REGIONAL COMPARISON OF FARMS ON THE BASIS OF THE FADN DATABASE

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SUMMARY

The territorial structure of Hungarian farms was investigated. The results obtained proved once again that Hungarian farms cannot be dealt with in a uniform way, because the differences between regions they take place in require different approach.

According to the results obtained so far the three Transdanubian regions located in Transdanubia, the western part of Hungary, are more or less equal in respect of farm size, labour productivity, and profitability. Therefore it is recommended to treat these regions in agricultural policy as a uniform system. The efficiency of farms in the regions of Northern Hungary and Northern Great Plain is lower as compared to other regions. Therefore it is recommended to support alternative measures aimed at the improvement of labour productivity in these regions. The region of Central Hungary also requires a different system of subsidies: here, horticulture producing higher value added should be supported to a greater extent in order to enable the farmers of the region to compete with imported goods and meet the changing demands of consumers.

Although the present research is in its initial stage, it enabled several consequences to be drawn, naturally without completeness. Therefore in the future it will be extended to several additional fields, such as the examination of farming cooperatives, or a deeper investigation of livestock and crop farming. Research will be completed also by a number of statistical methods, e. g. deviation, correlation, including the simultaneous evaluation of non-agricultural economic indices, since agriculture is largely influenced by the general development of a region.

INTRODUCTION

It is well known that there are significant differences between farms according to the regions they are located in. However, the evaluation of these differences has played little role in agricultural economic research. Hungarian researchers can use the results of the General Agricultural Census carried out in 2000, in which data are grouped according to regions and micro-regions. The authors' object was to add to them further data deriving from another database called FADN (Farm Accountancy Data Network).

A special feature of this database is that it contains the individual data of the farms, thus enabling direct conclusions to be drawn concerning the regional structures of these farms, and the differences between them in respect of number and size, land use, labour force, and efficiency.

Persons shaping agricultural and regional policy must pay attention to the differences between the regions, because uniform national regulations may have a different effect on agriculture in different regions.

The authors' investigations (which they hope constitute only the introduction of a longer series of studies) have also confirmed the above mentioned significant differences between farms depending on the region they are to be found in. Their method ad described in the present paper may add to the detection of these differences, thus contributing to the differentiation of the national subsidy system and, subsequently, to the increase in its efficiency.

As the EU accession of Hungary is proceeding, regional research is becoming more and more important, since one third of the financial support coming from the Union is allocated to regional development. Consequently, it is extremely important to produce data of appropriate quality and quantity. The FADN database provides relevant data useful for farms. Research focusing on information may enable the issues of regional policy like SAPARD and its successors to be adapted more easily to each region.

MATERIAL AND METHOD

The member states of the European Union established in 1965 the legal basis of a representative information system on farm economics, which provides data about the income of the different groups of farms on national and regional level. The system is called FADN (Farm Accountancy Data Network). The collection of data, along with their processing, is organised separately by the member states on their respective areas. The data thus collected and processed are forwarded to the European Commission in the required form on schedule (Keszthelyi & Kovács, 2002).

In Hungary the Research Institute for Agricultural Economics and Information (AKII) started to introduce the FADN system in practice in 1996, extending its application to more and more counties and farms. 2001 was the first year when the system was adopted throughout the country, and data were collected from approximately 1900 farms. Farms providing data for the present paper were selected at the beginning of 2001.

The basic data for the research were provided by AKII, Department of Business Analysis, in the framework of a long-term education and research cooperation between this institute and that of the authors.

In order to make regional comparison from the data of the FADN system, farm data had to be weighted on regional level. The data of the General Agricultural Census, which had been provided by the Central Statistical Office (KSH), Department of Agricultural Statistics, were used for this purpose. These data enabled the authors to count the number of farms represented by one farm in the FADN system within a certain region, along with their economic size class and type of farming.

Both in the General Agricultural Census and in FADN 17 types of farming and 10 economic size classes were differentiated when determining the national weight numbers on the basis of an EU standard. A weight number was associated to all the 170 cells thus obtained, which enabled the number of farms represented by a farm in the FADN system to be determined. (The only exception was the economic size class No. 1, because the data of such farms are not collected in the Hungarian FADN system[1].) At present there are 1888 farms in the database, of which 1401 are family farms, and 487 are farming companies.

