Facing the future: strategies and investment behaviour of polish farmers

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ABSTRACT

This paper analyses farm-household strategies and investment behaviour of Polish farmers with a particular focus on the perceived effects of CAP. The paper is based on a survey of Polish farmers carried out in 2006 on a sample of 63 farms. Farmers where selected in order to fit in the intersection of the following categories: different altitudes (plain/mountain); different specialisation (arable crops, livestock, fruit trees), different technology (conventional, organic). The survey includes information about farm and household structure, expectations, reaction to planned and intended investment, as well as about potential reforms such as decoupling of EU payments. Results show multifaceted expectations toward the future. The main objectives expressed by farmers are to reduce income uncertainty and to increase household worth. CAP payments are normally used on farm and concentrated on covering current costs and investment expenditure. The perspective of decoupling is expected to produce either no change or an increase of on farm investment.

Keywords: Common Agricultural Policy (CAP), Single Farm Payment (SFP), decoupling, impact analysis, Poland, investment behaviour.

1 INTRODUCTION AND OBJECTIVES

After more than fifteen years of transition, farmers in Eastern Europe seem to face new challenges. The integration in the EU and the evolving international markets create challenges but also open up new opportunities. These opportunities and related expectations on their turn affect, among other issues, long term investment behaviour. This seems particularly important as it implies long term choices that will affect competitiveness in the longer run. In the current and forthcoming years this is particularly true for New Member States (NMS) of Central and Easter Europe, where the Common Agricultural Policy (CAP) is in way of its implementation.

The background for this paper is provided by the 2003 CAP reform that partially de-links farm subsidies from production and concentrates the former in a Single Farm Payment (SFP) supporting producers' income (Regulation EC 1782/2003). SFP represents a large fraction of EU expenditure on agriculture and rural development (approximately 62% in 2005).

Among policy analysis exercises carried out up to now, the issue of policy effects on investment behaviour looks to a large extent insufficiently studied, particularly compared to its likely importance in the long term (BAUM et al., 2004; EUROPEAN COMMISSION, 2003; OECD, 2005). At the same time, literature emphasises the complexity of this issue, in relation to structural adjustment,

labour and capital markets, uncertainty and household life cycle (HAPPE K. (2004, LAGERKVIST C. J. (2005), LATRUFFE L. (2004), SCKOKAI P. and MORO D. (2006)

This paper analyses the farm strategies and investment behaviour of Polish farmers facing present markets and policy challenges, with a particular focus on the effects of the CAP. The study is based on a survey of farm households located in five different regions of Poland.

The paper is structured as follows. Section 2 describes the background situation of Polish agriculture. Section 3 describes the methodology adopted. Section 4 describes the case studies to which the methodology is applied. Section 5 discusses the results. Section 6 presents the policy implications and conclusions.

2 BACKGROUND: SCENARIOS AND CHALLENGES OF AGRICULTURE IN POLAND

Polish agriculture with its about 16 million hectares of agricultural land belongs to the largest agricultural sectors in the enlarged EU-27. Among many of the specific features of the agricultural sector in Poland the following few key characteristics should be mentioned: weakening role in the national economy - the agricultural contribution to GDP has fallen from 12.8% in 1980 to about 3% at present -, fragmented pattern of land ownership and farm structures. Although the share of private ownership was in Polish agriculture always very high (75%) compared with other former socialist countries, before 1989 still 25% of agricultural land was operated by state and co-operative farms. The transition to market economy initiated in 1989 resulted in almost complete privatization and transformation of the majority of former state farms into commercial companies. As a consequence, however, the distribution of land ownership is highly skewed. Generally, farms in the North and North-West of Poland are much larger than in the South. The total number of farms in Poland (about 1.8 million) indicates the magnitude of the structural problem that Polish agriculture is facing. Yet, it should be emphasized that about 60% of all Polish farm holdings are smaller than 5 hectares (agricultural land), they are mainly (semi)subsistence farms, often with no sales to the market. At the opposite extreme of the farms pyramid there are about 20% of farms (very often commercial farms) operating more than 20 hectares each, and all together more than 60% of the total agricultural area.

