated results from farm level modelling using linear programming for 210 farm types representing the variety of Polish farms, and 90% of the agricultural sector are presented. The benefits of the negotiated subsidy arrangements are unequally distributed and only a partial solution to low farm family incomes.

Keywords: EU accession, Polish Agriculture, direct payments, typical farms, farm model.

Introduction

Three policy scenarios were modelled:

- Base 2002, reflecting the current existing agricultural situation and support policies.
- CAP 2005 – the first year after accession;

- Two rates of direct payments were analysed since the accession agreement allows the Polish government to increase payments above the negotiated 25% of the EU rate:
  - The 35,9% rate - which moves part of the available EU funds (plus national co-financing) from the 2nd Pillar of the CAP, the rural development fund;
  - The 55% (optional) – which allows topping up of direct payments from the national budget.

Three different schemes for calculating direct payments are considered:

- Standard IACS, an administratively expensive system operated in present member states requiring details of cultivated areas and livestock numbers;
- Simplified – where the total eligible payments are distributed equally to each hectare of agricultural land irrespective of its use;

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- Mixed (IACS simplified) - combining the two approaches: simplified payments (25% of the EU rates) and additional support for activities eligible for payments under the standard scheme. This scheme will be introduced in Poland (table 1).

Table 1. Provisional rates of direct payment in the mixed scheme and LFA subsidies [Euro/ha]

Eligible area	Basic rate	Additional funds from the 2nd Pillar (with national co-financing)	Maximum rate with additional funds from the National Budget
	25%	35,9%	55%
Agricultural Land	40,2	-	-
Cereals, Oil, Protein and other eligible crops	-	22,2	48,0
Grassland and Fodder Crops	-	16,2	27,9
LFA payment*	40,0	-	-

* provisional, average rate

Agricultural sector in Poland

Poland, the largest new EU member state has 18.4 million hectares of agricultural land. Yields are currently lower than in the EU 15. The number of people involved in Polish agriculture is high due to a small and fragmented pattern of land ownership. Farm incomes are low and falling as shown by the declining contribution of agriculture to GDP (table 2). Political pressure to support farm incomes is strong. Political parties with an agricultural constituency have been part of Government coalitions recently and protests are frequent.

Table 2. General overview on the size and structure of the Agricultural sector and its role in the National Economy

Item	Year 1980	Year 1990	Year 2000
Area of agricultural land (Mio hectares)	19,1	18,8	18,4
Labour force in agriculture:			
- number of employed [Mio]	5142	3762	3875
- % of working population	29,5	25,6	26,2
Share of agriculture in GDP (%)	12,8	13,8	3,3

Polish agriculture is extremely varied with different kinds of land ownership, many different farm types reflecting natural conditions and traditional and advanced forms of technology.

The share of land which is operated privately has increased since transition although over 75% of the land was operated in this way under Socialism. (table 3)

Table 3. Operation of agricultural land [% of share in total area]

Farm type	Year 1976-1980	Year 1990	Year 2000
Family farms	75,9	76,0	90,2
Co-operative farms	3,9	4,0	2,0
Public sector	20,2	20,0	7,8

There is a highly skewed distribution of land ownership. Generally, farms in the North and North-West of Poland are larger than in the South.

Table 4. Land and labor distribution in different farm size clusters [%]

Item	Farm size clusters (ha)					
	1-5,0	5,01 – 10,0	10,01- 20,0	20,01 – 50,0	Above 50	Total
Farm holdings [% of total number]	56.3	23.8	14.3	4.8	0.8	100.0
Share in use of agricultural land	16.5	20.0	23.2	15.6	24.7	100.0
Labour-force distribution	52.4	25.4	16.0	5.5	0.7	100,0

Source: Rocznik statystyczny rolnictwa, GUS, Warszawa 2001.

The extent of the farm structural problem is shown in table 4. More than half of the agricultural workforce are on farms of between 1 and 5 hectares and three quarters on farms of less than 10 hectares. Almost 20% of the working population of Poland or 2.5 million people are small farmers.

