



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Structural Change and Distribution of Support in Hungarian Agriculture following EU Accession: A Preliminary FADN Analysis

Carmen HUBBARD - Szilárd PODRUZSIK - Lionel HBBARD

Carmen Hubbard and Lionel Hubbard are in the Centre for Rural Economy, School of Agriculture, Food and Rural Development, University of Newcastle, UK.
Szilárd Podrutzsik is in the Department of Food Economics, Corvinus University of Budapest, Hungary.
Correspondence address: carmen.hubbard@ncl.ac.uk



**Paper prepared for presentation at the joint IAAE - 104th EAAE- Seminar
Agricultural Economics and Transition:
„What was expected, what we observed,
the lessons learned.”**

**Corvinus University of Budapest (CUB)
Budapest, Hungary. September 6-8, 2007**

Copyright2007 by Carmen Hubbard, Szilárd Podrutzsik and Lionel Hubbard. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

Abstract

This paper, whilst preliminary and descriptive, highlights some significant changes in the structure of the Hungarian ‘national farm’ around the time of EU accession, based on an examination of farm-level data. Between 2002 and 2005 gross value of total production changes little, but direct agricultural subsidies nearly double. There is a marked shift in favour of arable farming, which affects both private farms and economic organisations. Arable farms increase their share of total subsidies by 20 percentage points over the three years, at the expense of most animal and mixed farms. Overall, the distribution of subsidies, whilst highly unequal, is slightly less unequal in 2005.

Introduction

This paper offers a preliminary descriptive analysis of some of the structural and distributional changes that have occurred in Hungarian agriculture following accession to the European Union (EU). Hungary is one of the ten countries that joined the EU in May 2004 and has achieved considerable economic and social progress since transition to a market economy. Economic indicators of performance show that the role of agriculture’s contribution to the Hungarian economy as a whole has decreased considerably since 1989, with the sector experiencing significant transformations. For example, the restitution of land to private ownership and the creation of a land market have had a radical effect on Hungary’s farm structure.

The analysis is based on FADN (Farm Accountancy Data Network) survey results for 15 farm types and focuses on changes in gross margin (i.e., gross value of production minus variable costs) as a measure of economic performance, and changes in the distribution of agricultural subsidies. The two years of analysis are 2002, two years prior to accession, and 2005, one year after accession.¹ Although this is a relatively short time period for a robust analysis, the results show that since EU accession there have been some significant structural and distributional changes in Hungarian agriculture.

Hungary has a dichotomous farm structure comprising private farms and economic organisations. The latter includes a number of different legal business forms, namely limited liability companies, cooperatives, deposit companies and joint stock companies. Private farms include a very large number of small units, many of which can be classified as uncommercial. Under each of the two major groupings the FADN survey records economic and financial information for 8 farm types, equating to small arable, medium arable, large arable, cattle and sheep, pigs and poultry, permanent crops, mixed, and horticulture.² For 2002, sample data for the horticulture farms of the economic organisations are not publicly available because of too few observations, and thus the number of farm types on which the analysis is based is reduced to 15.

As a measure of the economic performance of farms, the analysis focuses on Gross Margin. This was chosen rather than, for example, farm income, because it

¹ 2002 is the first year for which numbers of farms in the various type and size categories are available for use as raising factors in weighting the sample results.

² Dairying is represented mainly in the ‘cattle and sheep’ and ‘mixed’ farms.

circumvents the problem of evaluation of the labour input on Hungarian private family farms. As noted by AKI (2006, p.27), “Incomes of private farms and economic organisations cannot be directly compared.”³ The analysis also focuses on farmers’ receipts of agricultural subsidies, as recorded in the FADN survey. These have changed significantly over the three year period under study, as Hungary’s former system of agricultural support has been replaced by the EU’s Single Area Payment Scheme (SAPS), with ‘top-ups’ under Complementary National Direct Payments (CNDP).