Polish agriculture shows lower productivity of land and labour compared to the EU-15, resulting from relatively worse natural conditions (mainly soil quality), structural problems, and also from the technological gap.

Polish agriculture is extremely varied, including many different farm types which reflect a huge variety of natural conditions as well as of traditional and advanced forms of technology.
The EU accession in the year 2004 has significantly changed the economic conditions for farming, and has exposed Polish farmers to a free market environment. Although Polish agriculture has been included in the CAP since 2004, adjustment processes have been initiated since mid 1990s due to policy changes in the pre-accession period. The dynamic changes in Polish agriculture brought about many threats, but also created opportunities for farmers. There is a significant number of farms which implemented growth strategies, resulting in the on-going farm size increase and concentration of land in clusters of larger farms as well as concentration in the livestock sector, leading to a movement of animals from small scale activities to specialised large scale farming. These changes require investments in all types of fixed assets, including replacements of machinery and transportation means that are run down in a high number of farms.

3 METHODOLOGY

The methodology is based on a descriptive analysis of primary data collected from a survey of farm households in Poland which provided information about their present behaviour and stated reaction to policy changes. The survey includes information about farm and household structure, expectations, reaction to planned and intended investment, as well as about potential reforms such as decoupling of EU payments. Among the information collected, three main results are presented here:

- the expectations in terms of process and costs related to agriculture;
- the main objectives and constraints related to farming;
- the use that farm-households make of the money obtained from the CAP payments, i.e. how revenue from CAP are spent, and how farmers would react in case of decoupling.

In order to yield some interpretations about the last point, a simple correlation exercise with couple of variables has been carried out. The analysis of significative correlation could improve the understanding of the trend/sign of relations.

4 AREAS STUDIED AND THE SAMPLE

The survey was carried out in 2006 on a sample of 63 farms from 5 regions of Poland. In each region the case studies were selected according to the dominating agricultural system (i.e. the most typical farm types have been chosen). It can be stated that all the selected regions, although not fully homogenous in terms of natural conditions and structure of agricultural production, are recognised as tending to specialise; at least they have a wide recognition of dominating production orientation. The basic characteristics of the regions selected for the survey are presented in Table 1.

Table 1: Region description

Region	Characteristics
Mazowieckie	Located in the Central part of Poland. Warsaw, the capital of Poland, is a metropolitan area for this region. Largely due to this fact, there is a large number of small, self-subsistence farms, which sell very little to the market. The average farm size in the region is about 5,5 ha. The area of agricultural land (UAA) is 2,0 million ha. What is typical for the whole country, the region is strongly diversified in terms of natural conditions for farming (quality of soils is below the national average), as well as in dominating types of agricultural production. Southern part of the region is the largest concentration of apple farms in Poland.
Swietokrzyskie	This region located in central-southern part of the country can be classified as hilly. The area of agricultural land (UAA) is only 0,65 million ha. Small, mixed, family farms dominate the region. The average farm size is 5,2 ha. Quality of soils and climatic conditions are relatively good. Production structure in the region is diversified – crop and animal production have similar share in the total output. There is no clear specialization in the animal sector, although milk and pork production are the most important.
Malopolskie	The region, one of the smallest NUTS2 in Poland, is located in the southern part of Poland. The largest city in the region is Krakow, known for its tourist attractions and providing also a number of job opportunities for rural population. Except a small area around Krakow, where highly intensive, mainly vegetable farms on the plain with very good soils are located, the remaining part of the agricultural sector is concentrated in hilly, and further south, in mountainous areas. The average farm size is the smallest in Poland (2,1 ha). This is because of natural conditions, but also historical reasons (splitting land between succeeding children). Animal production still dominates (about 60% of the total output), however its share in the total output is diminishing.
Kujawsko-pomorskie	The region, located in central-north part of the country is characterized by good quality soils, and in general, favorable farming conditions. The area of agricultural land (UAA) is about 1,0 million ha. Large family farms dominate in the farm structure. Pigs production is the specialization of the region (33% of the total agricultural output), although cereals and intensive crops such as sugar beets and potatoes have

	an important share in the production structure.
Pomor-skie	The region is located in the Northern part of the country, along the Baltic Sea coast. The soils of medium and poor quality dominate. In the past the region was characterized by a high concentration of state farms, which were later transformed into private agricultural companies. In the sector of family farms both commercial and self-subsistence farms are large in numbers. Production structure in the region is diversified – crop and animal production have a similar share in the total output. Family farms are mostly mixed, with animal and crop production, whilst large companies tend to specialize in crop production, mainly cereals, oil-seeds and potatoes.

