The Economic Situation of Individual (Family) Farms in Hungary

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ABSTRACT

In 2003 a research study looked at the position of smallholders; the survey was carried out using questionnaires and interviews. The farms included in the survey were situated in 3 counties in the Southern Great Plain of Hungary and in 3 counties of the western part of the country (Transdanubia). The results of the survey showed that there was a firm tendency of concentration among the Hungarian individual farms. Though their average size is about 3 ha, the number and area of farms over 50 ha size are rapidly growing and taking a significant part of the total individual agricultural area. The number of small farms is great but their total farming area is relatively small. The concentration takes place primarily due to renting. The land market is sluggish mainly owing to the land-buying restrictions and the small intention to sell of those owners who are waiting for higher prices. Land prices are low but rising, especially on the Western border of the country, near to Austria. The dominance of arable production and within that cereal production, especially on the larger individual farms, points to a prevalence of extensive farming The present support and subsidy system fortifies this tendency. When comparing the Southern Plain with western Transdanubia, it can be said that agricultural production is greater in the former region and more people are involved in agriculture. There is a higher share of under-cover production of vegetables and ornamental plants and animal husbandry. However, it seems that in western Transdanubia the spirit of enterprise is stronger than in the Southern Plain: more farmers enter into contractual agreements, more farmers make use of credits and subsidies, and the farms operate with greater profitability. Nevertheless, the proximity of western Transdanubia to industrial and service centers and, furthermore, its closeness to Austria tend to suppress agricultural activities.

The regression analyses with respect to efficiency and profitability and the cluster analyses supported the assessments of the descriptive analyses and produced the following main conclusions: the larger farms, farmed by younger and better-educated individuals, are more efficient and profitable than the others. Furthermore, farmers with significant conceptions for development seem to achieve greater profitability.

Key words

ACKNOWLEDGEMENTS

1 INTRODUCTION

In 2003 a research study looked at the position of smallholders; the representative survey was carried out using questionnaires and interviews (Burger-Szép, 2006). The farms included in the survey were situated in 3 counties in the Southern Great Plain of Hungary and in 3 counties of the western part of the country (Transdanubia) (see Figure 1). The specific counties were, in the Southern Lowlands Bács-Kiskun, Békés and Csongrád; in the western part of Hungary the counties included Győr-Moson-Sopron, Vas and Zala. We received replies to the questionnaires which could be usefully used in the survey from 613 family farms (see Table 1).

In this paper the tables, figures, and statements refer to these farms except in cases where an other source is referred to.

Table 1

Number and area of farms in the two regions

Farmers	Southern Great Plain			Western Transdanubia		
	Number	Area ha	Average area ha	Number	Area ha	Average area ha
Entrepreneurs*	49	3072.40	62.70	46	2381.56	51.77
Smallholders**	180	2262.10	12.57	195	2286.00	11.72
Family farmers***	74	3230.00	43.65	69	3836.30	55.57
All	**303**	**8564.50**	**28.27**	**310**	**8503.86**	**27.43**

*Farms which are obliged to provide data for statistics regularly and to pay taxes.

** Farms which are not obliged to provide data for statistics regularly and to pay taxes till a certain income limit.

*** Farms which are also not obliged to provide data for statistics regularly and to pay taxes till a certain income limit but one family member is a full-time farmer and the other family members are helping on the farm. This legal form was created by the 1998-2002 center-right government in the interest of preferential support.

One of the aims of the study was to acquire a general picture of the state of family farms. A second aim was to compare the situation in the Southern Plain (a region which is far from the growth centre of the capital and the Western border of the country) with that in the 3 counties of the western part of Transdanubia. The Western border of the country is near to Austria, it is more industrialized, it is supplied with more foreign investment, has better transport roads, more services, more tourists and the per capita GDP and employment is higher than in the South Plain. However, in the Southern Plain the agricultural sector has a more dominant role.

Schultz (1953), when developing further the theory of Perroux (1950) about the economic advantages of market proximity, stressed that in the industrial and urban areas, where the trade of produce and means of production are significant, agriculture develops faster than in the areas further from centers of growth. We wanted to investigate whether this theory could be proved in our survey.

We surveyed and analyzed the following features of the respective farms: farm structure; land

tenure; labor force; production; yields; trade; capital stock; credits; subsidies; profitability; intentions for development; and prospects for the future. In this paper we deal with the results of the survey concerning the mentioned fields of investigation.

We were also interested to find out what sort of differences had taken place in the situation of individual farms since the questionnaire survey we carried out in 1998 with respect to individual and corporate farms in 11 Hungarian counties (Burger et al.; 1999, Burger, 2001).

Figure 1

Map of the Hungarian counties
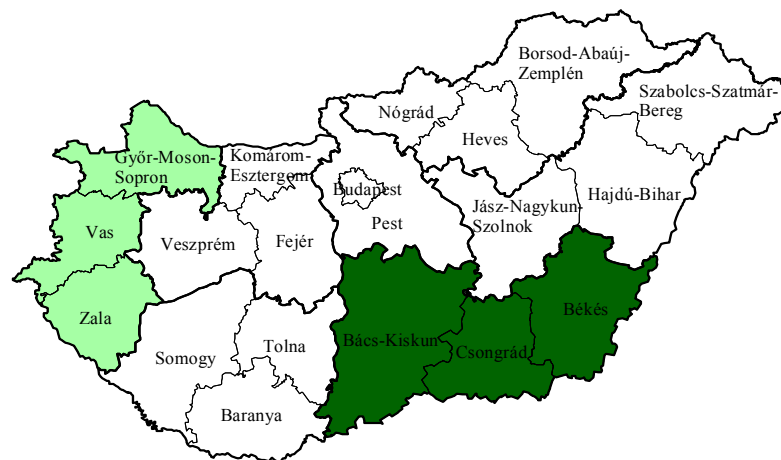
2 METHODS

The survey was carried out with interviews using questionnaires. University students of universities of Western-Hungary (Mosonmagyaróvár), Veszprém (Georgicon faculty, Keszthely) and Szeged helped to carry out the survey under the supervision of their teachers. Most of the questions asked referred specifically to the year 2003 (with respect to the cattle stock, with reference to the situation at the end of the year 2003). However, questions related to the financial situation (i.e. credits, subsidies) and to the economic results of the respective farms concerned the previous 3 years. The selection of the units was random but it did not comply with the classic conditions for random sampling. Furthermore, we did not carry out corrections with regard to under- or over-representation. Thus we had no intention of drawing conclusions from our results which could be taken as valid on either the regional or national levels. In the course of making comparisons between official national or international statistics, the aim was not to look for identical data but for similar tendencies.

The survey focused on the cultivated farm area. The processing of data was carried out according to farm sizes, age-groups of the holders, and their level of education. 2 mentioned regions were distinguished. There were some instances when the counties were treated individually. The size categories of the holdings were, respectively (in hectares): 1-5, 5-10, 10-20, 20-50, 50-100, and those above 100. Units below 1 hectare were not examined. The age-groups were the following: under-40, between the ages of 40 and 50, and those above 50. The levels of education were: elementary (primary) school, secondary school, and higher education.

In dealing with the wide range of elements concerning the efficiency and profitability of the farms, mathematical-statistical methods were employed. On the one hand, the model used regression analysis; on the other hand, in order to classify the main characteristics of the farms, cluster analysis was applied.

3 THE CONCEPT OF THE FAMILY FARM

Chayanov, 1966 regarded as a major feature of family farms the fact that they do not aim to maximize their profit, as does a capitalist farm, but to maximize the consumption of the family members. In family farms the output optimum will be reached at a level when the marginal sacrifice of labor of the working family members will equal the marginal utility of each consumer in the family. Raup, 1986 characterizes the family farms as organizations in which the family controls the means of production, the land and the labor force. Gasson and Errington, 1993 describe family farms as entities in which the ownership is identical with the management and this is inherited through generations and secured by kinship or marriage. Djurfeldt, 1996 stresses the unity of production, consumption (household) and kinship in family farms and the importance of the work of the family. We regarded those small farms as family farms (BURGER, 1994) which are managed and largely worked by the members of a family and farmed on own and/or rented land.

4 LAND TENURE

Examining the sizes and number of farms involved in the survey, an inverse tendency can be noticed: the larger the area of the holdings, the smaller their number (see table 2). This indicates a concentration of the agricultural area (although we did not examine the dynamics of this process). The tendency towards concentration reinforced the conclusions we had made in our survey of 1998; it could also be supported with dynamic data on the national level and from other sources (Agriculture in Hungary, 1996, 2002, 2004; Takács, 2005; Czimbalmas and Fehér, 2004).

According to the national statistics the number of individual farms under 1 ha decreased from 81.4% to 71.9% of the total number between 1994 and 2000 and their area decreased from 16.8% to 6.8%. During the same time the area of individual farms larger than 50 hectares grew from 15.5% to 30.8% and by 2003 to 39%. However, the average individual farm size was still 3 ha in 2003.

The concentration had primarily taken place due to renting. The larger the holdings are, the more land they rent. While in the lowest farm size category rented units represent 6%, in the largest category the equivalent figure is 42% (see table 3). It is not only those with the larger farms who are renting more land; it was also recognized that more people in the youngest age group are involved in renting (see Figure 2). According to the survey, farms above the size of 100 hectares show a significantly higher proportion of rented land in western Transdanubia than is the case in the Southern Plain. With respect to the latter point, it is possible that the renting of land for agricultural purposes by foreigners plays a role in this process.