On regional level the number of farms in the FADN system was not high enough for using the same method for

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[1] Economic size class No. 1 consists of farms below 2 European Size Units (ESU), which means that the Standard Gross Margins (SGM) counted on the basis of their production are below 2400 € per year.

counting the regional weight numbers, wherefore AKII researchers had to apply another method of calculation. Certain types of farming categories and economic size classes had to be merged, but there were still regions in which a certain type of farming was not represented by a farm in the FADN system. Therefore the weight numbers could not be counted accurately. The differences are shown in Table 1. The last three columns of the table indicate the proportion in which the number of farms in the FADN system multiplied by the regional weight numbers represented the number of farms in the General Agricultural Census.

Table 1.

The number of farms in the FADN system and General Agricultural Census, and the representativity of the FADN system on regional level

	General Agricultural Census			FADN			Number of farms represented		
	Family farms	Farming companies	Total	Family farms	Farming companies	Total	Family farms	Farming companies	Total
Central Hungary	5814	385	6199	135	35	170	100%	79%	99%
Central Transdanubia	5981	506	6487	137	47	184	98%	98%	98%
Western Transdanubia	7862	587	8449	162	64	226	96%	104%	97%
Southern Transdanubia	8997	704	9701	169	93	262	100%	116%	101%
Northern Hungary	6958	423	7381	147	61	208	100%	110%	101%
Northern Great Plain	23154	898	24052	276	99	375	100%	101%	100%
Southern Great Plain	27951	908	28859	375	88	463	100%	89%	100%
Total	86717	4411	91128	1401	487	1888	99%	100%	99%

In regional comparison it was only possible to focus on the family farms, because representativeness is only appropriate for this group, and accountancy in respect of labour force is different for the two groups of farms, since the cost of family labour force is not booked in family farms.

Total production value and return from sales composition were examined per region, whereas agricultural area, arable area, labour force, production value, own capital, and profitability were examined per farm.

RESULTS AND EVALUATION

A comparison of the regions showed that there are significant differences in agricultural area per farm (Figure 1). The greatest agricultural area is used by the farms of Central Transdanubia (32 ha) and Northern Hungary (29 ha), the national average being approximately 25 ha in case of farms greater than 2 ESU. It is remarkable that this index amounts to 24 ha in both the Southern and the Northern Great Plain region.

One of its causes may be that horticulture has a stronger position in the Southern Great Plain region, where there are also more livestock (pig and poultry) farms using no agricultural area at all.

Figure 1.

Land used by an average farm in the regions of Hungary

☒ Agricultural area (ha)
▦ Arable area (ha)
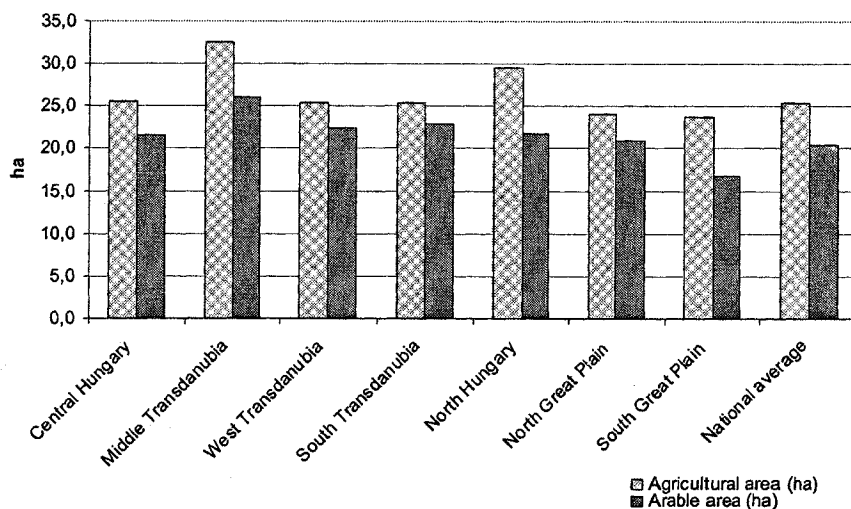
Examining the labour force structure of the farms, it turned out that almost the same number of family labour force is utilised in each of them (2.5-3 persons), which is not surprising because it is in accord with the average Hungarian family size. However, there are significant differences in the other types of labour force. The number of agricultural employees and season workers is higher in the northern regions parallel to a lower production value. This may be caused by the fact that vegetable, fruit and grape production requiring more labour force is more intense in this region on the basis of the FADN data (Figure 2). Of course the labour force utilisation per farm depends also on other factors, such as regional trends of the labour market, etc. Return from sales and production value per farm are highest in the Transdanubian regions (Table 2). The return from sales per farm is almost double the value for the Northern Hungarian region, which is lowest. Both return from sales and gross production value are lowest in the northern part of the country. The difference in the production value is not so great between the highest-ranked Western Transdanubian and the lowest-ranked Northern Hungarian region. It is remarkable that the Southern Great Plain region has a relatively high production value per farm in spite of the smaller agricultural area per farm.