The FADN Survey Results

The FADN consists of an annual survey carried out by all EU Members States, which collects financial data from farms for evaluating incomes and business analysis of agricultural holdings. The survey aims to provide representative data on region, economic size and type of farming. It covers approximately 90% of the total EU Utilised Agricultural Area (UAA) and more than 90% of total agricultural production. However, the survey covers only those holdings which owing to their size can be considered market-oriented (http://ec.europa.eu/agriculture/rca/index_en.cfm).

The basic FADN information for Hungary is shown in Table 1. The total sample in 2005 comprised 1,940 farms drawn from a population of almost 87,000 farms.⁴ The average size of farm in 2005 was 51 hectares, but with a wide discrepancy between the private farms and economic organisations. Most of the sample (1,546) relates to the private farms, which are far more numerous. However, the much larger average size of farms (395 hectares in 2005) under the economic organisations means that each grouping accounts for approximately half of the total agricultural land area in Hungary. Between 2002 and 2005 the number of private farms fell, with an increase in the average size of farm, whilst the number of farms under the economic organisations grouping *increased* by 30%, causing a correspondingly large fall in the average size of this category of farm. In the analysis, national level results are derived by use of raising factors based on the number of farms recorded in the population, i.e. N/n (Table 1).

Table 1 Hungarian FADN Records – basic data, 2005 and 2002

	2005	2002	% change
<i>All farms</i>			
Number of farms in sample (n)	1,940	1,893	
Number of farms in population (N)	86,773	91,128	-4.8
Average farm size (ha)	51.0	48.3	5.6
<i>Private farms</i>			
Number of farms in sample (n)	1,546	1,401	
Number of farms in population (N)	81,033	86,717	-6.6

³ The published FADN results do suggest a ‘correction’ for labour costs on Hungarian private farms based on the labour costs recorded by economic organisations, but the authors have chosen to use the unadjusted data and circumvent the issue by focusing on gross margin (i.e. approximately value added).

⁴ This is the number of farms above the FADN minimum threshold of 2 ESU (Economic Size Unit). The total number of farms in Hungary in 2005 was 715,000, down from almost 1,000,000 in 2002.

Average farm size (ha)	26.7	23.6	13.1
------------------------	------	------	------

Economic Organisations

Number of farms in sample (n)	394	492	
Number of farms in population (N)	5,740	4,411	30.1
Average farm size (ha)	394.8	526.8	-25.1

Source: AKI

The gross value of production of the Hungarian ‘national farm’ in 2005 was 1,496 billion HUF, slightly more than in 2002.⁵ Over this period, variable costs decreased slightly and thus the total national gross margin rose to 876 billion HUF (see top half of Table 2). More remarkably, direct agricultural subsidies, as recorded by the FADN, increased by 88% from a total of 121 billion HUF to 227 billion HUF. Their contribution to the gross margin of the national farm rose from 15% in 2002 to 26% in 2005.

Table 2 Economic Performance of Farms, 2005 and 2002

	2005	2002	% change
<i>All farms</i>			
Gross Production Value (m HUF)	1,495,930	1,445,960	3.5
Variable Costs (m HUF)	620,401	638,428	-2.8
Gross Margin (m HUF)	875,529	807,532	8.4
Agricultural Subsidies:			
- m HUF	226,912	120,524	88.3
- as % of Gross Margin	25.9	14.9	-
			% point change
<i>Private farms' share (%)</i>			
Gross Margin	36	33.5	2.5
Agricultural Subsidies	41	30.7	10.3
<i>Economic Organisations' share (%)</i>			
Gross Margin	64.2	66.5	-2.3
Agricultural Subsidies	59.3	69.3	-10.0

Source: FADN and authors' calculations

⁵ All values and prices in the paper are reported in nominal terms; deflators have not been used.

Private farms contribute approximately one-third to the total gross margin of the Hungarian national farm, with the remaining two-thirds accounted for by the economic organisations (lower half of Table 2). The dominance of the economic organisations was reduced slightly (-2.3 percentage points) between 2002 and 2005, but their share of agricultural subsidies decreased by 10.3 percentage points. Conversely, in 2005, private farms' share of agricultural subsidies had risen to above their corresponding share of the national gross margin, whereas in 2002 the situation was the reverse. To obtain a clearer picture of the changes that underlie these broad aggregates, the paper next examines what has occurred at the level of main farm types within the private farm and economic organisation groupings.