Table 2

Number and area of farms according to farm sizes

Farm sizes	Number	Area ha	Average area ha	Percentage	
				Number	Area ha
1-5 ha	197	589.40	2.99	32.14	3.45
5-10 ha	107	802.00	7.50	17.46	4.69
10-20 ha	114	1664.50	14.60	18.60	9.73
20-50 ha	113	3541.06	31.34	18.43	20.71
50-100 ha	49	3429.70	69.99	7.99	20.06
Over 100 ha	33	7041.70	213.38	5.38	41.18
All	**613**	**17098.36**	**27.89**	**100.00**	**100.00**

Table 3

The share of cultivated own and rented farm land

Farm sizes ha	Own land area	Rented land area	Other cultivated land area	All cultivated area
1-5	94.1	4.8	1.2	100.0
5-10	96.2	3.8	0.0	100.0
10-20	85.7	11.9	2.4	100.0
20-50	76.1	21.0	2.9	100.0
50-100	71.8	23.7	4.5	100.0
Over 100	58.3	37.6	4.0	100.0
All	**70.4**	**26.1**	**3.4**	**100.0**

Figure 2

Rented farm areas according to age groups of farmers
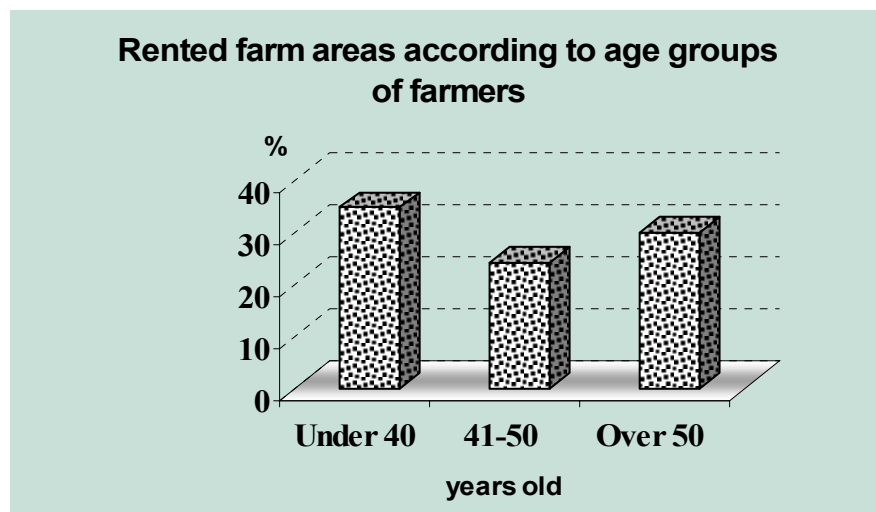
4.1 Land market

The market for the purchase and sale of agricultural land is weak. The reasons for this are the following:

- The demand for land is low. This is partly due to various restrictions with respect to purchase and partly due to the fact that the income from farming is low. In 1994 a law was passed which forbids the purchase and ownership of agricultural land (and other real estate) by cooperative and corporate farms, and by foreigners.

- During the course of the negotiations leading up to Hungary's accession to the European Union (EU), Hungary - like other transition countries – requested a 7-year derogation from EU rules (which was granted) concerning the freedom of any natural and legal individual citizen of an EU member-state to purchase agricultural land (Grover, 2003). The Hungarian negotiators also asked for and received a possible prolongation of the transition period by 3 years if land prices remained lower than the EU average after seven years. The reasoning of the negotiators was that with land prices being so low in Hungary it would make it possible for foreigners to buy large areas of land at cheap prices, thus causing the problem of land scarcity for domestic farmers. Only those self-employed foreigners who had farmed for three years on rented land and lived in Hungary would be exempt from the land-buying restrictions. The transitional arrangements will be reviewed within three years of accession and they can be terminated or shortened by the EU.

- The size of ownership and use of land by an individual are also limited (to 300 hectares) by law.

- Due to problems related to the registration and assignation of some parcels of land, as well as the long duration of legal processes concerning the ownership of some properties, the actual ownership situation of large areas of land remains uncertain. Owing to the lack of consolidation, many scattered parcels cannot be sold. There is still approximately 1.5 million hectares of land which is undivided in corporate farms, being under the common ownership of individuals who worked on the farm when it had a cooperative status, or in the hands of descendants of the corporate farms. Owing to the scattered nature and position of these parcels within the area of much larger fields it is impossible to sell them.

- The supply of agricultural land is also meager. During the course of the privatization of

land a significant proportion of agricultural land was returned to the descendants of its former owners or to other people not associated with that land. Most of the latter had no connection with agriculture and were living in towns. A large number of those owning land (and including many pensioners) but having no intention of using it do not feel it is worth selling the land at the moment and are prepared to wait until they can get a higher price.

Even with the poor supply of agricultural land for sale, problems with registration and the lack of land consolidation, foreigners still would not have much chance of buying a larger proportion of agricultural land at today's depressed prices. A more significant rise in the value of land can only be expected when more movement begins on the market. However, that cannot occur unless the factors obstructing greater movement are removed (Burger, 2005).

It is true that the Hungarian land prices and land rents are much lower than the Western European prices and rents. However they are gradually growing, mainly near to the Austrian border (Erb, 2004). However, they will probably never reach the highest European level because the man/land ratio is relatively low in Hungary. The foreign demand for land will not grow very much either at whatever prices after the restrictions are lifted since the demand for agricultural produce is low in Europe and the country lies on the periphery of Europe, far from the trade centers. The average land prices and land rents are very different even in the old EU countries. They depend on the total agricultural population/ land ratio, on the supply of and demand for land, and on the GDP/capita of the country, etc. An average EU price, which should be reached according to the negotiators for accession, as the criteria of lifting the restrictions with respect to the selling of land to foreigners, does not exist. Hungarian land prices will probably never reach the highest European level because the man/land ratio is relatively low and decreasing in Hungary, i. e. there is no land scarcity and very likely it will not be scarcity in the future (Burger, 2006).

4. 1. 2 Land prices and land rents observed

According to our survey, the rents are highest in Békés County in the Southern Plain, which possesses the best land quality; next in the list is the county of Győr-Moson-Sopron, which is right beside the border of Austria (see Table 4).

The highest average market price for agricultural land (according to results from the respondents) was in Győr-Moson-Sopron; this was followed by Bács-Kiskun and the other lowland counties (see Table 5). The highest price for arable land was also in Győr-Moson-Sopron, followed by Békés and then Vas County. The high market value and rent of land in Győr-Moson-Sopron county was not so much related to the superior quality of the agricultural land but for the most part, due to the greater level of industrialization and the livelier nature of the economy in general in that county

Table 4

Agricultural rents in the counties surveyed

Counties	Average rents (thousand HUF/ha)	Average rents (approximately in EUR/ha)
Bács-Kiskun	20.5	82
Békés	28.7	115
Csongrád	9.5	38
Győr-Moson-Sopron	14.7	59
Vas	5.0	20
Zala	7.8	31

.**Table 5**

Market prices of agricultural land in the counties surveyed

Counties	Average market prices of agricultural land (thousand HUF/ha)	Average market prices of agricultural land (approximately in EUR/ha)	Average market prices of arable land (thousand HUF/ha)	Average market prices of arable land (approximately in EUR/ha)
Bács Kiskun	220	880	207	828
Békés	190	760	172	688
Csongrád	180	720	148	592
Győr-Moson-Sopron	236	944	252	1008
Vas	82	328	163	652
Zala	127	508	114	456
All	**212**	**848**	**198**	**792**

Our survey indicated that most of the renting contracts (60% in the Southern Plain and 70% in western Transdanubia) were for 5 years. Contracts for shorter periods represented almost 25% of those in the Southern Plain and 10% in western Transdanubia. The respective figures for contracts longer than 5 years were 15% and 20%.

5 LAND USE

The structure of the agricultural land used indicates that an overwhelming part is devoted to arable farming (approximately 80%) and that – as shown in our earlier survey – it is cereals that represent the dominant crop. Vineyards and orchards account for a very small proportion of the land (about 2.5%) (see Figure 3). In the Southern Plain, Bács- Kiskun County followed by Csongrád County have figures which are slightly above the average for the latter types of land use. The average for the land given over to pasture is 12%, but in the counties of Vas and Zala – which, geographically, are in fact foothills of the Alps – the equivalent figures are 22% and 28% respectively. This is a consequence of the higher than average annual rainfall in those counties and the quality of their soil, which is not so suitable for arable farming. The average for the woodland area of individual farms is around 5%. The equivalent figure for Zala County is approximately 9%.