Farmers from those regions where sampled in order to fit in the intersection of the following categories: different altitudes (plain, mountain); different specialisation (arable crops, livestock, trees), different technology (conventional, organic). Sample descriptives are summarised in Table 2.

Table 2: Sample descriptives

	Min	Max	Mean	Std. Deviation	% of farms with positive value
Family farms	-	-	100%	-	-
Age of farm head (years)	21	62	46	9	100%
Succesor (% of yes)	-	-	67%	-	-
Household head labour on farm (hours/year)	301	2200	2015	452	100%
Household head labour off farm (hours/year)	0	1000	31	176	3%
Household labour on farm (hours/year)	642	10000	4972	2164	100%
Household labour off farm (hours/year)	0	4400	346	961	14%
Total external labour purchased (hours/year)	0	17600	2113	3161	70%
Owned land (ha)	3.4	106	20.8	19	100%
Land rented in (ha)	0	144.7	13	28	61%
Land rented in (% of total farm area)	-	-	22%	-	-
Land rented out (ha)	0	0	0	0	0%
Total land (ha)	3.6	204	34	40	100%
Share of organic products (%)	0	100	18%	37%	24%
Debt/asset ratio	0	50	6%	10%	56%
Payment amount in 2005 (euro/farm)	0	25805	3371	4740	98%
Payment amount in 2006 (euro/farm)	0	25805	3449	4856	97%

All sampled farms were family farms, often with a relatively young head. Two third declared to have a successor. Labour availability was rather varied, reflecting different household structures and farm specialisations. The same applies to available land that counted between 3.6 and 204 hectares, with an

average share of rented-in land around 22%. Average payments were around 3400 euro/farm, though with high variability.

5 RESULTS

Farmers showed a wide and varied range of expectations about prices of agricultural products, that can either increase, decrease or stay stable (slight majority) (Table 3).

Table 3: Expected direction of change of key context parameters

	Decrease	Increase	Stable	No reply
Product prices	27.0%	33.3%	36.5%	3.2%
Agricultural labour cost	1.6%	65.1%	17.5%	15.8%
Cost of agricultural capital goods	7.9%	76.2%	6.4%	9.5%
Cost of other production means	4.8%	84.1%	4.8%	6.3%
Decoupled payments	44.4%	6.4%	33.3%	15.9%
Rural development payments	22.2%	23.8%	36.5%	17.5%
Payments for organic production	17.5%	34.9%	33%	14.3%
Coupled payments	22%	22.2%	25.4%	30.2%

Expectations are more concentrated in the case of production factors (between 65 and 84% believe their cost will increase). On the contrary, expectations regarding policy parameters (rural development, organic payments) are rather evenly spread between optional answers, with an exception of decoupled payments which, as the majority believes, will decrease.

The range of expected changes show in fact that basically there is no relevant expectation of change for product prices and rural development payments, while increase in production costs, decrease in decoupled payments, and increase in organic payments appear of some relevance (normally + or – 10%) (Table 4).

Table 4: Expected size of change of key context parameters

	Size of change			
	Minimum	Maximum	Mean	Std. Deviation
Product prices	0.6	1.4	0.99	0.17
Agricultural labour cost	0.8	1.3	1.06	0.08
Cost of agricultural capital goods	0.9	2	1.12	0.19
Cost of other production means	0.9	1.5	1.10	0.12
Decoupled payments	0	1.05	0.91	0.27
Rural development payments	0	2	0.98	0.28
Payments for organic production	0	3	1.09	0.44
Coupled payments	0	4	1.16	0.73

Reduction of income uncertainty is the main focus of household objectives and may be likely read both as the need to maintain or increase income as well as to stabilise it (Table 5).