Farm types

A breakdown of the total national gross margin by the 15 farm types for the two years is given in Table 3, in which the farm types are listed by the percentage point change in shares. In 2005, the largest farm type, by gross margin, was the economic organisation mixed farm (23% share), and the smallest were the private livestock farms (<2% shares). Looking at the changes over the three year period, it is clear that there was a marked shift from animal and mixed farms to large arable farms, which affected both private farms and economic organisations. Arable farms in total (six farm types – large, medium and small under both private and economic organisation ownership) increased their share of the national gross margin by nine percentage points between 2002 and 2005 (Table 3). The shares of pigs and poultry and mixed farms each fell by over five percentage points; the larger relative reduction affecting the livestock farms.

Table 3 Share of National Gross Margin by Farm Type, 2005 and 2002

Farm group	Farm type	2005 %	2002 %	Change % point
Econ. Org.	Arable large	12.8	8.4	4.5
Private	Arable large	7.5	3.2	4.3
Private	Arable medium	5.0	3.3	1.7
Econ. Org.	Permanent Crop	4.6	3.1	1.5
Private	Horticulture	3.3	2.3	1.0
Private	Permanent Crop	2.6	2.4	0.1
Private	Arable small	6.3	6.2	0.1
Econ. Org.	Arable small	4.3	4.8	-0.5
Private	Cattle & sheep	1.8	2.3	-0.5
Econ. Org.	Arable medium	7.5	8.2	-0.7
Econ. Org.	Cattle & sheep	5.1	5.9	-0.9
Private	Mixed	8.3	10.4	-2.1
Private	Pigs & poultry	1.2	3.4	-2.2
Econ. Org.	Mixed	22.5	25.6	-3.1
Econ. Org.	Pigs & poultry	7.3	10.5	-3.2
Total		100.0	100.0	0.0

Source: authors' calculations based on FADN results

An indication of the extent to which these compositional changes in terms of farm type may have been due to changes in output and input prices is given by the data in Table 4. Output prices over the three year period generally fell, with only sugar beet and maize recording an increase. Coupled with large falls in the prices for eggs and milk, this maybe suggests relative price movements favouring arable farming. However, the price of sunflowers and rye also showed large falls over the period. Prices of all variable inputs rose over the three years, the highest rise recorded by energy and the lowest by feedstuffs. The movement in output and input prices clearly shows a price squeeze, but it is difficult to observe any particular farm type being favoured over others as a result of these relative changes. Farmers' decisions are likely to have been influenced also by policy changes, in particular in anticipation of EU accession, and by expected changes, relative and absolute, in levels of support.

Table 4 Agricultural Output and Input Prices in Hungary, 2005 and 2002

	Unit	2005	2002	% change
<i>Output</i>				
Sugar beet	Ft/kg	9.63	8.68	10.9
Grain maize	Ft/kg	21.2	21.14	0.3
Pigs (liveweight)	Ft/kg	272	273.33	-0.5
Potato	Ft/kg	30.44	31	-1.8
Winter barley	Ft/kg	21.02	21.72	-3.2
Wheat	Ft/kg	21.69	23.18	-6.4
Milk	Ft/litre	66.53	72.88	-8.7
Rye	Ft/kg	17.89	20.05	-10.8
Eggs	Ft/egg	10.94	12.81	-14.6
Sunflower	Ft/kg	49.76	63.61	-21.8
<i>Input (2000=100)</i>				
Energy & Lubricants		128	100.2	27.7
Seeds		152.6	133.3	14.5
Chemicals		124.7	114	9.4
Fertilisers		128.2	120.9	6.0
Feedstuffs		117	110.6	5.8

Source: authors' calculations

Agricultural subsidies

The distribution of agricultural subsidies, as recorded in the FADN survey, across the different farm types is shown in Table 5, with the farm types listed by the percentage point change in share. Economic organisation mixed farms received the largest share (20%) in 2005, with the private horticultural farms and pig and poultry farms (<1%)

in receipt of the smallest shares. The changes to the distribution over the three years show a clear shift in favour of arable farms which is even more pronounced than that reflected by changes in gross margin shares. Arable farms, which increased their share of gross margin by nine percentage points between 2002 and 2005, increased their share of total subsidies by 20 percentage points, at the expense of most animal and mixed farms. However, all farms received more direct subsidies in 2005 than in 2002 because of the near doubling in the total amount of direct subsidies paid.