Figure 3
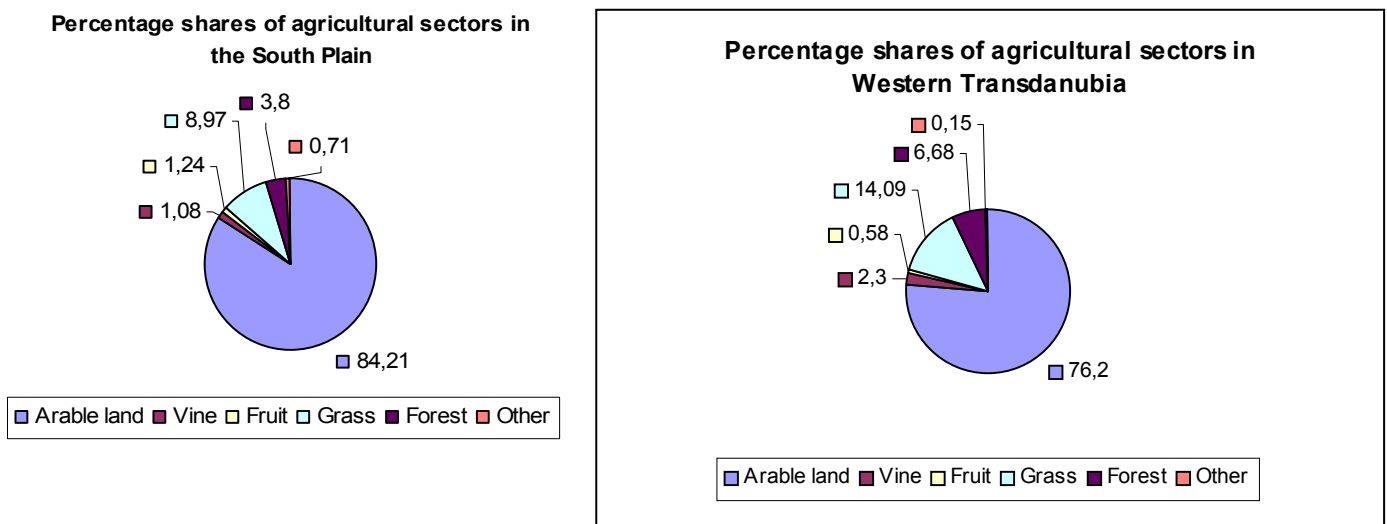
5. 1 Crop production

The respective figures for the proportion of arable land used for the production of cereals were: for both regions taken together 78%; Southern Plain – 72%; and western Transdanubia – 84%. The rest of land was used for many different crops, especially (among others) for oil-seed crops in a comparatively high proportion. The proportion given over to vegetables was quite low when considered as an average. However, it was higher in the Southern Plain than in Western Transdanubia. In the Southern Plain the under cover production was also quite significant.

According to the Eurostat, 2003/a the cereal areas are lower in most EU countries than in Hungary. In 2001 the cereal area was 51 % of the total agricultural area of Hungary (of which wheat and maize were 20-20% respectively). At the same time, that of France (which possesses the largest agricultural area in Western Europe) was 32%. The average cereal area of the EU 15 was 28%. Among the new countries Poland has a large area devoted to cereals: at 51% it is the same as Hungary. All the other new and accessing countries have smaller proportions than this.

The production of cereals has continued to be large in Hungary despite regular overproduction. There are several reasons for this: old habits seem to be hard to give up; farmers are comparatively well-equipped for cereal production; it is labor extensive; costs are relatively low; many farmers lack information about the market; and the marketing of other crops is weak. After the privatization, for those absentee owners who acquired land in this process the simplest and cheapest option for cultivating it was the production of cereals by hiring machinery services. Accession to the EU has added to the incentives for cereal production, given that the EU provides significant subsidies for the land itself and for cereal crops. The result of all the above was an even greater level of overproduction; even so, farmers organized protests in order to get higher subsidies for grain which could not be sold. Some agricultural experts suggest that in order to rectify the above-mentioned situation (i.e. to use more grain) there should an increase in support for animal production (which has decreased almost to half the size it was at the beginning of the transition). The government seems to be prepared to go along with these suggestions despite the fact that the market for live animals and meat does not look particularly promising at the moment. We think that greater diversification of crop production should be stimulated, propping it up with more thorough market information in the initial stages.

The yields for wheat and corn tend to be bigger on the larger farms (see Table 6). According to results provided by respondents in western Transdanubia wheat yields (4.2 tones/hectare) and corn yields (5.4 tones/hectare) are greater than in the Southern Plain (3 tones and 4.5 tones, respectively). The yields of farmers below the age of 40 were the largest and the survey indicated that results were also better in correlation with a higher level of education (see Figure 4).

Table 6

Average yields in tones in the different farm-size categories

Farm sizes (ha)	Wheat	Corn
1-5	3.30	4.45
5-10	3.90	4.85
10-20	3.49	4.87
20-50	3.73	5.13
50-100	4.10	5.85
Over 100	4.21	6.20
All	**3.69**	**5.00**

Figure 4

Yields according to educational levels of farmers
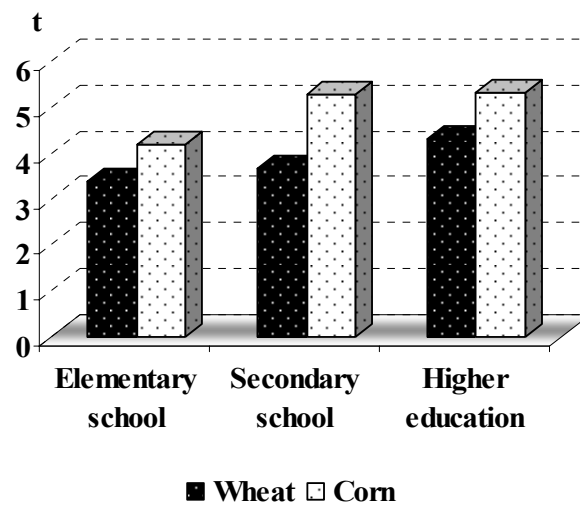
Products of organic farming account for only a small proportion of produce on farms surveyed: not more than 2.5 percent in average.

5. 1. 2 Regression analysis of productivity

In our survey wheat and maize production provided a sufficient number of cases for carrying out a multivariate regression analysis. In this regression analysis yields reflected productivity. A number of potential regressors have been pointed out. A significant correlation was found between wheat yields and wheat area, total cultivated area, ages and education levels of farmers, number of workers per ha, and machinery per 100 ha. Dummy variables represented the main income source of farmers, types of farms (entrepreneurs, smallholders and family farmers), self-consumption or market production as main farming goals, and selling with contracts and without them. Obviously these variables were interrelated as well. We used an SPSS stepwise linear regression procedure which built up the model step by step, selecting from the variables offered in the order of their explanatory power.

In the case of wheat only three variables contributed significantly to the explanation of the variance of the yields (Table 7).

In spite of the relatively low explanation level of the model it is easy to interpret the coefficients. The results are in line with the expectations. One grade higher educational level means a nearly 0.4 t/ha increase in yield, the fact of selling by contract and the larger cultivated area have positive effects, as well. The standardized coefficients show the relative importance of the different variables. The educational levels of farmers have the strongest effects.

Table 7

Results of the regression analysis of wheat yields [1]

VARIABLES	REGRESSION COEFFICIENT	STANDARD ERROR	STANDARDIZED COEFFICIENT
CONSTANT	2.693***	0.240	
EDUCATIONAL LEVEL	0.397***	0.116	0.199
SELLING BY CONTRACT	0.258*	0.122	0.126
TOTAL CULTIVATED AREA	0.002*	0.001	0.119

*** 99.9% * 95% levels of significance

[1] The regression of wheat yields was based on the data set of 284 farms. The explained share does not exceed 10% of the variability of wheat yields.

In the case of maize (Table 8) – with the same procedure – we could explain 5.7% of the yield variance (R=0.240).

Table 8

Results of the regression analysis of maize yields [1]

VARIABLE	REGRESSION COEFFICIENT	STANDARD ERROR	STANDARDIZED COEFFICIENT
CONSTANT	3.743***	0.432	
TOTAL CULTIVATED AREA	0.005**	0.002	0.166
EDUCATIONAL LEVEL	0.561**	0.212	0.161

*** 99.9% ** 99%. * 95% levels of significance

[1] The regression of maize yields is based on the data set of 258 farms.

According to Table 8 the yields of maize -similarly to the yields of wheat - are higher the larger the farms are, and higher the greater the educational level of the farmers is.

6 ANIMAL HUSBANDRY

In general, the number of animals per farm is greater as the size of the farm gets larger. However, the numbers per 100 hectares show a decreasing tendency as one moves from the smaller farm categories to the larger ones (see Table 9); this was similar to the findings of our previous survey. On farms larger than 100 hectares, apart from sheep and pigs, there are only small numbers of animals (especially with respect to cattle and cows). (In the Southern Plain the rearing of geese is significant and many farmers have stocks of geese.) The falling off of the numbers of animals per 100 hectares as the farm sizes get larger shows that the activities of most of the larger producers focus on –mainly extensive- crop production. The stock per ha of most species of animals is higher in the southern Great Plain than in western Transdanubia.

Table 9

Livestock on farms per 100 ha

Farm sizes in ha	Cattle	Cows	Pigs	Sheep	Goats	Horses	Hens	Geese	Ducks	Turkeys	Others
1-5	93.96	68.38	342.34	226.09	247.55	58.67	1563.75	2202.55	464.01	161.99	1210.12
5-10	80.36	51.56	149.74	251.82	53.14	48.38	445.69	9677.12	600.95	88.86	244.97
10-20	95.20	53.84	145.24	294.55	14.65	30.69	160.97	5605.36	82.73	47.72	294.09
20-50	51.60	32.82	107.38	466.40	11.35	24.62	3372.46	1919.45	165.63	41.04	302.44
50-100	25.95	30.61	57.93	148.32	7.99	9.83	81.94	1508.68	42.71	3.38	n.a.
Over 100	17.21	11.66	78.72	386.19	12.08	5.05	20.31	2256.39	n.a.	n.a.	n.a.
All	**36.00**	**23.74**	**105.33**	**356.21**	**26.33**	**16.62**	**1275.15**	**2987.47**	**235.54**	**50.74**	**370.57**

n. a. not available

Concerning livestock productivity we have data for milk. The larger the farms are, the higher are the milk yields (see Table 10). With respect to age-groups, milk yields are greatest among those dairy farmers under the age of 40. The yields produced by dairy farmers appeared to be higher as the level of education increased.

