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General Director:

Gábor Udovecz

Edited by:

Gábor Kovács

Authors:

Szilárd Keszthelyi, Gábor Kovács

Assistants:

Levente Barkaszi, Zoltán Kapeller, Andrea Kárpáti,
Eszter Kis Csatári, András Kiss, Gábor Suga

Opponents:

Péter Hodina
Péter Szerdahelyi

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Abbreviations and symbols

AWU	:	Annual Work Unit
ESU		European Size Unit
UAA	:	Utilised Agricultural Area
SGM	:	Standard Gross Margin
ø	:	Average
++	:	Upper quarter (the first 25 percent of farms in decreasing numerical order according to the profit before taxes per farm)
+	:	Second quarter (the second 25 percent of farms in decreasing numerical order according to the profit before taxes per farm)
-	:	Third quarter (the third 25 percent of farms in decreasing numerical order according to the profit before taxes per farm)
--	:	Low quarter (the last 25 percent of farms in decreasing numerical order according to the profit before taxes per farm)
-*	:	No available data

* If the symbol is indicated inside a table.

Calculated indicators and definitions

$$\text{Return on total output (\%)} = \frac{\text{income before taxes}}{\text{total output}} * 100$$

$$\text{Return on assets (\%)} = \frac{\text{income before taxes} + \text{interest paid}}{\text{liabilities}} * 100$$

$$\text{Return on net worth (\%)} = \frac{\text{income before taxes}}{\text{net worth}} * 100$$

$$\text{Return on labour (1000 Ft/AWU)} = \frac{\text{income before taxes} + \text{personal income}}{\text{Annual Work Unit}}$$

$$\text{Cash - flow} = \text{consolidated profit of the year} + \text{depreciation}$$

$$\text{Internal financing of investments (\%)} = \frac{\text{consolidated profit of the year} + \text{depreciation}}{\text{gross investments}} * 100$$

$$\text{Liquidity quick ratio} = \frac{\text{liquid assets} + \text{securities} + \text{debtors}}{\text{current liabilities}}$$

$$\text{Liquidity current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

$$\text{Equity ratio} = \frac{\text{net worth}}{\text{liabilities}} * 100$$

$$\text{Net worth in \% of fixed assets} = \frac{\text{net worth}}{\text{fixed assets}} * 100$$

$$\text{Dynamic indebtedness factor (year)} = \frac{\text{net liabilities}}{\text{cash - flow}}$$

Annual Work Unit (AWU): the unit of labour (generally used in EU statistics); annual working time (in working hours) of a healthy worker capable of full work and employed in full time. In the calculations we took 2 200 hours per year.

Corrected labour costs: the correction means the elevation of the labour costs of private farms in the FADN sample to the level of labour costs usual in economic organisations in the FADN sample. The correction serves the comparability of the two groups of farms.

Derivation of income in accounting:

01	Net return on inland sales
02	Net return on export
I.	**Net return on sales (01+02)**
03	Changes in self-produced stock
04	Value of activated self-produced assets
II.	**Value of activated self-produced goods (03+04)**
III.	**Other incomes**
	From this: retrieved value losses (unplanned depreciation)
05	Material costs
06	Value of used services
07	Value of other services
08	Purchase value of sold goods
09	Value of sold (mediated) services
IV.	**Material costs (05+06+07+08+09)**
10	Wages
11	Other wage-like payments
12	Social and health insurance
V.	**Labour costs (10+11+12)**
VI.	**Depreciation**
VII.	**Other expenses**
	From this: value losses
A.	***Income of farming activity (I±II+III-IV-V-VI-VII)***
13	Received dividends and shares
14	Exchange gain on the sale of shares
15	Interests and exchange gain on financial investments
16	Other received (due) interests and interest-like incomes
17	Other incomes from financial transactions
VIII.	**Incomes from financial transactions (13+14+15+16+17)**
18	Exchange loss on financial investments
19	Payable interests and interest-like expenses
20	Depreciation of shares, securities and bank deposits
21	Other expenses of financial transactions

IX.	**Expenses of financial transactions (18+19±20+21**
B.	***Profit on financial transactions (VIII-IX)***
C.	***Profit on ordinary activities (±A±B)***
X.	**Extraordinary incomes**
XI.	**Extraordinary expenses**
D.	***Balance of extraordinary events (X-XI)***
E.	***Profit before taxes (±C±D)***
XII.	**Taxes due**
F.	***Income after taxes (±E-XII)***
22	Employment of accumulated profit reserve for dividends
23	Paid (approved) dividends
G.	***Consolidated profit (±F+22-23)***

European Size Unit (ESU): similarly to the total SGM value (see Standard Gross Margin) it is used to express the **economic size** of a farm in the European Union. It is calculated in the following way: the SGM value expressed in euros is divided by 1200. (The divisor is determined centrally, in a longer period it can change as a result of inflation.) Accordingly, 1 ESU equals to 1200 euro of the total SGM of a farm. In the EU the following economic size categories are used at present:

Size categories	Parameters in ESU	Ceiling in EUR	Ceiling in HUF *	Title of category
I	< 2	2 400	583 128	very small
II	2 – 4	4 800	1 166 256	
III	4 – 6	7 200	1 749 374	small
IV	6 – 8	9 600	2 332 512	
V	8 – 12	14 400	3 498 768	small-medium
VI	12 – 16	19 200	4 665 024	
VII	16 – 40	48 000	11 662 560	large-medium
VIII	40 – 100	120 000	29 156 400	large
IX	100 – 250	300 000	72 891 000	very large
X	250 –			

* 1 EUR = 242,97 HUF (average exchange rate in 2002)

Gross investment: the sum paid on the increment of invested assets in a given year.

Gross Margin (GM): the difference between the production value and variable costs of the production and service activities (enterprises) of a farm. It includes the profit of the enterprise and, regarding the farm as a whole, covers permanent costs (that are not divided among activities). Gross Margin can be calculated on a unit of an activity e.g. 1 hectare wheat or 1 cow (annual average number) or on the whole activity (specific GM multiplied by activity size). Adding up GMs of all activities we arrive at the total Gross Margin of the farm.

Gross production value: performance of the production, service and related supplementary activities of a farm (sales, activated own performance, other incomes).

Labour costs: the sum of personal income and the common charges (social and health insurance etc.).

Net investment: increment of invested assets taking into account deprecations and write-offs (gross investment – write-off – depreciation).

Net liabilities: active debts, securities and liquid assets deducted from the amount of liabilities.

Net worth: the own source of the assets of a farm, which the founders and owners made available on a permanent basis. (The remaining part of the assets are financed from foreign sources, and are therefore burdened with liabilities (instalments of loans, interests etc.). The consolidated profit is a part of the net worth.