Table 5 Share of Agricultural Subsidies by Farm Type, 2005 and 2002

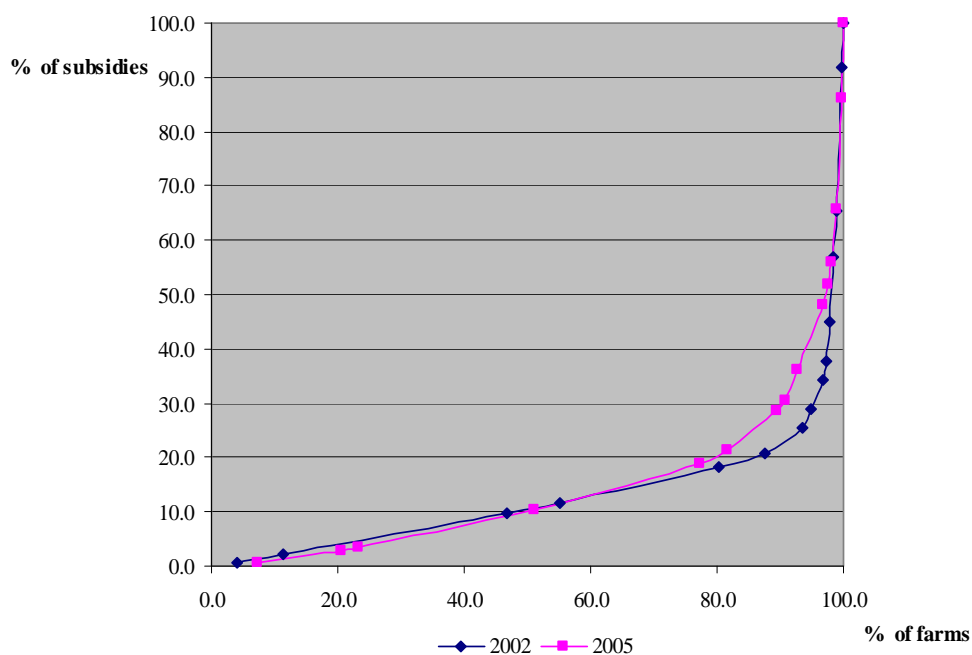
Farm group	Farm type	2005 %	2002 %	Change % point
Private	Arable large	12.1	5.3	6.8
Econ. Org.	Arable large	14.0	8.1	5.8
Private	Arable medium	7.3	4.6	2.7
Econ. Org.	Arable medium	9.6	7.5	2.1
Econ. Org.	Arable small	5.7	3.7	2.1
Private	Mixed	8.7	7.6	1.1
Private	Permanent crop	2.0	1.5	0.5
Private	Arable small	6.9	6.4	0.5
Private	Cattle & sheep	2.3	1.9	0.4
Private	Horticulture	0.8	0.7	0.1
Econ. Org.	Permanent crop	1.8	3.2	-1.4
Private	Pigs & poultry	0.5	2.7	-2.1
Econ. Org.	Cattle & sheep	4.2	8.2	-4.0
Econ. Org.	Mixed	20.4	26.6	-6.2
Econ. Org.	Pigs & poultry	3.6	11.9	-8.3
Total		100.0	100.0	0.0

Source: authors' calculations based on FADN results

An alternative description of the distribution of agricultural subsidies across farm types is given by Lorenz curves (Figure 1). These illustrates very clearly the oft-cited criticism that, in the EU, 80% of the subsidy accrues to just 20% of the farms. However, comparison of the curves for the two years shows that the overall distribution of subsidies was slightly more equal in 2005 (Gini coefficient 0.72) than in 2002 (Gini coefficient 0.75).⁶

⁶ Note that in constructing the Lorenz curves for the two years, the ordering of the farm types (classes) changes.