Table 10

Annual milk yields per cow on dairy farms

| Farm sizes in ha	Average milk yields (l)
1-5	3150.00
5-10	4185.71
10-20	5220.00
20-50	5293.75
50-100	3893.33
Over 100	8075.00
All	**4699.66**

7 OTHER ECONOMIC ACTIVITIES

Other economic activities were minimal on the farms represented in our study. With respect to the processing of foodstuffs the percentage of farms involved in this activity was: 2.5% of 1-20 hectares; 4.4% of 20-50 hectares; 6.1% of 50-100 hectares. Within this activity wine (viticulture) was an important element. A larger proportion of farmers was involved in the provision of services: 4% on farms under 10 hectares and 10-12% on farms above that size. Among the services, the most important were associated with machinery services, horse-riding, and the letting-out of rooms.

The low proportion of activities outside the sphere of agriculture and taking place on individual farms demonstrates that Hungary is far from the stated aim of the EU with respect to the diversification of rural activities in order to overcome the problem of agricultural overproduction (Csete, 2005; Fehér, 2005). These activities should be given more support than of cereal production.

8 MEANS OF PRODUCTION

8. 1 Irrigation and the use of fertilizers

The area of land irrigated was clearly greater among the larger-sized farms. However, considering the whole area occupied by the 613 farms, only 6.7% of that territory could be irrigated. The proportion of land under irrigation in the Southern Plain is 7.6%, while in western Transdanubia the figure is even lower at 5.8%. This can be explained by the fact that the rainfall in western Transdanubia is more than in the other region. However, the area of land which can be irrigated in both regions is small given the need to water crops when there is low rainfall or a drought. Farmers with higher education have larger areas of irrigated land on their farms (see Figure 5).

Figure 5

Average irrigated area of irrigated farms according to educational levels of farmers
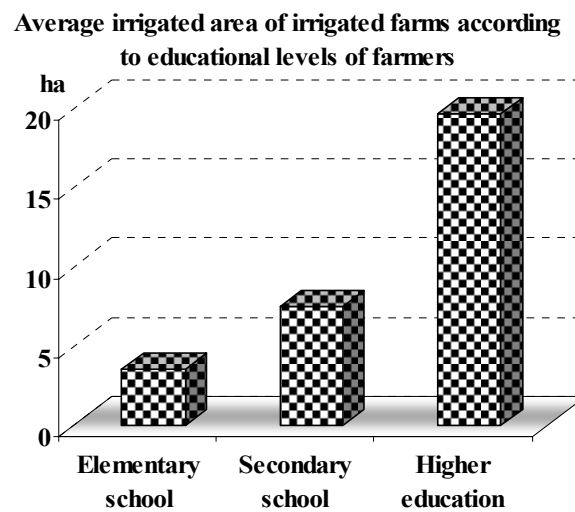
On farms of between 1-5 hectares, 213 kg of fertilizers were used per hectare, while farms over 50 hectares used almost 300 kg per hectare. On the basis of information given by respondents, the use of artificial fertilizers is higher in the Southern Plain than in Western Transdanubia.

8. 2 Mechanization

The stocks of agricultural machinery were examined from two points of view: (1) an overall view of all the farms surveyed and (2) with respect to the farms responding to these questions.

If all the 613 farms in the survey are taken into account it would appear that the stock of agricultural machinery for each farm is quite small. If we consider the smaller and larger tractors together, only farms larger than 20 hectares have more than one tractor. As was expected, larger farms are better supplied with larger tractors. With respect to combine harvesters, only on farms of over 100 hectares was there almost an average of one combine per farm; elsewhere this figure was clearly below one. The number of agricultural machines per 100 hectares – similar to the findings of our earlier survey – in general decreases as the size of the farms gets larger. This indicates economies of scale.

Respondents – and obviously this refers to those who actually have machines – from smaller farms had one or more tractors, a combine harvester, and a transport vehicle; farms above 50 hectares in size had more than two tractors. Machinery per 100 hectares also becomes lower as the size of farms gets larger. Table 11 shows the average stock of machinery for all of those who responded to this question.
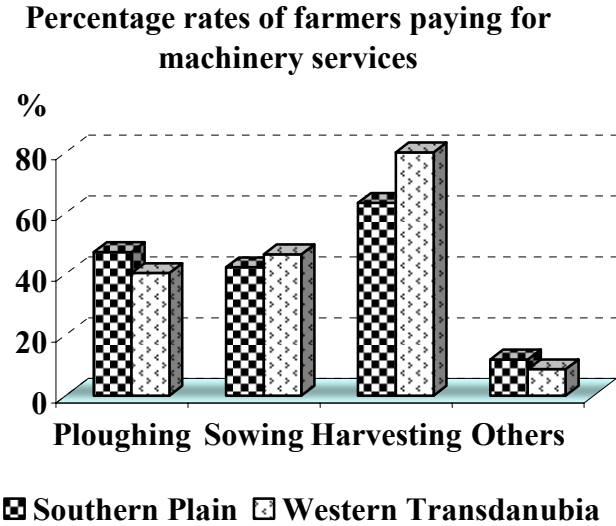
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Table 11

The average stock of machinery of farmers responding to this question

| Two axle tractors under 8kW (pieces)		Two axle tractors over 8kW (pieces)		Two axle tractors all		Combine harvesters (pieces)		Lorries (pieces)	
Per 1 farm	Per 100 ha	Per 1 farm	Per 100 ha	Per1 farm	Per 100 ha	Per 1 farm	Per 100 ha	Per 1 farm	Per 100 ha
1.31	**2.86**	**1.49**	**3.28**	**1.55**	**3.79**	**1.20**	**1.17**	**1.18**	**3.18**

The capacity of machines owned by farms complements the machinery services. Agricultural machines that have come into private ownership from large farms, complemented with newly-bought ones, are frequently used to provide services. The use of such services is particularly noticeable among smaller farms which use extensive methods to cultivate their land. On some of them the aim is not so much to earn income from their land but, rather, they are more interested in maintaining its quality. These farmers are the ones who see land as a form of savings and someday expect a much higher price for it than is the situation at present. Of the farmers we questioned, quite a large proportion said they made use of the services of machinery that can be hired. Half of those questioned said they required these services for ploughing and sowing, while about 72% of their number required hired machinery for harvesting, and 10% said they also needed the services of such machinery for other purposes (see Figure 6). Among the smaller farms the overall demand for the services of hired machinery is greater (60-70%) than the demand from larger farms (20-30%).

Figure 6

Percentage rates of farmers paying for machinery services

☒ Southern Plain   ☐ Western Transdanubia

First, we investigated the composition of the labor force of individual farms. The gender of managers showed that everywhere men were in the majority. Women account for 13.5% on average. The proportion of male managers is somewhat lower in the smaller-sized farms, given the fact that men have to undertake work outside the farm in order to support their families. In the Southern Plain the percentage of women managers is 15.5, while in western Transdanubia it is 13.1. The latter figure is probably lower because there are greater opportunities for women to work outside the farm in that region (see Figure 7).