Permanent costs: costs independent from the size of a given activity (e.g. annual depreciation of a 100-cow barn does not change whether there are 50 or 100 cows). Permanents costs are usually connected to the permanent assets of a farm (land, buildings, machinery and permanent staff). For a number of decisions we do not need to divide permanent costs according to types of activities/farming (this division is not easy in the case of sources collectively used by different types of activities or sources that are not connected directly to either activity), it is enough to count them in one aggregate amount at the level of the farm.

Personal income: the sum of wages, benefits in kind and other wage-like payments.

Standard Gross Margin (SGM): normative gross margin (applied to usual weather and production conditions) determined on a unit of agricultural production activity (1 hectare, 1 livestock unit). If we multiply the specific standard gross margin of the production activity with the size of the given activity we get the total SGM value of a farm. Therefore, it is used to define the economic size of a farm. The ratio of the SGM value of a certain activity (enterprise) in the total SGM of a farm characterises the type of the farm.

Types of farming: are defined in terms of the relative importance of the different enterprises[1] on a farm. Relative importance is measured quantitatively as a proportion of each enterprise's SGM to the farms' total SGM. In this report on Hungarian farm the types are the following:

- **Arable farms** (cereals, sugar beets, potatoes etc.): SGMs of arable crops ≥ 2/3;
- **Animal production I.** (grazing livestock: cows, cattle for fattening, sheep, equidae): SGMs of grazing livestock ≥ 2/3;
- **Animal production II.** (granivores: pigs, poultry etc.): SGMs of granivores ≥ 2/3;

[1] The English term "enterprise" in the sense of the EU farm typology means a specific part of the total farming activity of a farm, i.e. a certain crop or animal category.

- **Permanent crops** (vineyards, fruits, hop): SGMs of permanent crops ≥ 2/3%;
- **Vegetable production**: SGMs of vegetables, ornamental plants and nurseries ≥ 2/3;
- **Mixed farms**: other farms that cannot be classified into the previous types.

Variable costs: costs that change with the size of an activity (e.g. seeds, fertilisers, fuels, lubricants). These costs, contrary to permanent cost, do not exist if the activity is suspended for a time.

Summary

In the survey carried out in the framework of the Farm Accountancy Data Network in 2002 we analysed the data of 1401 private farms and 492 economic organisations. In the aggregate the sample represented more than 90 thousand farms. The collected data mostly come from business records and primarily allow analysis of the income situation of different farm groups. Data were collected only from commodity producing farms that are over a predetermined threshold size[2].

In summary we can state that in 2002 both farm groups, i.e. private farms and economic organisations (associations with or without legal entity and cooperatives) achieved a modest profit, but **profitability of farming was still far behind the other, also capital intensive sectors of the national economy**: While in 2002 return on net worth in farms participating in the FADN survey was 5.4 percent this index was 17.9 percent in mining, 19.9 percent in the construction industry and 13.2 percent in the processing industry.[3] **As compared to the previous year, profitability calculated at current prices reduced in private farms (17 percent decrease), while economic organisations achieved a minimal increase (2 percent).**

In 2002 the average size of farms was 48.3 hectares, of which 44.9 hectares was agricultural area. The ratio of leased land was 67 percent. An average farm employed 1.9 AWUs. The size of livestock per farm was 16.0 LUs. On the average of one farm, the value of assets was 21.3 million HUF; from this 62.2 percent were fixed assets and 37.8 percent were current assets.

Gross production value per one hectare agricultural area was 356.2 thousand HUF, while production costs per hectare amounted to 332.3 thousand HUF. This way 24.0 thousand HUF/ha income of farming activity was realised. Profit before taxes was 18.4 thousand HUF/ha, income after taxes was 16.7 thousand HUF/ha. Return on total output amounted to 5.2 percent, while return on assets has hit 5.6 percent.

Examining the results we found that **in private farms specific income of farming activity per hectare was approximately 3 percent higher** than in economic organisations, but this is only due to the low wages and related common charges accounted in private farms. If, for the sake of comparability, we correct these differences, **economic organisations show a relatively more advantageous income position**.

Despite the modest profitability, investing activity definitely strengthened as compared to the previous years. Nevertheless, only 25 percent of gross investments

[2] The low limit was determined in 2 European Size Units (ESUs) (see the definition of ESU on page 8). In Hungary the 2 ESU, i.e. 2400 euro, i.e. 600000 HUF standard gross margin can be generated by producing wheat on 13 hectares or sugar-beet on 4.5 hectares or keeping 4 milk-cows or fattening 30 pigs (in the average of the years 1997-1999).

[3] Source: Quick report of the Hungarian Tax Authority, July 2003.

brought factual accrual of assets because the majority of realised investments compensated depreciation or replaced written-off or sold assets.

As a result of the government measures (debt consolidation program), indebtedness of farms only grew to a small extent, although the volume of investments increased. At the same time, economic organisations are still seriously indebted (in 2002 the ratio of net worth did not come up to 59 percent). As a consequence, in economic organisations payable interests on loans almost halved the income of farming activity. Although indebtedness of private farms slightly increased but, similarly to the previous years, it is still not considerable (this is indicated by the 87 percent ratio of net worth).

In 2002 the weather and market conditions (drought, frost damages, low producer prices for pig) harmed the profitability of vegetable and ornamental plant producers the least, consequently, they take the lead (although their advantage is not as significant as in other years). Cattle and sheep producers (animal production I.) come second, followed practically with equal results by crop producers and pig and poultry farmers (animal production II.) in the third and fourth place, respectively. Mixed farms come next, while fruit and wine growers had the worst results.

It is notable that **average values cover significant dispersion in both farm groups**. (It is shown for example by the fact that 60.3 percent of private farms were profitable, 39.7 percent unprofitable, while 67.0 percent of economic organisations were profitable and 33.0 percent unprofitable.) Based on the results, it seems obvious that larger farm-size, better supply of assets and reasonable structure of farming lead to better incomes, but farming expertise and professionalism may also play an important role.

We have analysed the data for 2002 in international (EU) comparison as well. In Hungary the **gross production value** per one hectare is 59 percent of the EU average. However, even despite the forced economisation, the value of **current productive consumption** reaches 86 percent of the community average. While in the European Union 1.83 Euro production value falls on 1 Euro current productive consumption, this ratio is only 1.26 Euro in Hungary. This results both from the high input prices and the weak efficiency of the utilisation of inputs.

Deducting current productive consumption and depreciation and the balance of current subsidies and taxes from the gross production value, we arrive at the **net added value. It is 241 Euro/ha in Hungary as opposed to the EU average of 868 Euro/ha.** Not in the last place, the discrepancy between the net added values is due to the **different levels of support** after taxes. In Hungary this is only 33 percent of the EU average.