There is also a significant modern and efficient commercial farming sector with about 20% of farms operating 60% of farmed land and supplying most of the marketed output.

Most small farms families rely on agricultural incomes to a small extent (table 5). Social payments are important but are a growing burden on government finances. Raising farm family incomes from their low level by means of agricultural

support is a major political objective. Unfortunately raising farm incomes trough improving productivity has been unsuccessful in recent years.

Table 5. Structure of personal farm family income in the year 2001.

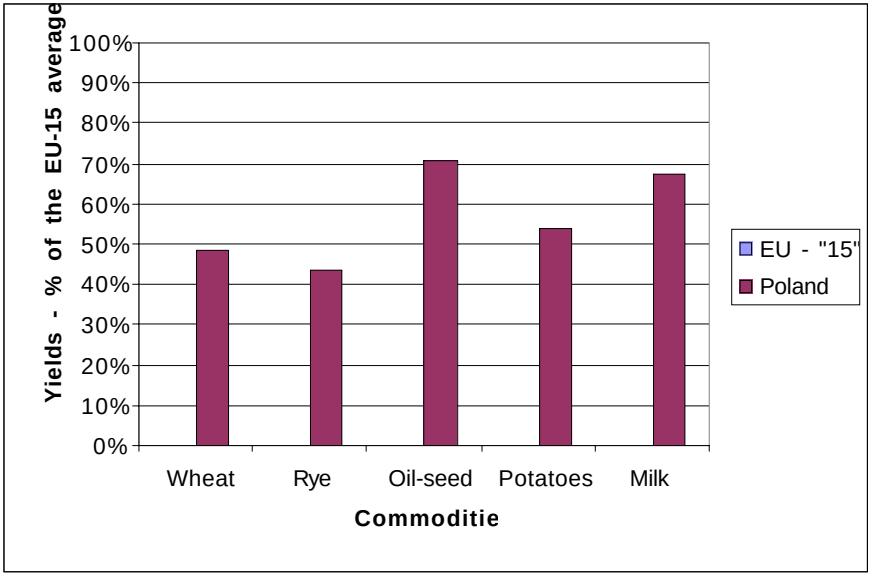
Income category	Farm size clusters [ha]					
	< 5	5 – 10	10 – 20	20-50	> 50	Average
Farm Family Personal Income – Euro/farm	5420	5600	8012	11377	20759	10519
Personal Income [%]	100,0	100,0	100,0	100,0	100,0	100,0
Farm Income	6,9	33,3	62,3	77,9	84,9	69,0
Other sources	93,1	66,7	37,7	22,1	15,1	31,0
Of which:						
social payments	35,3	27,6	14,5	7,0	2,6	10,8

Source: Produkcyjno-ekonomiczna sytuacja gospodarstw prowadz_cych rachunkowo__ roln_ w latach 1999-2001. IERiGZ 2003.

The productivity of land as measured by crop and livestock yields while on average low by EU standards (diagram 1) differs widely between farms depending on quality of soils and the intensity of production.

Diagram 1. Polish yields as a percentage of the EU "15" average in the year 2000

	Wheat	Rye	Oil-seed	Potatoes	Milk
EU - "15"	66.6	43.1	30.9	360	5450
Poland	32.3	18.8	21.9	194	3668
EU - "15"	Wheat	Rye	Oil-seed	Potatoes	Milk
Poland	48.5%	43.6%	70.9%	53.9%	67.3%