Figure 7
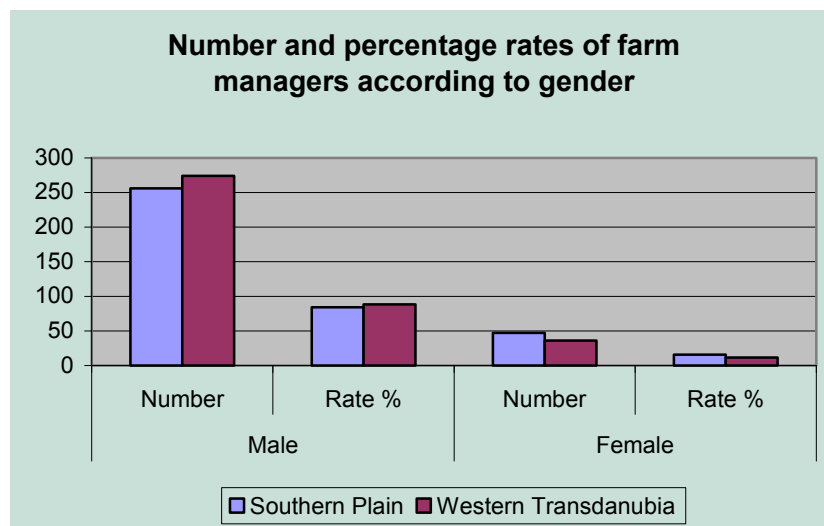
In the 1980s western economists wrote about the feminization of agriculture owing to the significant share of men working outside agriculture (Pheffer, 1989). Nowadays, however, some authors write that many women take outside jobs as well (Findeis and Swaminathan, 2002; Bharadwai and Findeis, 2003).
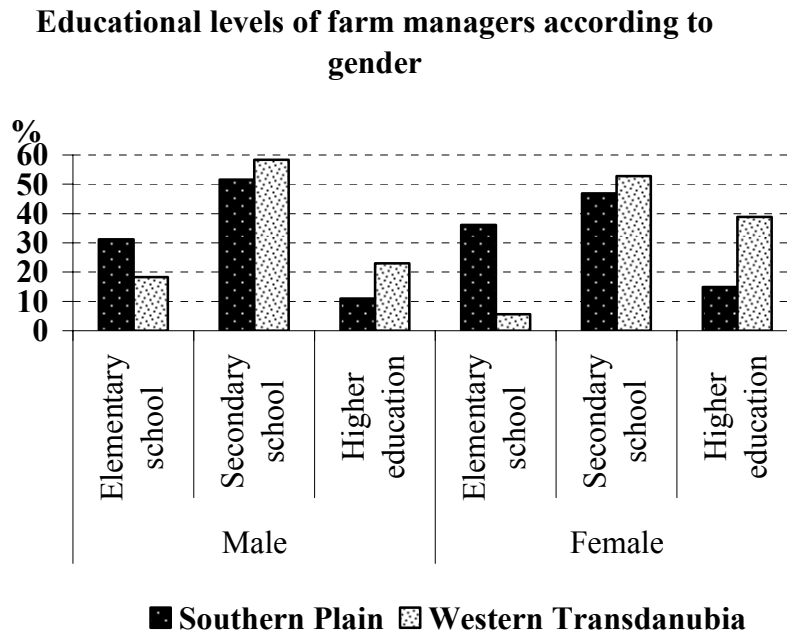
According to the Eurostat, 2003/b the percentage of female farm managers on farms of the 15 EU States in the year of 2000 was 22.2. It is noticeable that the smaller the farms are in these countries the higher the rate of female managers. The likely reason is that men have to seek work outside the farm in order to attain satisfactory income. However, the share of women working in agriculture was everywhere higher. It ranged from 27 per cent (France) to 43 percent (Austria) in 2003. At the same time, the rate of female farm workers was still higher in the accession countries: in the Czech Republic 34 %, in Hungary 44 %, in Bulgaria 46 % and in the Baltic States 50 %.

We investigated the proportion of husbands and wives among the working family members on farms. The respective figures were 56% and 44% in the Southern Plain and 61% and 39% in Western Transdanubia. Taking the other family members into account, the proportion of women was fairly great among all working family members. However, the rate of working wives was somewhat lower in Western Transdanubia owing to the bigger job opportunities for women.

Whether considering male managers or female ones, for both groups the percentage of individuals who have completed a secondary school education is approximately 50% - according to our survey. For women, the percentage among them who have completed a course in higher education is 25%, while the equivalent figure for men is 15%. In general, in western Transdanubia the proportion of managers who have completed secondary education

and/or higher education is higher than in the Southern Plain (see Figure 8).

Figure 8

Educational levels of farm managers according to gender

■ **Southern Plain** ☐ **Western Transdanubia**

With regard to both genders, managers are dominated by the 50 years and above age-group (57% for men and 47% for women). According to the Eurostat, 2005 farm managers above the age of 55 accounted for only 17 per cent in the 15 EU States in 2002.

The survey showed that in the larger size-groups of farms the number of family members, dependants, working family members and farm laborers also became larger. However, the number of family members and laborers per farm area decreases with the size of the farm; this indicates that the bigger the area, the smaller the need for labor per area. In the Southern Plain the number of wives, minors and other family members working on farms is greater than in western Transdanubia owing to the better opportunities for jobs in other sectors of the economy in that region. At the same time, the survey clearly indicated that the proportion of adolescents participating in agricultural work on farms of more than 50 hectares is relatively large, especially in western Transdanubia. This finding would suggest that on the farms of more than 50 hectares – which have a bigger need for the labor of adolescent family members – there is more chance that these young people will see some prospects in agriculture and thus consider it worthwhile to stay on the farm.

The percentage of individuals who claimed that agriculture was their main source of income did not go above 31% of the total number of respondents. However, it was clear that this percentage significantly increased as the size of the farm became larger. On farms of between 1 and 5 hectares only 18% of those working on them declared that agriculture was their main source of income. The equivalent figures for farms of above 50 hectares and those above 100 hectares were 59% and 75%, respectively (see Table 12).

Table 12

Sources of incomes of farmers

Farm sizes in ha	Income				
	From farming as main job	From another job of up to 20 hours weekly	From another full-time job additionally	From rent or other social benefits	All
1-5	17.55	12.77	30.32	39.36	100.00
5-10	17.31	8.65	43.27	30.77	100.00
10-20	28.70	18.52	28.70	24.07	100.00
20-50	44.14	11.71	21.62	22.52	100.00
50-100 ha	58.70	n.a.	15.22	26.09	100.00
Over100	75.00	6.25	9.38	9.38	100.00
All	**30.90**	**11.54**	**28.35**	**29.20**	**100.00**

According to the Eurostat 2003/b the share of those who were full-time employed in agriculture in the 15 EU countries was 21 % in 2002. The share of full time individual male farmers was 26.6 that of female farmers was 13.1 %.

The proportion of individuals occupied full-time in farming was greater in the Southern Plain than in western Transdanubia. In the latter region the proportion of individuals declaring agriculture to be their main occupation among those below 50 years of age was also greater.

9 TRADE

With respect to the sale of agricultural products, above all we wanted to find out the respective proportions of farmers producing only for their own purposes and those producing also for selling on the market. According to the replies to the questionnaires almost 67% of the smallest farms of 5-10 ha size produce for selling. The proportion of market-oriented farms increases in line with the size of the farms. Altogether, 78% of the respondents claimed to be selling products.

A significant percentage of farmers (approximately 40%) sell to wholesale traders. Sales to wholesalers show a growth tendency up to 100 hectares as the size categories of farms increase; with respect to sales in other directions such a tendency is not apparent. Direct sales to retailers and to large chain stores are comparatively small. On the other hand, sales to food processors and directly to consumers are significantly larger. Large agricultural farms integrate the production and sales of some producers; 5% of individual farms were involved in this. Our earlier survey showed that in 1998 a larger proportion of produces of individual farmers were sold to big farms (15 % of plant products and 10 % of animal products) with such contractual agreements. Table 13 shows the direction of sales in the two regions in percentage.

Table 13

Direction of sales in percentage

Region	Wholesale trade	Retail trade	Chain stores	Food processors	Local markets	Integrator farms	All
South Plain	46.39	2.41	0.00	8.43	34.34	8.43	100.00
Western Transdanu-bia	34.85	9.13	0.41	34.85	17.84	2.90	100.00
All	**39.56**	**6.39**	**0.25**	**24.08**	**24.57**	**5.16**	**100.00**

Products of organic farming account for an average of 2.4% of all sales. The smallest farm categories represent 0.6% in this figure; and all other categories represent about 2-3%.

Almost a half of the farms sell on a contractual basis. This indicates a weakness in the security related to selling. It is mainly the larger farms that enter into contractual agreements. The larger farms are keener to look for the security of sales and it is more likely that they also have better contacts in the commercial sphere (see Table 14).

Table 14

Percentage shares of farms selling with contracts

Farm sizes in ha	%
1-5	20.81
5-10	41.12
10-20	62.28
20-50	70.80
50-100	71.43
Over 100	87.88
All	**48.94**

Sales made on the basis of contracts show a tendency to increase as the age-groups get younger but the correlation with levels of education is more significant (see Figure 9).

Figure 9

Percentage shares of contracting farmers according to educational levels
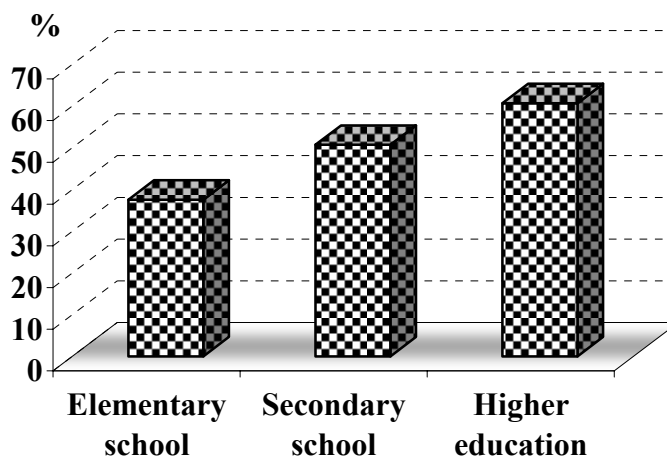
According to the structure of contracts, cereals account for the greatest proportion, followed by animals and animal products. The respective rates for other agricultural produce are much smaller (see Table 15). The small sales rates with respect to vegetables, fruits and wine are affected not only because of the farmers' reluctance to enter into binding agreements but also because the organization of trade in these products is weak. The problem could be alleviated by cooperation. However, there is even reluctance on the part of the producers to cooperate.