Introduction

Development of the Farm Accountancy Data Network

For the **analysis of the incomes and economic activities of farms** and this way for the **support of the Common Agricultural Policy,** in 1965 the European Commission established a representative information system, named Farm Accountancy Data Network (FADN) (Hungarian abbreviation: MSzIH). Member states are obliged to provide data for the system. In the fifteen member states of the Union, data are collected from app. 60 000 thousand farms, partly to fulfil the obligation towards the Commission and partly for internal purposes. Sample farms represent a statistical population of 4 million farms. The farms, selected according to well-defined criteria, join the system on a voluntary basis and provide accountancy data. These data are treated in an anonymous way, strictly observing the prescriptions on data protection and are only used for statistical purposes. Although, according to the situation and special needs of the countries, the data collection systems of the individual member states differ from the compulsory Community standard to some extent, all of them are able to deliver data of uniform content and structure to the central FADN data base after certain conversions.

After the change of political and economic system, insufficient data were available for a long time about the status and changes of the financial, property and income situation of the newly established or transformed agricultural businesses, although besides policy makers, several other organisations (schools, research institutes, extension services, interest groups, financial institutions etc.) also required these data. This unfavourable situation had (and still has) to be changed inevitably, not only for internal reasons but also for the sake of EU accession.

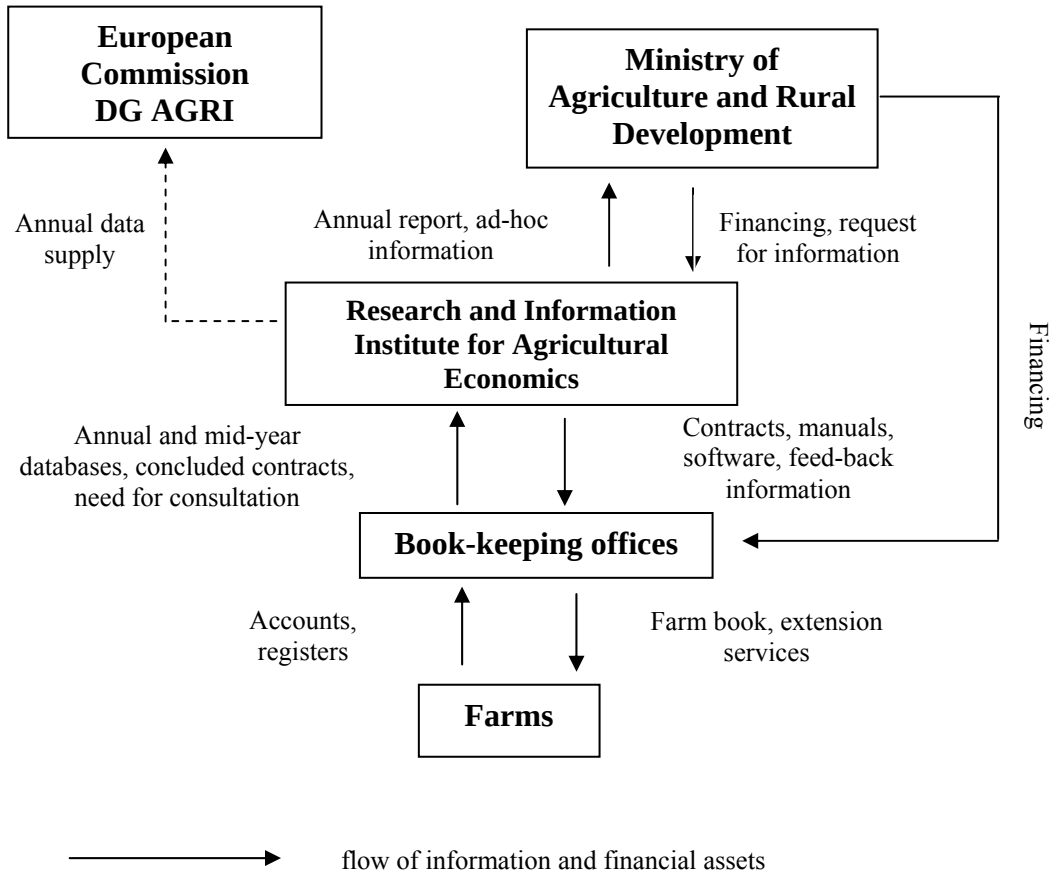
In order to tackle the problem, in 1995 the Hungarian **Ministry of Agriculture** commissioned the **Research and Information Institute for Agricultural Economics (AKII)** to develop the Hungarian subsystem of FADN. In 1996 AKII set to the practical implementation, involving more and more farms in the data collection. Later the Act CXIV of 1997 on agricultural development ordered the establishment of the network, providing the legal base for the system. In the framework of international projects (TRANSFORM, PHARE) several experts assisted the resolution of methodological and organisation problems. As a metaphrase of the German Testbetrieb System the name "**Tesztüzemi rendszer**" got widespread for the Hungarian system.

The system, which was gradually extended, reaching **national coverage by 2001**, presently receives data from 1900 agricultural businesses. The processed results are published annually by AKII in Hungarian and English. The main findings of the analysis are integrated into the minister's report to Parliament on the situation of agriculture. In its Regular Reports on Hungary the European Commission has also evaluated the development of the Hungarian Farm Accountancy Data Network in a positive way.

The organisational structure of the system is shown in figure 1.

Figure 1.

Organisational structure of the Hungarian FADN



The data collection system includes the following organisations:

- European Commission's Agriculture Directorate-General, which manages the activities in the framework of the uniform FADN, prepares general reports on the Union as a whole and uses data for other purposes (e.g. modelling);
- Ministry of Agriculture and Rural Development (MARD), which takes up general supervision and financing;
- AKII, which is responsible for continuous operation, central data procession, publishing and dissemination of information, development of the system and maintaining contacts with the European Union;
- Specially selected book-keeping offices maintain direct contacts with farms, and (in the majority of private farms) do the book-keeping and compile the annual reports. At present 9 book-keeping offices selected in an open competition belong to the system. These offices are also responsible for exploring and recruiting data supplying farms on the basis of the selection plan elaborated by AKII.

- Farms are the objects of observation. Selection is made according to four criteria (legal form, farm size, production type and geographic situation). The survey only included farms above 2 European Size Units.

Information flow between the different layers of the structure are characterised by the following:

The **Ministry** of Agriculture and Rural Development asks **AKII** for data and provides financial sources (MARD finances the activity of the book-keeping offices as well). At the same time, AKII prepares the annual report and supplies information on ad-hoc demands.

In their comprehensive relationship **AKII** provides **book-keeping offices** with contracts, professional documentation, instructions and software, while the offices provide farm data for AKII and require regular information and counselling.