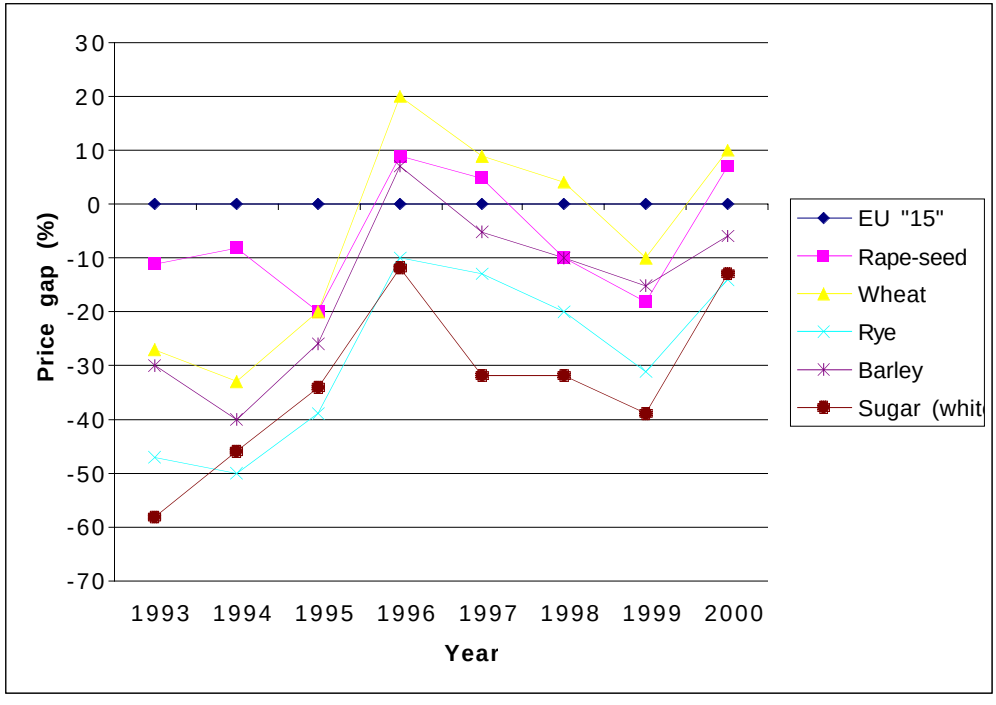


Crop yields reflect the fact that about 35% of Polish agriculture faces poor or very poor conditions, with good and very good conditions for agricultural production on about 37% of the land area. Farm buildings and machines are run down,

a large amount of land has been abandoned and in association with the low degree of profits a lack of access to credit is often a constraint to investment and growth. Falling agricultural profits and increasingly more adverse terms trade have resulted in enhanced levels of market protection since transition when most subsidies to the sector were abandoned. The result (with some exceptions) has been that Polish farm prices especially for crops have come more into line with EU levels. (Diagrams 2 and 3)