Table 15

The structure of contracts

	Arable crops	Animals, animal products	Vege-tables	Fruits	Grapes, wine	Ornamen-tals	All
Number of contracts	196	114	14	8	7	1	340
Percentage share of contracts	57.65	33.53	4.12	2.35	2.06	0.29	100.0

9.1 Cooperatives

Sales of agricultural produce with the mediation of cooperatives are quite small. Of the 613 farms involved in our survey, 11% were members of an acquisition-sales cooperative, 3% were members of processing cooperatives, and 6% were members of some other form of cooperative. The smallest per cent of members of the acquisition-sales cooperatives can be found in the lowest size-category of farms (5 %). The proportion of members increases among farms of over 50 hectares, and with farms of over 100 hectares 27% of farmers have membership of one or another kind of acquisition-sales cooperative. In the Southern Plain membership of one or another form of cooperative is greater than in Western Transdanubia.

10 CREDITS

5-10% of farmers questioned took up credits over the three years preceding the survey. Most of these farmers took up credits for their current production. Credits for investment were taken up by 10% of debtor farmers. A greater part of both the credits for current expenditure and those for investment were applied for by farmers with land of over 20 hectares. Table 16 presents the shares of farmers taking up credits from all those who were surveyed.

Table 16

**Percentage shares of farmers taking up different credit types**

Size of farms in ha	Short term credits (within 1 year)	Credits for supplementing capital*(3-6 years)	Credits for investment (1-10 years)	Credits for farming**	Other credits
1-5	5.6	3.0	0.5	0.5	1.5
5-10	2.8	1.9	1.9	1.9	0.0
10-20	4.4	5.3	4.4	4.4	4.4
20-50	16.8	4.4	20.4	11.5	2.7
50-100	20.4	8.2	40.8	8.2	12.2
Over 100	33.3	18.2	36.4	12.1	12.1
All	**9.6**	**4.7**	**10.3**	**4.7**	**3.4**

*Short term credit beyond 1 year

** It functioned as a substitution for the EU per-hectare aid before the accession

The proportion of farmers - as a share of all farmers surveyed - who took up credits in the Southern Plain was smaller than that in western Transdanubia (see Figure 10).

Figure 10

Percentage shares of farmers demanding different credit-types
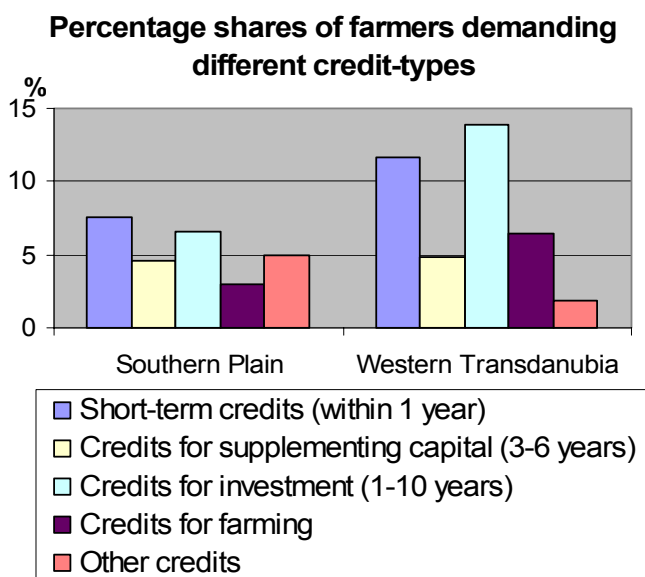
Most of those who required credit needed it for the following purposes (in order of demand-priority): the purchase of agricultural machinery, the purchase of animals, the purchase of materials, the purchase of land, and buildings -among them animal shelters-(see Figure 11).

Figure 11
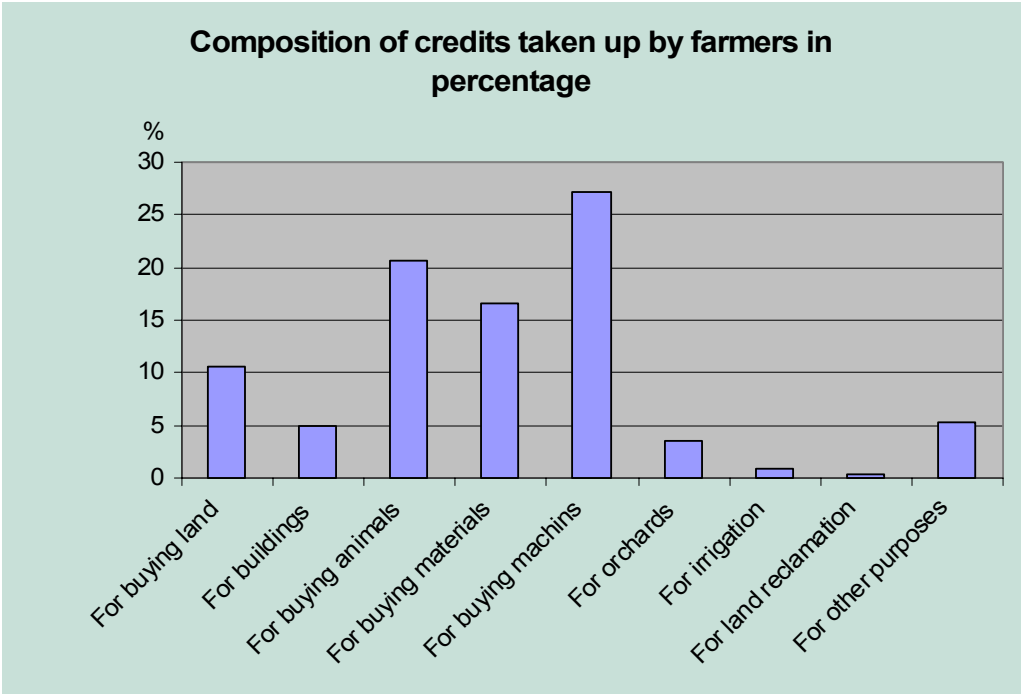
A comparatively high proportion of farmers with land of between 1-10 hectares took up loans to buy land, and this was similar to farmers with more than 100 hectares who showed their intention to enlarge their farms.

11 SUBSIDIES

According to data of the three years preceding the survey the most important subsidies – i.e. those which were granted for agricultural land as per-ha aid, interest payments, and development (within that latter item, for the purchase of machinery) – were, to a significantly greater extent provided for the larger-sized farms rather than the smaller ones. Table 17 shows the shares of farmers receiving support from all those who were surveyed.

Table 17

Percentage shares of farmers receiving different types of support

Farm sizes in ha	Per-ha aid	For interest pay-ment	For pur-chase of mate-rials	For ex-ports	For environ-mental aid	For regional devel-opment	For area devel-op-ment	For irri-gation	For land recla-mation	For plant-ing or-chards	Devel-op-ment aid	Other sup-ports
1-5	27.92	1.02	2.03	-	-	1.52	1.02	0.51	-	1.52	5.08	5.58
5-10	48.60	0.93	3.74	-	-	1.87	-	-	-	0.93	3.74	22.43
10-20	71.93	7.02	2.63	0.88	0.88	0.88	0.88	0.88	0.88	2.63	17.54	26.32
20-50	83.19	23.01	7.08	2.65	0.88	-	0.88	0.88	-	2.65	33.63	21.24
50-100	87.76	32.65	10.20	-	-	-	2.04	-	-	-	61.22	14.29
Over100	81.82	45.45	12.12	-	6.06	3.03	-	-	-	3.03	48.48	24.24
All	57.59	11.09	4.57	0.65	0.65	1.14	0.82	0.49	0.16	1.79	19.25	16.97

The proportion of farmers - as a share of all farmers surveyed – who received some support was greater in Western Transdanubia than in the Southern Plain (see Figure 12).
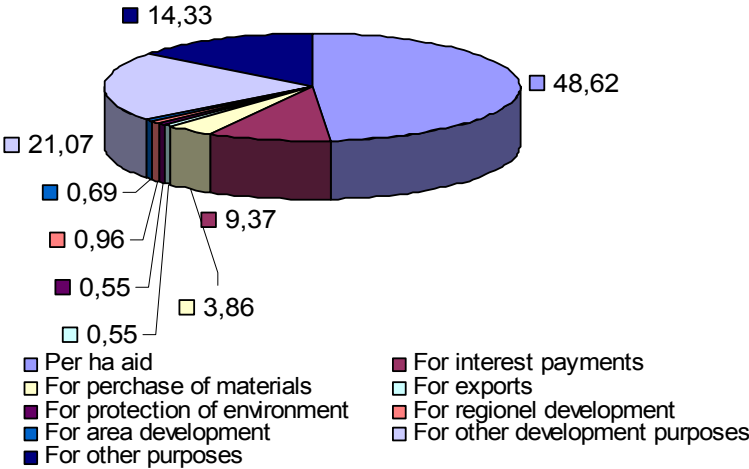
Figure 12
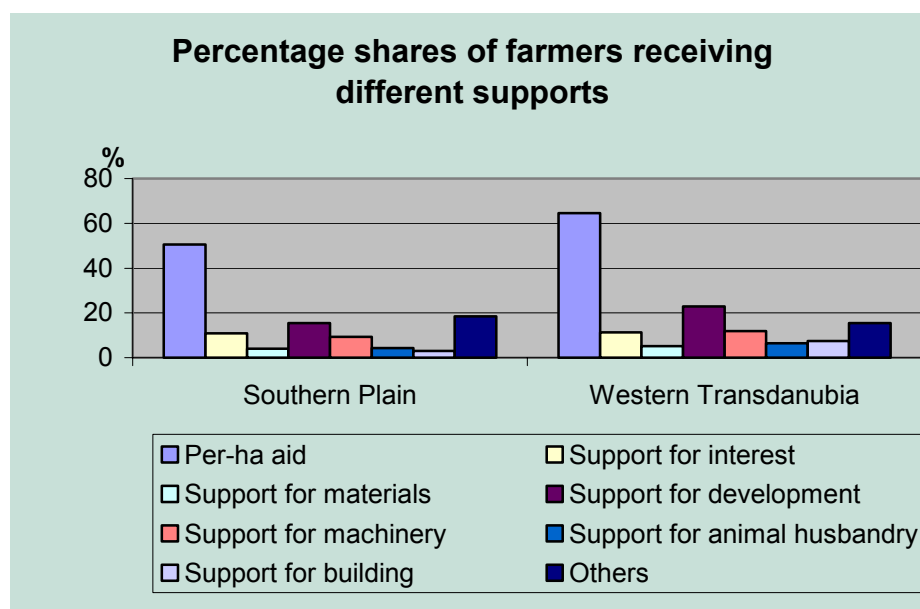
The greatest proportions of subsidies were provided first for land as per ha-aid, then for development, including the purchase of machinery, support for interest payments and the purchase of materials, then other subsidies for undefined purposes (see Figure 13). The