Book-keeping offices provide **farms** with feed-back information on their own activity and let them have the average figures of farms with similar capacities, which they can use for horizontal and vertical comparison. In addition, in exchange for the cooperation, book-keeping offices offer extension and other services for farms (preparation of tax return sheets and applications, organisation of field tours for data suppliers etc.). On the other hand, farmers let the offices have their invoices and business records.

Officially, detailed data at farm level will have to be first transmitted to the European Commission's Agriculture Directorate-General on the year 2004 (in September 2005 at the latest). However, summarised data have already been provided on the year 2001, which the Commission published on their website (The 2002 Agricultural Year, http://europa.eu.int/comm/agriculture/agrista/2002/table_en/agri.htm).

In sample farms data are collected in the following fields:

- identification and basic data of farms,
- geographic data,
- labour-force,
- business balance,
- profit and loss account,
- changes in fixed assets,
- value of livestock and stocks,
- maturity of active and passive debts,
- changes in livestock and stocks,
- subsidies applied for the reported year,
- arable area, average yields and prices, internal consumption,

- calculation of costs and receivables.

Description of the report

Our FADN report has been published since 1998. Our present report includes the processed data of 1893 farms that supplied information suitable for evaluation. (Due to incorrect data supply or because of their non-typical character we did not process the data of some farms.)

The main part of the report starts with a short analysis. The evaluations mostly build on the comparison of the results of the different farm categories in 2002, but at some places we also refer to the experience of earlier years. Tables inserted in the text have been compiled on the basis of **tables in the annexes**, but in some cases we also used parts of the total database not indicated there.

When compiling the tables in the annexes, our objective was to publish data that can be used for many purposes, even for further calculations, in a standardised form.

Data in the annexes cover farms as a whole, while data about the different activities will be published in a separate publication. **All output data were calculated as a weighted average of the individual groups of sample farms.** For weighting purposes we used the data of the General Agricultural Census of year 2000. The weight shows how many farms in the similar group of the population a farm in the sample represents. This way the result does not only characterise the farms in the sample group but also the statistical population they represent.

When interpreting the data, it is important to keep in mind that the Farm Accountancy Data Network only takes into consideration the in the broader sense agricultural activity of farms (agricultural basic activity, processing of agricultural products, forestry, fishery, agricultural services, rural tourism), but does not count with the industrial, commercial and non-agricultural service activities.

Data of the individual farm groups were indicated according to the following categories:

- assets,
- production structure,
- yields, sales prices,
- asset and liability statement,
- investments,
- income statement,
- profitability, liquidity.

If, in exceptional cases, the number of farms in a certain group was less than five, data relevant for the group were not indicated (for data protection reasons).

A methodological feature of data processing is the usage of **Standard Gross Margin (SGM)** to express the economic size of farms according to EU rules (see definition on page 9). These values were calculated from the books of FADN sample farms on 1997-98-99[4]. (In order to strengthen normativeness, values were sometimes compared to time series from other sources and corrections were carried out if it was necessary.)

In the following we describe the income situation of private farms and economic organisations separately, and then we compare the two categories. The analysis is closed with an international comparison restricted to income data.

[4] Since SGM is nothing else than a tool for the classification of farms, up-to-dateness is not priority. Too frequent recalculations of SGM would result in that certain farms shift into other categories without actual changes in farming. In order to avoid this, SGM values are revised in every five year.

1. Incomes of private farms

The survey covers 1 401 private farms[5]. This **sample** represents private farms over 2 European Size Units registered in the General Agricultural Census in 2000, the total number of which was approximately 87 thousand. The examined 87 thousand farms cultivated **71 percent of the area** utilised by all private farms[6] and produced **59 percent of the total Standard Gross Margin**. Consequently, the survey only covered larger, explicitly commodity producing farms. When evaluating the results it has to be taken into account that farms of this size are generally more profitable than the smaller ones.

Average size of farms was near 23.6 hectares (32 percent of which was leased), average **labour size was 1.0 AWU**[7] and the average **value of assets was 11.1 million HUF** (including the value of own land as well). Similarly to the previous years, **the data of the survey reveal** that **in the aggregate** the activities of private farms yielded **only a modest profit**. (table 1.)

Profit before taxes was 22 800 HUF per one hectare utilised agricultural area, 511 000 HUF per annual work unit and 506 000 HUF per farm. **Profit before taxes per one unit of agricultural area was approximately 17 percent lower than in 2001.** Taking alternative investment possibilities into account, profitability is still considered very low: 8.3 HUF profit before taxes per 100 HUF production value, 5.0 percent return on total assets and 5.3 percent profitability of net worth. From the total sum of profit before taxes and personal incomes 949 thousand HUF fell on one Annual Work Unit (return on labour).

Although the value of the above indicators remains below the expectable level even in comparison with the alternative investment possibilities, the fact that in reality **incomes include a significant part of expected personal incomes**, implies an even worse situation. The accounted labour cost was only 432 000 HUF per year per work unit (slightly more than 36 000 HUF per month). This way in the average of farms gross income covered personal consumption rather than the improvement of production[8].

[5] In this category belong: "**croppers**", (which are small-scale farmers but not private entrepreneurs, possess a special licence for agricultural production and are eligible for certain relief from taxation. A large number of „croppers" are over 65 and only pursue subsidiary farming. They are not interested in quality production and thus renounced subsidies and rejected registration; **private entrepreneurs**; and "**consolidated farms**",(which are farms that, due to taxation and subsidy reasons, are formally divided into several farms but actually operate as one).

[6] According to the General Agricultural Census the total number of private farms is almost 960 thousand.

[7] AWU: Annual Work Unit. See definition on page 8.

[8] It is partly the withdrawal of money for personal consumption that causes the significant difference between profits before taxes and consolidated profits. (table 1.)

Table 1.

Main details of the income of private farms, profitability indices (100 HUF / ha UAA)

	1000 HUF/ha UAA	Dispersion %
Gross production value	273.30	100.00
from this: net sales	231.29	84.63
from this: arable crops	74.99	27.44
animal production	108.21	39.59
vegetables, fruits, wine and grapes	27.75	10.15
other incomes	34.56	12.65
activated own performance	7.45	2.73
Total costs of activities	248.96	100.00
from this: cost of raw materials	134.09	53.86
from this: purchased seeds, propagation materials	13.18	5.29
fertilisers	11.51	4.62
crop protection	9.65	3.88
purchase of livestock	19.67	7.90
purchase of feed	44.28	17.79
fuel and lubricants	17.32	6.96
labour costs	24.24	9.74
from this: wages	19.27	7.74
depreciation	27.44	11.02
Income of farming activity	24.34	
Profit before taxes	22.80	
Profit before taxes thousand HUF/farm	505.99	
Consolidated profit of the year	5.59	
Return on total output %	8.34	
Return on assets %	5.02	
Return on net worth %	5.27	
Return on labour thousand HUF/AWU	949.18	

In 2002, private farms in the surveyed sample made considerable (compared to previous years) investments, in the average value of 1340 thousand HUF[9]/ha. However, this only brought an accrual of fixed assets of 349 thousand HUF (net investment), because the **bigger part of investments was used to compensate annual depreciation and to replace the written-off or sold assets**. 43 percent of gross investments were executed in the category of machinery, equipment and

[9] This volume of investment was considerably larger than what the ordinary own sources (consolidated profit and the depreciation) covered, which means that the involvement of foreign sources grew to a great extent (this is shown by that the internal financing of investments indicator reduced in comparison to the year 2001).

vehicles, 27 percent in real estates, while the accrual of breeding animals was 9 percent. The proportion of unfinished investments was 20 percent.