Diagram 2. Poland – EU "15" price gaps for crops

	1993	1994	1995	1996	1997	1998	1999	2000
EU "15"	0	0	0	0	0	0	0	0
Rape-seed	-11	-8	-20	9	5	-10	-18	7
Wheat	-27	-33	-20	20	9	4	-10	10
Rye	-47	-50	-39	-10	-13	-20	-31	-14
Barley	-30	-40	-26	7	-5	-10	-15	-6
Sugar (white)	-58	-46	-34	-12	-32	-32	-39	-13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Price gap (%)
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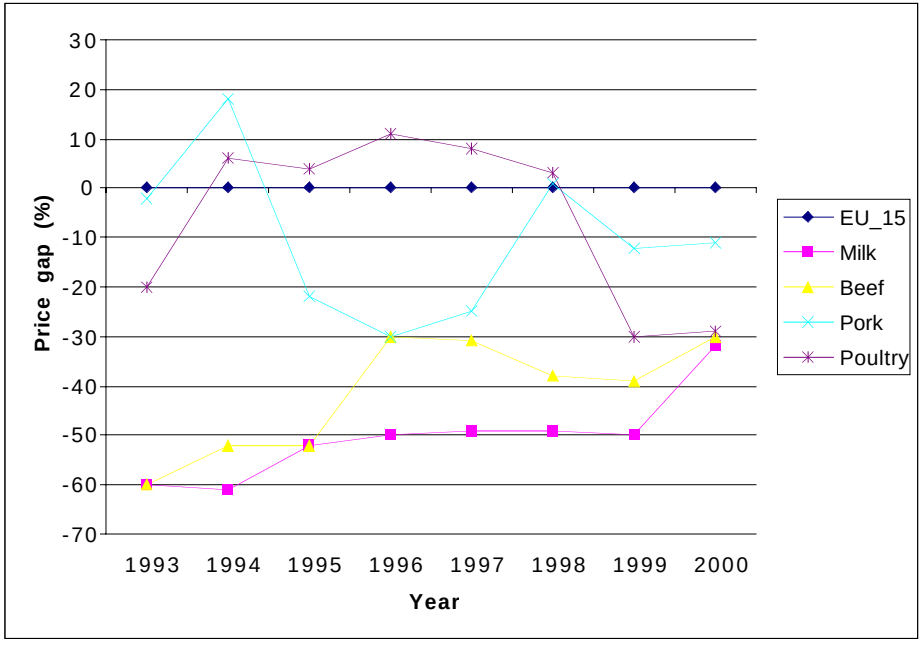
EU "15"
Rape-seed
Wheat
Rye
Barley
Sugar (whit

Diagram 3. Poland – EU "15" price gaps for milk and livestock

	1993	1994	1995	1996	1997	1998	1999	2000
EU_15	0	0	0	0	0	0	0	0
Milk	-60	-61	-52	-50	-49	-49	-50	-32
Beef	-60	-52	-52	-30	-31	-38	-39	-30
Pork	-2	18	-22	-30	-25	1	-12	-11



Poultry	-20	6	4	11	8	3	-30	-29

Methodology

The methodology used for this study is based upon a farm income optimization, static LP model and has been described in detail elsewhere[Majewski et. al. 2000]. Analyses have been carried out for 210 farm types, differentiated by type of production (cattle, pig, mixed and arable), quality of soils (good, medium and poor), intensity of production (intensive and extensive) and farm size (ranging from 3 ha to over 800 ha).

The number of farms represented by each farm type was estimated [Majewski et al, 2002], in order to aggregate the results up to the National level. It has been calculated that the farm types identified represent about 90% of the Polish Agriculture.

Parameters for the models were based on detailed descriptions of real farms from a sample survey of 700 commercial farms [Majewski, 2001]. Some simplifications were made in the base year production structure for example by removing activities of marginal importance. Some normative coefficients were also used in order to exclude individual farm specific irregularities.

It was assumed that in the short period between the year 2002 and accession there would be no significant adjustments in the farm and the production structure and there would be no major productivity increases.

The yields and productivity level assumptions for different types are shown in table 6.

Table 6.Yields of selected main crops (dt/ha) for the Base and CAP scenarios

Crops	Farms				
	Intensive		Extensive		
	Soils quality				
	Good	Medium	Good	Medium	Poor
Winter wheat	50	43	39	29	0
Spring Barley	42	35	32	23	0
Rye	0	32	0	23	16
Peas	30	25	25	20	0
Oil-seed rape	30	24	19	16	0
Ware Potatoes	320	300	240	160	140
Sugar Beets	450	380	330	280	0
Permanent Grass	450	360	320	260	190

Sources: farm survey data, own assumptions

Milk yields were varied depending on farm within the range 3300 l/cow up to 7000 l/cow. In pig production different rates of feed conversion and numbers of piglets per sow were used.

German input prices and costs which are on average some 10 to 20% higher than Polish levels were used as a reference for EU levels. Polish 2001/2002 input prices were lower, although with some exceptions, for instance almost equal prices for pesticides. The fixed costs are assumed not to change from the base year.

Adjustments costs

Meeting EU standards and legal regulations will require investment, such as in manure storage and in milk production facilities. The annual costs of these investments have been reduced by benefits associated with such investments such as

fertiliser savings and quality premia. [Majewski, et al. 2002]. Additional costs related to the preparation of applications for payments were also calculated.