support was comparatively smaller for the following: exports (0.55%), environmental protection (0.55%), regional and area development (0.96 and 0.69%), and still smaller for space for animals, storage facilities, glass- and plastic houses, irrigation, and plantation. The share of subsidies for SAPARD was insignificant. The share of subsidies provided for per-ha aid was greater with respect to smaller farms (about 60 %), than to farms over 50 ha (35-40 %); however, the share of subsidies for development was greater with respect to the larger farms (27-33 % as against 7-14 % to smaller farms).

Figure 13

Composition of supports provided for farmers in percentage

◻ Per ha aid	◼ For interest payments
◻ For perchase of materials	◻ For exports
◼ For protection of environment	◻ For regionel development
◼ For area development	◻ For other development purposes
◼ For other purposes	

12 PROFITABILITY

We were interested to find out whether, in the three years preceding the survey, farms had been profitable, broken even, or made a loss. Respondents clearly indicated a declining tendency for profitability (see Table 18). Farms that broke even were also in decline. The number of farms making losses increased. The position stayed fairly unchanged on those farms of 50-100 hectares which were breaking even, and on those farms above 100 hectares which were profitable.

Table18

Profitability in different years

Farm-sizes in ha	Profitable			Broken even			Loss makers		
	2000	2001	2002	2000	2001	2002	2000	2001	2002
1-5	30.27	23.12	22.58	45.41	46.24	37.63	24.32	30.65	39.78
5-10	35.64	32.67	33.66	44.55	50.50	46.53	19.80	16.83	19.80
10-20	38.18	35.78	24.77	50.00	45.87	46.79	11.82	18.35	28.44
20-50	38.46	49.04	35.24	51.92	41.35	44.76	9.62	9.62	20.00
50-100	40.82	40.82	35.42	30.61	40.82	43.75	28.57	18.37	20.83
Over 100	57.58	48.48	59.38	27.27	36.36	21.88	15.15	15.15	18.75
All	36.60	34.71	30.29	45.02	45.02	41.82	18.38	20.27	27.88

If these figures are taken into account on a regional basis, it is apparent that over the three years relevant for the survey, western Transdanubia had a greater number of profitable farms and farms breaking even than in the Southern Plain. Furthermore, the number of loss-making farms in the former region was lower than in the latter (see Figure 14).

Figure 14

Percentage rates of profitability of farms in the two regions
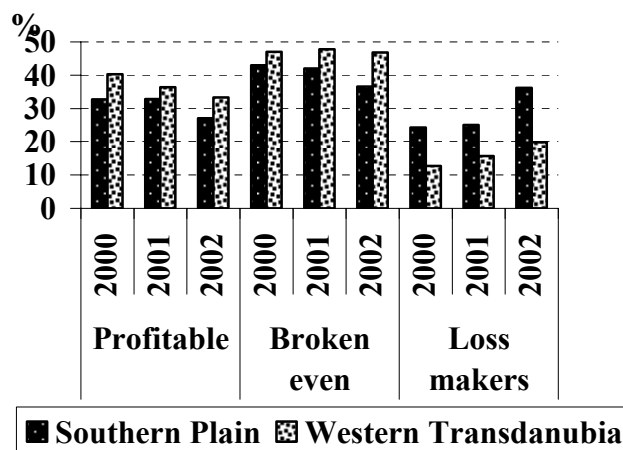
For individual farm-owners the survey indicated that there were more farmers above the age of 50 who were making losses and they were less profitable than the average. If levels of education are taken into account, it would appear that more of those with a primary level of education than those with a higher level of education were making losses.

Comparing the results of our surveys of 1998 with those of 2002 it can be stated that in 1998 38% of the individual farms considered in the study claimed to be profitable; 17% said they were loss-making and 45% claimed to have broken even. In 2002 the equivalent figures were 30%, 28% and 42% respectively. Thus it is also apparent that the number of profitable farms has decreased while that of loss-making ones has increased during the period between the two surveys.

13 INTENSIONS FOR DEVELOPMENT

The farmers' intentions for further development perhaps represent a more reliable assessment of their economic position than their profitability. Thus it was in line with this that we asked whether farmers wanted to develop their farm or not, or did they wish to reduce their farm activity, or only a part of it and develop in another direction.

Of the total respondents, 39% claimed that they wanted to make further developments, while 34% said that they had no plans for further development; 6% said they had plans for developments in particular areas and at the same time wanted to reduce their activities in other spheres; 21% wanted to cut down in their overall activities. A definite majority of respondents is intending to develop. If we take into account those who want to redirect their energies from one activity to another, then of all respondents almost 45% fall into this category.

The number of farms with intentions for development is smallest among the lower categories of farms and here can be found the largest number of farms with no plans for any development at all. Farmers with plans for development become greater in number as one moves up through the farm categories (see Table 19).
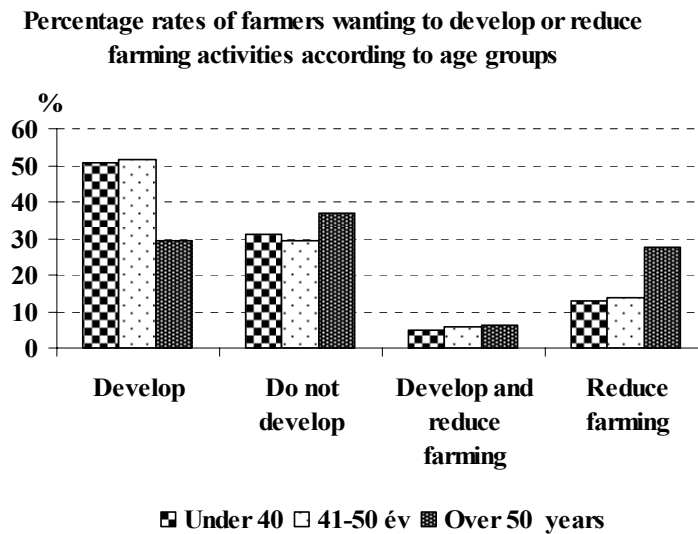
Table 19

Farmers' intensions for development

Size of farms in ha	Develop	Do not develop	Develop and cut down	Cut down all activities	All
1-5	2.33	49.24	1.52	25.89	100.00
5-10	33.64	28.04	11.21	27.10	100.00
10-20	35.09	29.82	7.02	28.07	100.00
20-50	54.87	27.43	6.19	11.50	100.00
50-100	63.27	18.37	10.20	8.16	100.00
Over 100	72.73	18.18	6.06	3.03	100.00
All	**38.99**	**33.77**	**6.04**	**21.21**	**100.00**

With respect to age-groups, those over the age of 50 represent the greatest number having no designs for development and/or who aim to reduce their activities (see Figure 15). If levels of education are taken into account, it is those who have completed a course in higher education who want to increase or develop their activities; those who have completed a primary level of education represent the smallest number aiming to expand their activities.

Figure 15

**Percentage rates of farmers wanting to develop or reduce
farming activities according to age groups**

☒ **Under 40** ☐ **41-50 év** ▨ **Over 50 years**

There are more farmers with intentions for development in western Transdanubia than in the Southern Plain. At the same time, there are more cases of farms in the former region which aim to develop certain branches of their activities at the expense of others. Farms in the Southern Plain show more signs of stagnation and/or regression.

In our 1998 survey the replies of individual respondents showed that more farmers planned to develop, and less wanted to cut back on their activities than was the case in the recent survey. However, in both surveys the frequency of plans for development was above the average among farms of over 20 hectares, and with respect to farms over 50 hectares it was significantly above the average.

If the proportions of separate development aims are considered, the survey indicated that buying or renting land was in the largest proportion. Following this, the next proportion was the purchase of machinery, and then construction, and finally the increase of animal stocks. The proportion of intentions to develop processing or service facilities was minimal. However, given the present depressed state of agriculture it would seem that auxiliary activities represent one of the more reliable ways for gaining extra income and these are the activities that are given more priority for support from the EU.

Plans for reducing activities were, in order: the selling or letting of land, then reducing the size of live-stock, then the complete winding up of the farm, and lastly the selling of machinery. The various plans for giving up land indicate that, for those wishing to make further developments, there should be more land on offer if the space and time of selling and purchasing, and the letting and renting of land are in accordance with each other.