Figure 2.

Distribution of labour force in farms
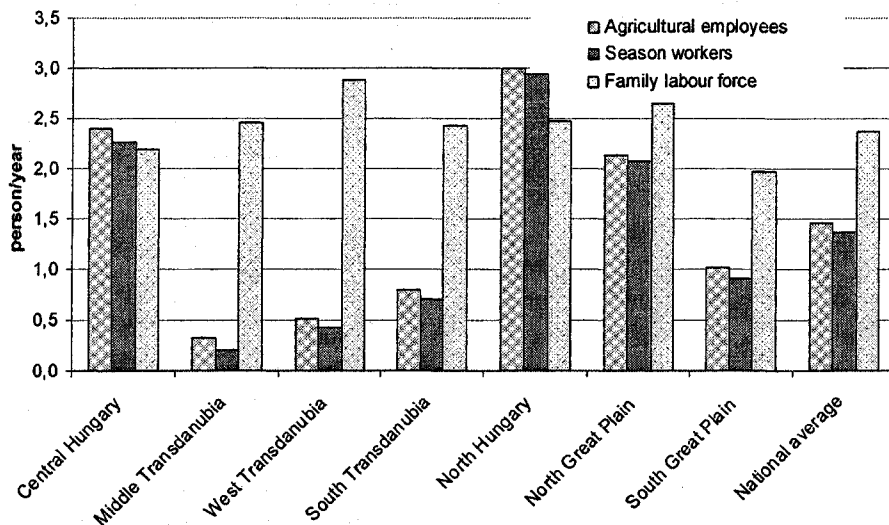
The regional differences are highest in income before taxes: the highest value taking place in Southern Transdanubia is almost 20 times higher than the lowest value taking place in Northern Hungary. This great difference is caused by the higher percentage of profitable farms in the Transdanubian regions (see Table 3). The farmers of the Northern Hungarian and Northern Great Plain regions are in the worst situation with an income of 154,000 and 65,000 HUF/year before taxes, respectively. Seeing that family farms book less wage, the percentage of farms with questionable vitality may be relatively high in these regions. It is also obvious that the profitability of farms is also low in the Central Hungarian region, where GDP per capita is relatively high, in spite of the fact that the huge food market of the capital can be most easily reached from this region. One of the numerous factors of this may be the decrease in prices of many horticultural products as compared to 2001, which play a considerable role in the agricultural production of the region (4).

It is interesting that, in spite of the above mentioned differences in income before taxes and production value, there is no difference in capital supply (own capital/fixed assets), the index values ranging from 115 to 140 per cent. Regions with higher net return from sales and production value exhibit a higher percentage of foreign capital, so the farmers of these regions can easier obtain credits. In spite of this the role of foreign capital is still relatively low in general, the percentage of own capital and total assets having ranged from 77 to 95 per cent in 2002. This means that family farms are either less creditable or do not need foreign capital.

Table 2.