Modelling results

A. Financial impacts of introducing the CAP in the first year after accession – no changes in cropping structure assumed

The aggregated short-term financial effects of implementing the CAP in Polish Agriculture are presented in table 7. LFA subsidies, distributed among farm types, were included with the direct payments.

Table 7. Modelled financial results for the Polish agricultural sector in the year 2004 after accession to the EU with different payments schemes applied (mln Euro)

Item	Base scenario	CAP 35,9% + LFA			CAP 55% + LFA		
		Simplified	Standard IACS	Mixed	Simplified	Standard IACS	Mixed
Net Farm Income	-272	397	273	341	812	693	755
Gross Farm Income*	2406	3076	2951	3019	3491	3372	3434
Payments as % of:							
- revenues	1%	9%	9%	9%	12%	13%	12%
- Gross Farm Income	4%	36%	38%	36%	45%	47%	45%
Change (base = 100) of:							
- revenues	100	106	104	106	106	104	106

- costs	100	107	106	107	107	106	107
- Gross Farm Income	100	128	122	126	149	143	147

*Net Farm Income plus depreciation

The farm income for the sector in the year 2004, with direct and LFA payments included, will, on average, increase by 47% under the mixed payments scheme in comparison to the 2001 base situation. The simplified scheme would give an additional 2% increase, while the standard scheme is noticeably less beneficial .(43% increase) since it requires land to be set aside.

Arable and cattle farms and farms below 7 hectares and those above 50 hectares benefit the most from the new subsidies.

Significant Farm Income increases expressed in relative terms are less impressive if nominal incomes are compared (table 8).

Table 8. Farm Income (Euro/ha) in 2004 for different groups of farms - Mixed scheme of direct payments calculation - 55% rate

Farms	Policy scenarios				
	Base 2002	CAP 2005	Base 2002	CAP 2005	Base = 100%
	Net Farm Income		Gross Farm Income		
Sector	**-17.9**	56.3	158.0	232.1	147%
Farms type:					
Cattle	-**58.6**	9.0	126.1	193.7	154%
Pig	14.3	93.2	161.5	240.3	149%
Arable	**-121.3**	**-31.4**	70.4	160.4	228%
Mixed	53.3	120.6	224.2	291.5	130%
Soils quality:					
Good	47.2	110.7	298.2	361.6	121%
Medium	**-30.6**	45.8	143.1	219.5	153%
Poor	**-46.4**	32.1	75.2	153.7	204%
Farm size					
Below 7 ha	**-122.9**	**-53.8**	92.2	161.3	175%
7-15 ha	-**5.6**	60.9	185.6	252.1	136%
15-25 ha	34.7	107.3	199.3	272.0	136%

25-50 ha	72.5	151.3	203.8	282.5	139%
Above 50 ha	100.3	204.5	186.9	291.1	156%
Non-LFA	5,2	82,8	212,6	290,1	136
LFA	-40,0	61,0	105,6	210,9	195

* LFA payments included

The base year average Net Farm Income was negative for most farm types. The low level of initial incomes explains the relative high improvement. However, the expected mean gain in terms of cash flow improvement will be less impressive and for a large number of small farmers below their expectations.

Optimisation results (changes in production structure and financial impacts)

Farmers also have the opportunity to further improve their incomes after the introduction of the CAP by changing their combination of enterprises. This potential was explored by calculating the optimal combination of crops and livestock to maximise farm incomes.
Five different future scenarios were assumed;

- CAP – no direct payments (0%);
- CAP Simplified – 55% of EU payment rate;
- IACS – standard CAP – 55% of EU payment rate;
- MTR_SP – mid-term review simplified (first year, with price decreases, compensation, modulation and degression);
- MTR_+ 2% - with a 2% productivity increase, compensating income reductions.