Figure 1 Lorenz curve for subsidies, 2005 and 2002



Summary and Conclusions

The analysis, whilst preliminary and descriptive, has highlighted some significant changes in the structure of the Hungarian 'national farm' over the relatively short period 2002-2005. Gross value of production changed little over these three years. However, with the introduction of the SAPS and CNDP, direct agricultural subsidies nearly doubled and their contribution to total gross margin rose from 15% to 26%. The number of farms under the economic organisations grouping increased by 30%, but their share of agricultural subsidy payments decreased by 14%, with private farms gaining a considerably larger share.

In terms of the composition of the national gross margin, there was a marked shift from animal and mixed farms to large arable farms, which affected both private farms and economic organisations. Large arable farms' share of the national gross margin increased by nine percentage points between 2002 and 2005. The shares of pigs and poultry and mixed farms each fell by over five percentage points.

Changes to the distribution of agricultural subsidies over the three years show a shift in favour of arable farms which is even more pronounced than that reflected by the changes in gross margin shares. Arable farms increased their share of total subsidies by 20 percentage points between 2002 and 2005 (from 36% to 56%), at the expense of most animal and mixed farms. Overall, the distribution of subsidies, whilst highly unequal in both years, was slightly more equal in 2005 under the SAPS.

What is not clear from this descriptive analysis is the direction of causality between changes in structure of the national farm and changes in the distribution of subsidy

payments. Were farmers chasing subsidies over this period? Or were subsidy payments, under the SAPS, reflecting structural changes that were being driven by other factors, for example market prices or competitive effects of the Single Market? The latter are destined to become more important as adoption of the Single Farm Payment further decouples production decisions from subsidy payments.

The caveats associated with this analysis are fairly self-evident. The paper only focuses on two years' data, 2005 and 2002, and these may be atypical in terms of output and input prices, farmers' decisions of what to produce and climatic conditions. Also, FADN only covers those farms which are commercially viable, ignoring the very large number of small units which account for the vast majority of private farms in Hungary. Furthermore, the analysis has used gross margin as an indicator of economic performance and ignored the impacts of changes in labour and other fixed costs. Analysis of farm income would provide a better indication of the changes to the economic welfare of farmers. Nevertheless, the paper highlights some interesting changes in Hungarian agriculture around the time of EU accession and points to some possible avenues for further exploration. It is a first step in undertaking a detailed and in-depth analysis of the economic welfare effects for different types of Hungarian farm of CAP implementation.

Bibliography

- AKI (2006). *Agroeconomic Information, Results of Hungarian FADN Farms, 2005*.
Research Institute for Agricultural Economics, Budapest.
- AKI. *Results of Hungarian FADN Farms*. <http://www.akii.hu/>
- Hungarian Central Statistical Office (2004). *Agriculture in Hungary, 2003, Farm Structure Survey – Volume I*, Budapest.
- Hungarian Central Statistical Office (2006). *Agriculture in Hungary 2005, Farm typology*, Budapest.
- Hungarian Central Statistical Office (2006). *Statistical Yearbook of Agriculture 2005*, Budapest.
- Hungarian Central Statistical Office (2006). *Agriculture in Hungary 2005, Farm Structure Survey – Volume I*, Budapest.
- Hungarian Central Statistical Office (2006). *Economic Accounts for Agriculture, 2005*, Budapest.
- Keszthelyi, S. (2006): *A teszttüzemek 2005. évi gazdálkodásának eredményei*, Agrárgazdasági Információk vol 6, Agrárgazdasági Kutató Intézet, Budapest.
- Keszthelyi, S., Kovács G. (2004): *A teszttüzemek 2003. évi gazdálkodásának eredményei*, Agrárgazdasági Információk vol 2, Agrárgazdasági Kutató Intézet, Budapest.

Keszthelyi, S., Kovács G. (2001): A tesztüzemek 2000. évi gazdálkodásának eredményei, Agrárgazdasági Információk vol 2, Agrárgazdasági Kutató Intézet, Budapest.