Profit and capital supply indices per farm on regional level

Region	Net return from sales	Gross production value	Income before taxes	Percentage of own capital	Capital Supply	Return on production value
Central Hungary	4 761	5 786	252	91%	122%	4%
Central Transdanubia	6 009	6 980	674	79%	117%	10%
Western Transdanubia	7 091	7 932	779	86%	143%	10%
Southern Transdanubia	5 921	7 192	1 273	77%	115%	18%
Northern Hungary	3 857	4 800	154	83%	119%	3%
Northern Great Plain	4 432	5 615	65	81%	125%	1%
Southern Great Plain	5 392	6 348	717	95%	123%	11%
National average	**5 214**	**6 259**	**526**	**86%**	**124%**	**8%**

Table 3 indicates the percentage of profitable and non-profitable farms, and the amount of average profit or average loss. The values as compared with the national average, 62 and 38 per cent, respectively, are extremely poor, which is especially important because almost 40 per cent of the farmers cannot make use of subsidy forms requiring adequate profitability. Related to this index, there are great differences among the regions, which have been already mentioned above, and it is especially remarkable that the number of non-profitable farms is also very high in the Western Transdanubian region. The region was capable of reaching good profitability indices in spite of this circumstance, because in this region the average profit per farm was highest and the average loss lowest.

Table 3.

**Percentage of profitable and non-profitable farms and their pretax income at the regional level**

Region	Percentage of profitable farms	Percentage of non-profitable farms	Average profit	Average loss
Central Hungary	51%	49%	1396	-939
Central Transdanubia	75%	25%	1437	-1568
Western Transdanubia	49%	51%	2427	-831
Southern Transdanubia	84%	16%	1652	-713
Northern Hungary	44%	56%	1437	-841
Northern Great Plain	54%	46%	1093	-1147
Southern Great Plain	69%	31%	1325	-608
National average	**62%**	**38%**	**1413**	**-912**

The database enables also the regional distribution of the types of farming to be investigated (Figure 3). This is true also for the data of the General Agricultural Census, but the FADN database enables also the weight of each type of farming to be determined, on the basis not only of the production value but also of the return from sales, of the labour force, or of the other types of cost. In this case the return from sales was used for examining the distribution of types of farming.

Figure 3.

Distribution of the main types of farming on the basis of the net return from sales
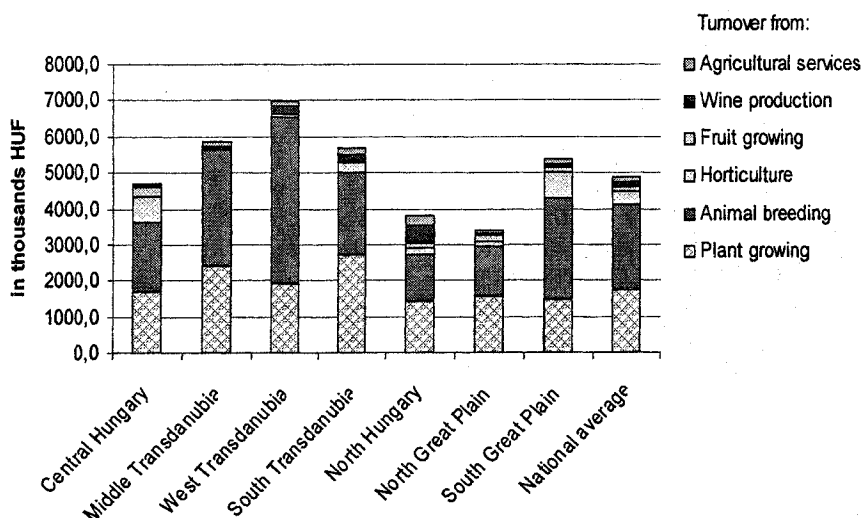
The Transdanubian regions turned out to have the highest rate of livestock farming on the basis of the return from sales. The Southern Great Plain and Central Hungarian regions have the highest percentage of services and horticulture, which is caused by the traditions of vegetable and fruit growing (Southern Great Plain) and the vicinity of the capital (Central Hungary). The distribution of the return from sales follows the geographical distribution of the traditional wine regions, wine production being most significant in Northern Hungary and Southern Transdanubia.

Besides the analysis of the types of farming, there is also the possibility of examining the regional distribution of the economic size classes. The European Size Unit (ESU) category was used for this purpose, which is counted on the basis of Standard Gross Margins (SGM) produced by the farm. 1 ESU means 1200 €, therefore a farm of 4-8 ESU may produce a SGM of 4800 or 9600 €.