The results in table 9 indicate the stability of the pattern of cropping enterprises (which has been the case during all the turbulence of the transition to a market economy). There are some small changes which are in step with the new subsidies. Livestock enterprises are also highly stable in the different scenarios. Dairy quotas are a binding constraint.

Table 9 – Aggregate optimal crop production structures [%]

Crops	Scenarios

	Base	CAP 0%	Simplified 55%	Mixed 55%	Standard 55%	MTR_SP	MTR_ +2%
Cereals	68,4	63,3	63,3	65,2	63,8	63,4	63,5
Oil-Seed	3,7	5,6	5,6	5,7	5,6	5,6	5,7
Protein	1,4	0,8	0,8	1,3	2,2	0,9	1,0
Root crops	12,6	15,5	15,5	13,4	13,2	15,5	15,5
Fodder crops	9,1	9,9	9,9	9,5	9,0	9,7	9,5
Other	4,8	4,8	4,8	4,8	4,8	4,8	4,8
Set-aside	-	-	-	-	1,4	-	-
Total	100,0	100,0	100,0	100,0	100,0	100,0	100,0

Improvements in farm incomes (table 10) are only slightly greater with optimization. The reduction in income arising from the Medium term review proposals can easily be offset by a rise in productivity.

Table 10 Aggregate optimal Farm Income in Mio Euro (LFA included)

Crops	Scenarios						
	Base	CAP 0%	Simplified 55%	Mixed 55%	Standard 55%	MTR_SP	MTR_ +2%
Net Farm Income	-272	167	1058	1087	890	856	1082
Gross Farm Income	2406	2845	3736	3765	3568	3534	3761
Direct Payments as:							
- % of revenues	1%	3%	10%	10%	9%	10%	10%

- % of Gross Farm Income	4%	11%	35%	36%	34%	38%	36%
Gross Income change Base = 100%	100%	118%	155%	156%	148%	147%	156%

Discussion

Introducing the Common Agricultural Policy with the negotiated level of direct and less favoured area payments will markedly increase Polish farm incomes. Farmers' revenues will most probably differ from those predicted, because of model divergence with real costs, prices, farms' efficiency and variations in the Euro/zloty exchange rate. The utilization of support measures may not be complete (as assumed in the model), depending on the number and correctness of farmers' applications for payments.

The claim that the CAP direct payments are decoupled from production is supported to a limited extent by the stability of the optimal enterprise mix in the different scenarios. However, no attempt has been made to estimate the price effects of the changes in production. There is a much potential for productivity increases which can offset any price or subsidy reductions.

The additional payments will favour large farmers. Payments received by smaller farms will have a small impact on their income situation and will in effect be a new kind of social support. The LFA payments will most probably convince farmers to sustain existing production in poor farming conditions.

The importance given to direct payments in the accession agricultural negotiations and the fact that some development funds can be used to enhance their rate is evidence of the likelihood of continued political pressure for farm income support by a large and powerful group of small Polish farmers. This pressure could increase if expectations about the benefits of the CAP are not fulfilled within this social group [Majewski, Perepeczko, 2002].

It has to be stressed, that direct payments comprise only 40% of EU finance directed to the Polish farm sector. The Structural Operational Program and Rural Development funds will offer strong support for the development process in the Polish farming sector and will be augmented by co-financing from the Polish Government and the beneficiaries own funds.

It is ironic that some of these funds are to be used for direct payment purposes when the small size of farm limits the effectiveness of this form of support to income from farming and the effect is likely to be short term. Successful long run rural development programs should improve the prospects for, and the remuneration from, both on and off farm employment and hence all the sources of income for small farm families.

The long run competitiveness of Polish farming depends on a quickening of its restructuring, improving the quality of its products, increasing environmental safety of agricultural production, as well as on developing market oriented attitudes and actions of farmers. Thus the main condition for long lasting, sustainable development of Polish agriculture is the development of human capital.

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