Table 5: Importance of different household objectives (number of answers per ranking position)

	Rank					
	1	2	3	4	5	6
Income certainty	48	13	1	1		
Household worth	6	22	21	5	5	
Household consumption	2	8	8	14	7	6
Household debt/asset ratio	2	6	4	15	8	14
Leisure time	4	10	14	8	6	10
Diversification in household activities		4	7	6	16	6

The farming activity is mainly limited by two constraining factors: market share of key products and unavailability of land from neighbouring farms (Table 6).

Table 6: Importance of different constraints to expanding farming activity (number of answers per ranking position)

	Rank								
	1	2	3	4	5	6	7	8	9
Market share/contract of key products	26	9	6	2	1				
Unavailability of land from neighbouring	21	13	3	9	2	1			
Liquidity availability	7	11	4	1	9	2	3		1
Total household labour availability	4	4	5	4	3	1	1		1
Household labour availability in key periods	4	9	10	3	1			1	
External labour availability in key periods	4	5	5	3		2	3	3	1
Short term credit availability	1	3	6	3	3	4	4	2	
Long term credit availability	2	2	1	5		3	4	1	1
Others	1	2	2	1	1				
Total external labour availability		2	2		3	3	1	2	4

This shows substantially a two sided difficulty for the farmers interviewed, i.e. on the one hand they are related to the markets for their products, on the other hand they are concern about the possibility to find land resources allowing for their expansion strategy.

The role of the CAP payments in these farms is to a large extent determined by its absolute value, which is often rather limited, with the exception of plain crops and livestock (Table 7).

Table 7: Amount of CAP payments received (euro/farm)

Technology	Area	Specialisation	Amount (euro/farm)
CONVENTIONAL	Mountain	Crop	960
		Livestock	1895
		Orchard/vineyard/forest	421
	Plain	Crop	11145
		Livestock	5573
		Orchard/vineyard/forest	901
EMERGING	Mountain	Crop	-
		Livestock	1231
		Orchard/vineyard/forest	-
	Plain	Crop	1131
		Livestock	4581
		Orchard/vineyard/forest	-

As a reference hint about the role that CAP plays in the farm-household economy, farmers were asked about their use of revenues from CAP payments. Stated use of CAP payments showed a clear choice for current on farm expenditures (Table 8).

Only livestock farms showed a marked attitude to use payments for investment. Off farm use is mostly negligible. The choice to use Payments for on-farm investment is positively correlated with the absolute and relative amount of payments as well as to farm size (Table 9).

Table 8: Stated use of payments

Technology	Area	Specialisation	Stated use of SFP: On farm current expenditure	On farm investment	Off farm productive current expenditure	Off farm productive investment	Off farm non-productive intermediate consumption	Off farm non-productive durable goods
CONVENTIONAL	Mountain	Crop	100%	-	-	-	-	-
		Livestock	57%	26%	3%	7%	4%	3%
		Fruit tree	100%	-	-	-	-	-
	Plain	Crop	90%	6%	-	-	1%	3%
		Livestock	51%	32%	-	1%	13%	3%
		Fruit tree	94%	6%	-	-	-	-
EMERGING	Mountain	Crop	-	-	-	-	-	-
		Livestock	15%	85%	-	-	-	-
		Fruit tree	-	-	-	-	-	-
	Plain	Crop	100%	-	-	-	-	-
		Livestock	70%	30%	-	-	-	-
		Fruit tree	-	-	-	-	-	-

Table 9: Correlation between use of CAP payments and potential explanatory variables

Variable	On farm current expenditure	On farm investment	Off farm productive current expenditure	Off farm productive investment	Off farm non-productive intermediate consumption	Off farm non-productive durable goods
Payment amount in 2005		+			+	+
Total external labour purchased	+				-	
Household head labour on farm				-		
Payment/revenue		+			+	+
Household head labour off farm						
Number of production contracts						
Succesor						
Age of farm head						
Number of partial workers						
Land rented in % of total farm area		+				+
Household labour off farm						
Household labour on farm						
Total land		+			+	+