Figure 4.

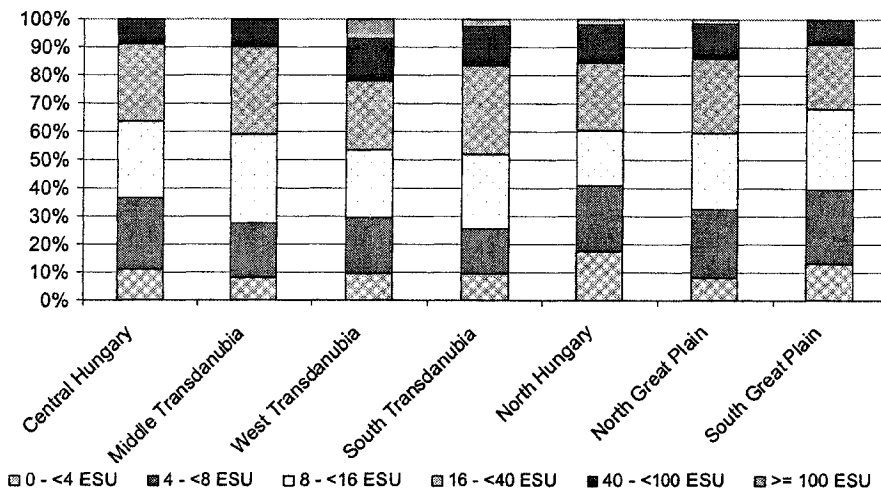### Regional distribution of the economic size classes

Figure 4 indicates that, in this respect, there are no significant differences among the regions. Large-scale farms (above 100 ESU) are concentrated mostly in the Transdanubian regions, whereas medium-sized farms (8-16 ESU) can be found in all regions in almost equal percentages. 50-60 per cent of the farms in all regions earn less than 16 ESU, which corresponds to the produce of 100 ha of wheat.

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AGRÁRVÁLLALKOZÁSOK REGIONÁLIS ÖSSZEHASONLÍTÁSA A TESZTÜZEMI ADATBÁZIS ALAPJÁN

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A kutatással az volt a célunk, hogy a rendelkezésre álló adatbázissal megvizsgáljuk a magyar egyéni gazdaságok területi struktúráját. Tanulmányunk újfent igazolta, hogy a magyar mezőgazdasági üzemeket nem célszerű egy egységes rendszerben kezelni, a regionálisan is fennálló különbségek eltérő viszonyulást igényelnének.

A jelenlegi eredmények alapján is megállapítható, hogy a három dunántúli régió az üzemméret, a munkaerő-hatékonyság és a jövedelmezőség tekintetében többnyire egységes képet mutat, ezért célszerű ezeket a regionális agrárpolitika keretében együtt kezelni. Az észak-magyarországi régiók üzemeinek hatékonysága elmarad a többi régiótól, különösen az egy főre jutó termelékenység esetében, ezért ezekben a régiókban a munkaerő hatékonyságát javító, alternatív intézkedéseket lenne célszerű támogatni. A Közép-Magyarországi Régió is eltérő kezelést igényel; ebben a régióban elsősorban a nagyobb hozzáadott értéket előállító kertészeti termelést kellene támogatni annak érdekében, hogy a régió termelői fel tudják venni a versenyt az importtermékekkel, és megfeleljenek a változó fogyasztói szokásoknak.

Bár a jelenlegi kutatás kezdeti stádiumban van, már így is több következtetést tudunk tenni, természetesen a teljesség igénye nélkül. Kutatásunkat a jövőben tovább kívánjuk fejleszteni több területen: a vizsgálatba be szeretnénk vonni a társas vállalkozásokat, az állattenyésztést és növénytermesztést mélyebben szükséges vizsgálni. Különböző matematikai, módszertani elemekkel is szeretnénk kiegészíteni a kutatást, mint például szórás, korreláció, különböző adatok, kereszt- és mezőgazdaságon kívüli fejlettségi mutatók együttes vizsgálatával, mivel a mezőgazdaság működését nagyban befolyásolhatja egy-egy régió általános fejlettsége.