Although **indebtedness of private farms grew to some extent,** similarly to the previous years, **it remained very low**. This is indicated by the 86 percent ratio of net worth and the **negative index of net liabilities** (except large farms), which means that the amount of liquid assets and active debts exceeds the amount of total liabilities. Nevertheless, these alone favourable figures do not indicate that the financial standing of private farms is stable. It is rather the consequence of the deficiency of own sources required for taking out loans and also of other difficulties (high interest rates, complicated administration, strong requirement of multifold securities) that farmers are compelled to adjust their activity to their self-financing capacity. This is mainly characteristic to smaller farms. Although the smaller extent of indebtedness reduces business risks, it also hinders development and the creation of farms with profitable size and assets in larger numbers.

Examining profitability of private farms according to economic size,[10] we can detect a clear dominance of large farms. (table 2.)

Large farms cultivated 112.0 hectares agricultural area and had 41.6 livestock units. Small farms, at the same time, had 14.3 hectares and 3.6 livestock units. Examining the structure of production, it is notable that in small farms labour intensive activities (horticultural, grapes, fruits) had a larger ratio in the revenue (13.7 percent) than in large farms (7.8 percent). Large farms, on the other hand, achieved a 9.7 percent higher revenue per hectare than smaller farms due to their more intensive crop production and animal breeding activities (mainly pigs). (They also receive 1.6 times more agricultural support per hectare, which is indicated among other incomes.) At the same time, however, production costs per hectare of large farms were hardly above those of small farms. As a result, large private farms had 2.7 times higher farm incomes per hectare than small farms (figure 2.). In small farms the return on net worth was only 30 percent of that of large farms and the consolidated profit (labour costs deducted prom the income after taxes) was negative.

[10] A private farm is small if total farm SGM does not exceed 2 million HUF,
medium size if SGM is between 2 million and 5 million HUF,
large if SGM is over 5 million HUF.

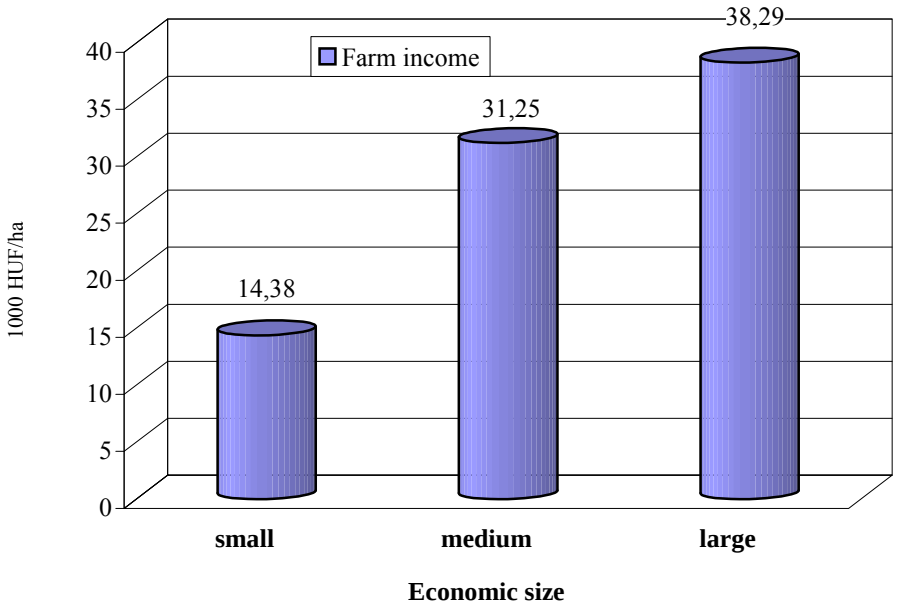
Table 2.

Profitability of different size groups (SGM) of private farms

	Unit	Size categories (1000 HUF SGM)		
		Small ≤2000	**medium** >2000 – 5000	**large** >5000
Number of farms in the sample	–	406	500	495
Number of farms in the population	–	68163	13324	3861
Utilised agricultural area	ha/farm	14.28	36.63	112.04
Livestock unit	pc/farm	3.63	9.60	41.58
Gross production value	1000 HUF/ha	268.71	263.67	294.49
Costs of activities	1000 HUF/ha	254.33	232.43	255.54
Income of farming activities	1000 HUF/ha	14.38	31.25	38.29
Profit before taxes	1000 HUF/ha	13.89	29.94	34.79
Profit before taxes	1000 HUF/farm	198.41	1096.73	3897.63
Return on total output	%	5.17	11.35	11.81
Return on assets	%	2.81	6.90	8.74
Return on net worth	%	2.89	7.55	9.55
Return on labour	1000 HUF/AWU	602.12	1401.73	2135.00

Figure 2.

Connection between farm size and profitability in private farms



To put it simply, the **advantage of large farms is mostly due to their more effective cost management**: due to their large size they are able to utilise labour and assets more effectively and they have to purchase less services (because they can do

a large part of machine work themselves, relatively cheaply). This way their specific costs are more favourable. Results of medium size farms are between the extreme values of the two other size groups but are somewhat closer to the results of large farms.

There is also a notable difference between farms of different size groups as regards their development capacities and thus viabilities: gross investment per hectare in large farms was twice as large as in small farms (for this large farms used three times as much investment support per hectare as the small ones). In small farms the value of net investments was even negative. This means that while large private farms were able to renew their assets, and their investments actually served development and less the replacement of the obsolete assets, small farms were not even able to simply replace their assets. As a result of their more dynamic development, the volume of outstanding total debts per hectare of large farms is much higher than that of small farms. (The ratio of the specific values of long term liabilities is 3.6:1). All in all, indebtedness of large private farms is not alarming.