14 REGRESSION ANALYSIS OF PROFITABILITY

We tried to demonstrate the effects of labor force, marketing, credit needs, subsidies and intentions for development on the profitability and the interrelationship between them by regression analysis.

Due to our lack of precise information concerning the profitability of the farms the following variables were constructed to provide rough estimates about it. If the farmers who were asked claimed that their farming was profitable we marked it with (+1), if they claimed that they just broken even we marked it with (0) and the loss-makers with (-1). The level of profitability

was calculated as a sum of the 3 years' marks (the mark for the year 2002 was doubled). The number of development plans and the number of plans to limit or cut down certain activities in the given period were used as indicators.

A number of potential regressors were indicated. Significant correlation was found between the profitability and the following variables: total cultivated area, ages and education levels of farmers, number of workers per ha, machinery per 100 ha, and number of development plans. Dummy variables represented the main income source of farmers, types of farms (i.e. entrepreneurs, smallholders and family farmers), self consumption or market production as main farming goals, and selling with contracts and without it. Obviously these variables were interrelated as well. We used a SPSS stepwise linear regression procedure which built up the model step by step, selecting from the variables offered in the order of their explanatory power.

Using the stepwise regression procedure 5 variables were selected (see Table 20.).

Table 20

Results of the regression analysis[1]

Variables	Regression coefficients	Standard error	Standardized coefficients
Constant	1.04***	0.454	
Development plans	0.386***	0.059	0.273
Labor force per ha	-0.325*	0.130	-0103
Ages of farmers	-0.21**	0.08	-0.108
Working family members	-0.640**	0.226	-0.116
Total cultivated area	0.04*	0.002	0.091

*** 99,9% ** 99%, * 95% level of significance

[1] The regression analysis was based on the data set of 550 farms, for which all of the variables were available. The variables selected explain 14.2% of the profitability variance.

In spite of the not very high explanation level the results are in line with the expectations. The standardized coefficients show the relative importance of the different variables. It is not surprising that the farms which have numerous development intentions are profitable and this is the strongest relationship.

The average number of workers per farm is less than 3 according to the survey. On farms under 5 ha the average number of workers per farm is 2.37, and on those over 100 ha 4.24. This means that a farm which is 50 times bigger than the smallest farms has a labor force which is less than twice the size of that of the latter, hence the labor force/ha decreases sharply with the growing area. Consequently the number of workers per ha and the total area are in a strong negative correlation. The regression results indicate that the lower number of workers per ha and the larger area cultivated are connected with higher profitability. The negative coefficient for ages of farmers means that the higher age has a negative effect on profitability.

15 CLUSTERS OF FARMS

Based on the characteristics of labor, land use, animal husbandry and supply of machinery we can identify different clusters of farms. We characterized the farms by a set of their main features. Then different clusters were formed in accordance with the similarities of these features. Finally we compared the different clusters.

The main features which characterized the farms were the followings:

Labor: ages, educational levels (1-elementary school, 2- secondary school, 3- high school), number of workers on the farm, number of workers per ha.

Land: the total cultivated area (ha), the share of own land in the total area (%), the share of wheat area (%);

Livestock: heads of cattle and pigs, number of cattle and pigs per 100 ha;

Machinery: number of machinery per 100 ha, i. e. number of tractors, combine harvesters, and lorries.

Each farm was characterized by a vector and the elements of this were the standardized values of the above characteristics. They were standardized in order to avoid the influence of the magnitude of the different measures. The similarity of the farms/vectors was measured by Euclidean distance. 5 groups of the 573 farms were formed using an iteration procedure (SPSS K-means cluster i. e. quick cluster). One single farm with a huge pig stock formed group 2. Therefore we omitted cluster 2.

The characteristics of the resulting clusters are presented in table 21.

The characteristics of the "Traditional" cluster 1 with 72 farms are the following: aged farmers with low educational levels, small land areas, highest number of workers, 1-2 machines, and no specialization.

The "Medium productivity" cluster 5 is the largest group. It is characterized by larger, but still small farms with younger but still relatively old but more educated farmers, a small number of workers, and low mechanization level.

103 farms form the "Efficient" cluster 4. They have large areas, young educated farmers, and highest number of machines. The number of workers and machinery per area are small; they are engaged in efficient crop farming.

The cluster 3, 56 farms of "Cattle breeders" has one common characteristic: cattle husbandry. The cattle stock is the highest in this cluster in absolute and relative measures.

Table 21

Clustering characteristics of the formed clusters

Clustering characteristics	Cluster 1 Traditional farms	Cluster 3 Cattle breeder farms	Cluster 4 Efficient farms	Cluster 5 Farms of medium productivity
	N=72	N=56	N=103	N=341
Total number of adolescents working on the farms	4.3	3.1	3.4	2.5
Number of workers per ha	1.8	0.3	0.1	0.4
Ages of managers (year)	53.9	49.8	48.2	52.6
Educational levels of managers (1-elementary, 2-secondary, 3-high)	1.7	1.8	2.0	2.0
Total cultivated area (ha)	3.2	28.3	88.5	13.9
Shares of wheat area (%)	11.3	29.8	29.9	24.5
Cattle (heads)	0.1	19.5	2.0	0.4
Cattle per 100 ha	3.0	112.0	4.2	4.4
Pigs (head)	8.2	10.8	18.0	6.0
Pigs per 100 ha	326.7	77.2	53.0	70.0
Tractors, combine harvesters, lorries (pieces)	1.2	1.8	3.1	0.7
Pieces of tractors, combine harvesters, lorries per 100 ha	43.9	12.1	7.3	6.7

The question which naturally arises is: which of the former characteristics have an effect on the profitability of farms?

The level of profitability was characterized by the variables used in the regression analysis. The tendency signifies the changes of the profitability during the start an end of the 3 year period (see Table 22).

The results presented in table 22 show that the clusters based on the several features of production significantly differ in profitability. The profitability is significantly less than in any other group in the first cluster which represents small, non- specialized farms and farmers with low educational levels. The fourth "efficient" cluster including young, educated farmers with more development, investment intentions and producing on larger areas than those in the other clusters has significantly the highest profitability. The overall development of profitability is not encouraging: it is decreasing in every cluster, except in the fourth one where it seems to be stable. However, the differences are not significant.

Table 22

Characteristics of profitability of the formed clusters[1]

Characteristics of profitability	Cluster 1 Traditional farms	Cluster 3 Cattle breeder farms	Cluster 4 Efficient farms	Cluster 5 Farms of medium productivity
	N=72	N=56	N=103	N=341
Level of profitability (-4 to +4)	-0.6	0.5*[1]	1.2*[1, 5]	0.3*[1]
Tendency of profitability	-0.2	-0.2	0.0	-0.2
Development intentions	0.7	1.5*[1]	2.1*[1,.5]	1.0
Shrinking, reducing intentions	0.3	0.3	0.2	0.4*[4]
Types of subsidies gathered	0.4	1.3*[1]	1.9*[1,.3,.5]	1.0*[1]

[1]The figures in the cells represent the average values of the given characteristic of the given cluster. If it is significantly higher than the same characteristic of the other clusters then it is marked with * and beside the * with the numbers of the other clusters. For example, the level of profitability is significantly higher in the cluster 4 than in the first and fifth clusters.

Summarizing, it can be said that the farm clusters based on production factors have their economic profile as well. We have the small traditional farms (cluster 1) with elderly farmers, without market-oriented management, without important subsidies, and their "raison d'être" may be to support family maintenance due to the lack of any other possibilities. All the other clusters have more active management, and have intentions to make use of market possibilities and agricultural policy. The most ambitious farmers are in the fourth "efficient" cluster, with the most development plans, profitable farming, and success in gaining subsidies. In the fifth medium productivity cluster the intentions may be similar, but with more risk with respect to success due to the shortage of resources. The cattle breeders (third cluster) are competing to maintain their productivity level in similar general conditions such as those in the fifth 5 "medium productivity" cluster.

16 CONCLUSIONS

The respective data acquired from our surveys of 1998 and 2003 suggest that the situation of agriculture worsened over that period. The main indication of this is that the proportion of respondents who regard themselves as loss-making has increased between the two periods. The second indication is that, in 2003, the proportion of individual farmers intending to wind up their activities completely was greater than it was in 1998. The third indication is that in 1998 it was apparent that farms of over 50 hectares were able to stabilize their situation with respect to profitability; in the second survey this could only be said for farms over 100 hectares.

When comparing the Southern Plain with western Transdanubia, it can be said that agricultural production is greater in the former region and more people are involved in agriculture owing to the lack of sufficient opportunities for other forms of employment. However, it seems that in western Transdanubia the spirit of enterprise is stronger than in the

Southern Plain: more farmers enter into contractual agreements, more farmers make use of credits and subsidies, and the farms operate with greater profitability. Nevertheless, the proximity of western Transdanubia to industrial and service centers and, furthermore, its closeness to Austria tend to suppress agricultural activities and not to boost them, as Schultz, 1953 stated it.

The regression and cluster analyses supported the assessments of the descriptive analyses and produced the following main conclusions: the larger farms, farmed by younger and better-educated individuals, are more efficient and profitable than the others. Furthermore, farmers with significant conceptions for development seem to achieve greater profitability.

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