However, the use of revenues does not give any direct information about changes that would be produced in case of decoupling. For this reason, householders were asked directly about their reaction to the hypothesis of decoupling. The stated reaction shows effects in three main directions. As expected, "no reaction" was the most frequent answer in orchard and vineyard farms. Livestock farms and conventional mountain crop farms stated mostly the hypothetical increase of on farm investments. Only farms in plain areas, using organic technologies stated mostly the change in crop mix (Table 10).

Table 10: Reaction to decoupling

			Reaction to SFP					
			Increase investment		Decrease investment			None
Technology	**Area**	**Specialisation**	On farm	Off farm productive	On farm	Off farm productive	Changes in crop mix	
CONVENTIONAL	Mountain	Crop	100%	-	-	-	-	-
		Livestock	43%	7%	-	-	14%	36%
		Orchard/vineyard/forest	13%	-	-	-	-	88%
	Plain	Crop	40%	20%	-	-	-	40%
		Livestock	88%	-	-	-	-	12%
		Orchard/vineyard/forest	13%	-	-	-	-	88%
EMERGING	Mountain	Crop	-	-	-	-	-	-
		Livestock	100%	-	-	-	-	-
		Orchard/vineyard/forest	-	-	-	-	-	-
	Plain	Crop	-	-	-	-	100%	-
		Livestock	50%	-	-	-	33%	17%
		Orchard/vineyard/forest	-	-	-	-	-	-

It should be noted, however, that decoupling is a pure hypothesis at present in Poland and often farmers showed to have not clear perception about what it could consists of.

The choice to increase investment on farm is again positively correlated with the amount of payments and farm size, but negatively correlated with the presence of a successor and total external labour purchase (Table 11). In fact, this is consistent with the perception that households that are more labour-self-sufficient and with a perspective for staying in agriculture pursue strategies that are less dependent from policy changes.

Table 11: Correlation between reaction to decoupling and potential explanatory variables[1]

	Increase investment			Changes in crop mix	Changes in other activities	None
Variable	On farm	Off farm productive	Off farm non-productive			
Payment amount in 2005	+					
Total external labour purchased	-					
Household head labour on farm		-		-		
Payment/revenue						
Household head labour off farm				+		
Number of production contracts						
Succesor	-					+
Age of farm head						
Number of partial workers	-					+
Land rented in % of total farm area	+					-
Household labour off farm						
Household labour on farm				-		
Total land	+					

6 DISCUSSION

This paper focuses on getting empirical evidence and insights about farmers' expectation, strategies and reaction to CAP in Poland. The sample, though biased towards most dynamic and collaborative farmers, showed a positive attitude towards pursuing and expanding farming activities. Farmers also showed multifaceted expectations about the future, mostly revealing the feeling that (i) the gap between gross revenue and costs will continue to decrease (and consequently the profit margin will decrease) and (ii) the role of the policy will be most likely reduced and more focused. A main outcome of the study is that in most cases CAP payments are used on-farm and concentrated on covering current costs and investment expenditures. However, reactions to decoupling are highly differentiated both across different systems and across farms in the same system. Accordingly, differences in reaction are better explained by different individual household/farm characteristics (structure, resource endowments and human capital), rather than by association with a specific agricultural system. Overall, in the more efficient and expansion-oriented farms, decoupling is

[1] No significant correlation was found with the statement that investments were reduced.

perceived as an opportunity for investment, while in small, poorer performing farms the SFP introduction is viewed rather as an opportunity for extensification. Altogether, the hypothetical post-decoupling CAP looks very much, from the point of view of the Polish farmers interviewed, like a policy which may take different roles depending on the context in which it is cast. As a result, the study hints at the fact that a number of wider issues should be addressed more directly in order to understand farm household behaviour with respect to policies. In particular, demographic trends, labour and land use opportunities, technological options and personal strategies seem to be increasingly major drivers of farm reaction to CAP.

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