We have also examined the incomes of private farms according to their **type of farming** (most characteristic farming activity). (table 3.) Based on the return on net worth, which can be regarded as a key indicator, in 2002 vegetable and ornamental plant growers had the best results among private farms (although their advantage was not as significant as in earlier years). Cattle and sheep producers (animal production I.) come second, followed practically with equal results by crop producers and pig and poultry farmers (animal production II.) in the third and fourth place, respectively. Mixed farms come next, while fruit and wine growers had the worst results.

When analysing the income situation of private farms we must not forget that the average values cover **significant dispersion**. According to our calculations 60.3 percent of farms had positive (or zero) consolidated results, and 39.7 percent had negative results. On the average, profitable farms had a consolidated profit of 774 thousand HUF, while the unprofitable ones had a consolidated loss of 879 thousand HUF. It is interesting, however, that only 56.7 percent of small farms were profitable while this ratio is over 79 percent among large farms. (figure 3.)

Figure 3.

The proportion of profitable and unprofitable private farms according to size categories
(based on their consolidated profit)

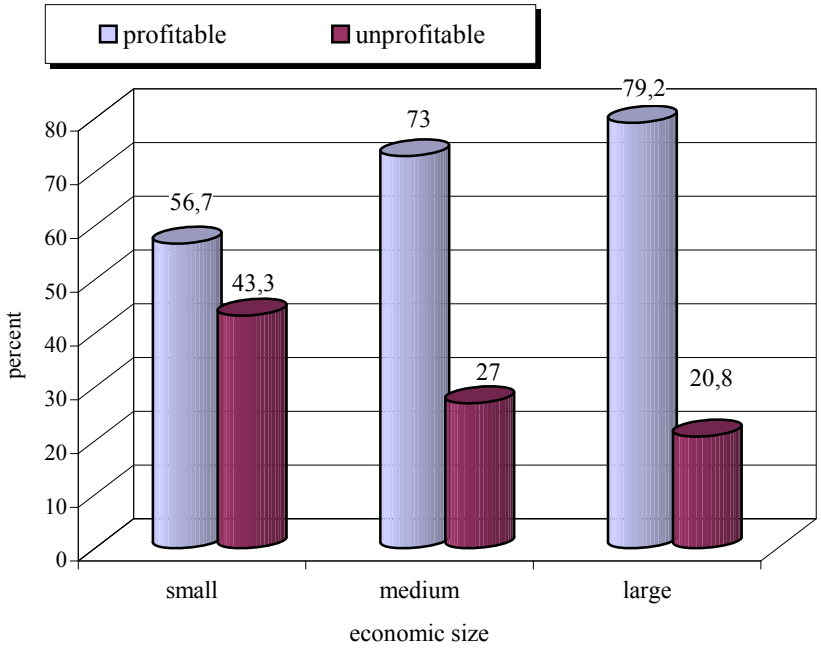


Table 3.

Profitability of different types of farming

	Unit	Types of farming					
		Arable farms	**Animal production I.**	**Animal production II.**	**Permanent crops**	**Vegetable**	**Mixed**
Number of farms in the sample	–	692	101	130	98	29	351
Number of farms in the population	–	29904	7674	6657	6672	2287	32154
Gross production value	1000 HUF/ha	164.48	209.77	3076.78	412.38	1398.31	247.25
Costs of activities	1000 HUF/ha	143.21	182.69	2913.20	396.46	1205.34	230.74
Income from activities	1000 HUF/ha	21.28	27.08	163.58	15.92	192.98	16.51
Profit before taxes	1000 HUF/ha	19.98	27.54	142.19	15.09	191.34	15.23
Profit before taxes	1000 HUF/farm	680.35	563.17	827.64	171.33	1260.74	279.35
Return on total output	%	12.15	13.13	4.62	3.66	13.68	6.16
Return on assets	%	6.27	6.37	6.13	1.31	9.04	3.57
Return on net worth	%	6.71	7.17	6.55	1.22	9.81	3.62
Return on labour	1000 HUF/AWU	1391.39	821.11	1143.34	637.64	1224.17	656.93

The best 25 percent of private farms[11] realised a profit before taxes of 91.5 thousand HUF per one hectare agricultural area, while the weakest 25 percent of farms made a loss of -46.4 thousand HUF per hectare (table 4.).

Table 4.

Result of the best and worst 25 percent of private farms

	Unit	Best 25 percent	Worst 25 percent	All farms
Number of farms in the sample	–	350	351	1401
Number of farms in the population	–	4246	26554	85348
Standard Gross Margin	1000 HUF/farm	7408.44	1621.36	1831.83
Agricultural area	ha/farm	75.35	23.64	22.20
Assets	1000 HUF/ha UAA	541.27	493.43	500.05
Animal stock	LUs./100 ha UAA	33.15	27.03	28.31
Wheat yield	t/ha	3.91	2.97	3.46
Milk yield	l/cow	5386.29	3821.60	4455.96
Gross production value	1000 HUF/ha UAA	361.06	188.20	273.30
Net investments	1000 HUF/ha UAA	62.48	11.35	15.73
Profit before taxes	1000 HUF/ha UAA	91.45	-46.35	22.80
Profit before taxes	1000 HUF/farm	6890.92	-1095.91	505.99
Consolidated profit	1000 HUF/ha UAA	49.16	-46.64	5.59
Cash-flow	1000 HUF/farm	5508.09	-322.46	733.05
Return on net worth	%	21.05	-11.00	5.27

The exaggerated dispersion of incomes cannot be neglected, because farms in different economic situation need differentiated agricultural policy approach. On the other hand, this large dispersion can be interpreted in a way that **still a lot can be done for the levelling of the standard of farming**. Since skills and professional knowledge of farmers have a greater and greater role in profitability, attention should be paid to their training and the extension services.

[11] Classification was done by quartering the population based on the profit before taxes per farm and in the following we only examined the two extreme quarters.

2. Incomes of economic organisations

In 2002 492 economic organisations (associations with or without legal entity and cooperatives) provided data for the FADN survey. The sample represents a population of 4411 farms, i.e. approximately 70 percent of the total number of economic organisations registered in the General Agricultural Census, which, however, produce 99 percent of the total Standard Gross Margin and utilise 99 percent of the total land of the sector.

The **average size of agricultural area** utilised by the examined economic organisations **was 527 hectares**, almost all (97 percent) of which was leased. The average **value of assets was 218.3 million**, i.e. 450.4 thousand HUF per hectare. 19.3 AWUs were employed per farm.

While economic organisations created 429.7 thousand HUF per hectare gross production value, costs amounted to 406.1 thousand HUF per hectare, i.e. the farm income was 23.6 thousand HUF per hectare, and this is **a 2 percent increase compared to the previous year** (table 5.). If from the farm income we deduct the losses (large credit costs) on financial transactions (11.0 thousand HUF per hectare!) and add the balance of incomes and expenses irrelevant to the usual farm activities (1.8 thousands HUF/ha), the **profit before taxes** we get this way is **14.5 thousand HUF per hectare**. Both the income after taxes and the consolidated profit were positive. (Consolidated profit was 11.9 thousand HUF per hectare and 5782 thousand HUF per farm.) **Profit before taxes was 3.4 HUF per 100 HUF production value and 5.5 HUF per 100 HUF net worth.** The return on labour, which is the sum of profit before taxes and personal incomes per annual work unit, was 1596 thousand HUF/AWU.

In 2001 **the ratio of net worth did not exceed 59 percent** in economic organisations, but it was still enough to cover all fixed assets (end even some current assets), (net worth in percentage of fix assets: 108 percent). Liabilities amounted to 85.6 million HUF on the average, 68.2 percent of which were short-term loans. Net liabilities (active debts and financial assets deducted) amounted to 44.1 million HUF. The dynamic indebtedness index reveals that the cash-flow (the sum of consolidated profit and depreciation) would allow the pay-off of net liabilities in 2,5 years. Liquidity indices are acceptable: 71 percent of short-term liabilities are covered by liquid assets (active debts and financial assets); and the amount of total current assets is 1.7 times higher than the amount of short-term liabilities. The overall picture of financial independence and stability of money flow in economic organisations is not alarming, however, it is worrying that farms are compelled to use a great part of their free sources to repay debts, while they urgently need money for development.

Table 5.

Main details of the income of economic organisations, profitability indices (100 HUF / ha UAA)

	Value	Dispersion %
Gross production value	429,73	100,00
from this: net sales	342,55	79,71
from this: arable crops	80,16	18,65
animal production	144,79	33,69
vegetables, fruits, wine and grapes	11,24	2,62
agricultural services	35,35	8,23
other incomes	57,53	13,39
activated own performance	29,66	6,90
Total costs of activities	406,08	100,00
from this: cost of raw materials	177,65	43,75
from this: purchased seeds, propagation materials	11,51	2,83
fertilisers	14,32	3,53
crop protection	14,64	3,61
purchase of livestock	7,92	1,95
purchase of feed	49,51	12,19
fuel and lubricants	23,43	5,77
labour costs	66,01	16,26
from this: wages	43,03	10,60
depreciation	24,26	5,97
Income of farming activity	23,65	
Profit on financial transactions	–10,98	
Profit before taxes	14,48	
Consolidated profit of the year	11,93	
Consolidated profit of the year per farm, thousand HUF/farm	5781,87	
Return on total output %	3,37	
Return on assets %	6,19	
Return on net worth %	5,48	
Return on labour, thousand HUF/AWU	1595,78	

On the average of all economic organisations **the value of gross investments per 1 hectare agricultural land is 76.3 thousand HUF, the value of net investments is 18.6 thousand HUF, both indices show improvement compared to the previous year**. The index of net investments show that although in nominal value farms invested more than the decrease of the value of their fixed assets (depreciation, write-offs or sales), but because of the increase in the price of invested goods in the previous years this surplus **was inevitably not enough to replace assets at usage value**. The greatest part (27.5 percent) of gross investments was

executed in the category of machinery, 17.4 percent in real estates. Investments the increase of breeding stock were also significant, 21.6 percent. The proportion of unfinished investments was 27.0 percent.

As concerns profitability according to economic size expressed in SGM,[12] we found that small farms, with an average land of 81.3 hectares and 19.1 livestock units, could stand the competition with the larger farms. Gross production value was significantly higher in small farms than in the two other size groups. (This is due to the higher ratio of vine, fruit, vegetable and poultry production and the extensive servicing activity.) On the other hand, the costs per hectare are also high in the small size category and these farms suffer the highest specific losses on financial transactions. Thus, although the specific farm income is the highest in small economic organisations, as regards profit on ordinary activities per hectare and the other income indices, large farms take the lead. Since the intensity of land use and the ratio of activities pursuable without land are different in the three size categories, the per-hectare indices do not provide proper ground for comparison. Nevertheless, if we look at the index of return on net worth, it becomes obvious that **larger farm size produces better results** (table 6.)

Dispersion of individual results is very significant also in economic organisations. According to consolidated results, exactly two thirds of economic organisations were profitable (or had zero profit), with an average consolidated profit of 13.6 million HUF. One third of the farms were unprofitable suffering an average loss of 9.8 million HUF. Nevertheless, there are profitable and unprofitable farms in all size groups. The ratio of profitable farms, in the order of increasing sizes: 61, 70 and 82 percent.

The best 25 percent of economic organisations realised a profit before taxes of 37.5 thousand HUF per hectare, while the weakest 25 percent made a loss of -32.3 thousand HUF.

[12] Based on their *economic farm size* out of the 492 economic organisations

159 farms are small:	SGM does not exceed 20 million HUF,
155 are medium size:	SGM is between 20 million and 80 million HUF,
178 are large:	SGM is over 80 million HUF.

The number of farms in the individual size groups: 2563, 1063, 785, respectively.

Table 6.

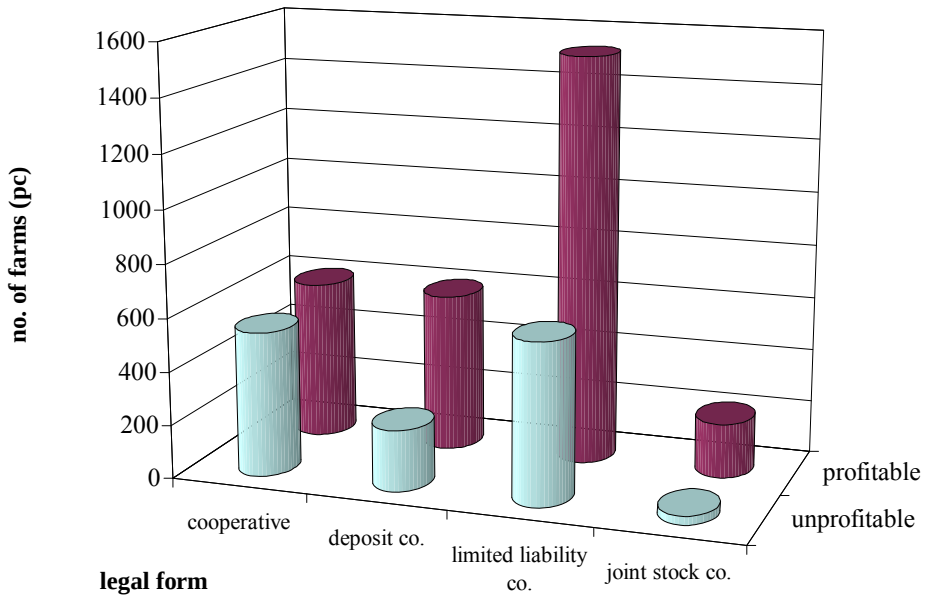
Profitability of different size groups (SGM) of economic organisations

	Unit	Size categories (1000 HUF SGM)		
		small ≤20000	**medium** >20000 – 80000	**large** >80000
No. of farms in the sample	–	159	155	178
No. of farms in the population	–	2563	1063	785
Utilised agricultural area	ha/farm	78.03	523.90	1759.89
Gross production value	1000 HUF/ha	547.88	374.71	434.82
Costs of activities	1000 HUF/ha	519.44	361.14	407.80
Income of farming activities	1000 HUF/ha	28.44	13.56	27.02
Income from financial transactions	1000 HUF/ha	-17.18	-10.31	-10.35
Consolidated profit	1000 HUF/ha	5.12	3.72	16.22
Consolidated profit	1000HUF/farm	399.52	1948.91	28545.42
Return on total output	%	1.67	1.53	4.32
Return on assets	%	3.35	4.96	7.45
Return on net worth	%	1.80	3.02	7.25
Return on labour	1000 HUF/AWU	1104.57	1234.18	1810.95

The ratio of profitable and unprofitable farms differ according to legal form of the businesses: the **ratio of unprofitable farms is the highest among cooperatives**. (figure 4.)

Figure 4.

Profitable and unprofitable farms according to legal business forms (based on consolidated profit)



3. Comparison of the incomes of private farms and economic organisations

Incomes of private farms and economic organisations cannot be **directly** compared. The main reason is that private farms do not account justified wages for the work of family members as labour costs (in 2001 labour costs in private farms were 24.2 thousand HUF per hectare, while in economic organisations they amounted to 64.6 thousand HUF). Therefore, a part of personal incomes of family members is indicated in the profit of private farms. Comparability can only be ensured by a correctional transaction, when similar wages are calculated for utilised labour units in both sectors. It means that instead of the labour costs (wages, other wage-like payments and social and health insurance) accounted in private farms we calculated with the same labour costs as in the case of economic organisations (1651.5 thousand HUF/AWU/year).

As a result of the correction, labour costs of private farms grew by 2.8 times, which resulted in a 17.5 percent increase in the operational costs. Evidently, the correction reduced the incomes: all indicators of income became negative.

After all this, the two sectors can be compared according to the last two columns in table 7.

In economic organisations production value per one hectare agricultural area was 57.2 percent and production costs were 38.8 percent higher than in private farms.

Although the difference between production values per hectare in the two sectors is partly due to the difference between the specific incomes from traditional agricultural activities (economic organisations had a 7 percent higher income from plant production and 34 percent higher income from animal production while the per hectare incomes of private farms from fruit, vegetable, grape and wine production were 2.5 times higher), the real reason is that in economic organisations specific **incomes of the so-called other agricultural activities** (agricultural services, trade in agricultural products etc.) **were several times higher than in private farms**. Finally, (if we disregard the amount of investment subsidies, which cannot be accounted as income), economic organisations received twice as much agricultural support per hectare, which is accounted among other incomes, than private farms.[13]

[13] The reason of the difference is that economic organisations get higher amounts of interest rate subsidy, even if counted per hectare, than private farms, which are neither as able nor as ready to take out loans.

Table 7.

Comparative indices of private farms and joint businesses

	Unit	Private farms		Economic organisations
		Without correction	With correction	
Gross production value	1000 HUF/ha UAA	273.30	273.30	429.73
Net sales	1000 HUF/ha UAA	231.29	231.29	342.55
of which: arable crops	%	74.99	74.99	80.16
animal breeding	%	108.21	108.21	144.79
fruits, vegetables, grapes, wine	%	27.75	27.75	11.24
other agricultural activities	%	20.34	20.34	106.36
Other incomes	1000 HUF/ha UAA	34.56	34.56	57.53
Activated own performance	1000 HUF/ha UAA	7.45	7.45	29.66
Total costs of activities	1000 HUF/ha UAA	248.96	**292.60**	406.08
of which: material costs	1000 HUF/ha UAA	175.07	175.07	286.61
labour costs	1000 HUF/ha UAA	24.24	**67.88**	66.01
costs of used services	1000 HUF/ha UAA	31.16	31.16	55.42
so-called other expenses	1000 HUF/ha UAA	23.19	23.19	29.86
Income of farming activity	1000 HUF/ha UAA	24.34	**-19.30**	23.65
Profit before taxes	1000 HUF/ha UAA	22.80	**-20.84**	14.48
Consolidated profit	1000 HUF/ha UAA	5.59	**-38.05**	11.93
Return on total output	%	8.34	**-2.74**	3.37
Return on assets	%	5.02	**-1.04**	6.19
Return on net worth	%	5.27	**-1.73**	5.48
Return on labour	1000 HUF/AWU	949.18	**659.06**	1595.78
Cash-flow	1000 HUF/ha UAA	33.02	**-10.62**	36.19

Note: corrected items are set in bold.

As regards the differences in the cost structure **(after the correction calculation), labour costs per hectare are 3 percent higher in private farms than in economic organisations**[14]. Although it is true that the specific value of **used services** (including e.g. land rent, insurance fees and banking costs) and the so-called **other expenses** (which include provisions for expected liabilities and charges, taxes and fees payable to the local governments and the national budget) burdens

[14] This phenomenon shows that in private farms more working time is spent on one unit of agricultural area than in economic organisations. The reason is that small size farms deal with labour intensive cultures in a larger ratio.

economic organisations to a significantly larger extent than private farms, but the correction of labour costs erodes the (apparent before the correction) advantage of private farms and turns their profits into losses. The aggregate result of these effects is that in private farms the (corrected) farm income per hectare was -19300 HUF, the consolidated profit (i.e. loss) was –38050 HUF, while in economic organisations these values were 23650 HUF and 11930 HUF, respectively. Consequently, economic organisations are in a better position even considering the other indices of profitability.

From the comparison of the incomes of private farms and economic organisations we can draw the conclusion that regarding their profitability, **private farms are only competitive if they are able (and willing) to keep their labour costs and the consumption of family members low**. This conclusion mainly applies to the farms in the low size category, which make out approximately four fifth of the examined private farms (total farm SGM does not exceed 2 million HUF; average agricultural area is 14.3 hectares). If we leave these farms out of the corrected comparison, the remaining **larger private farms can stand the competition with economic organisations, what is more, some of their indices are even better.**

4. Aggregate data of private farms and economic organisations

The appropriate assessing (weighting) methods make it possible to determine the characteristics of the total population of farms above the 2 ESU size limit, i.e. of 91 thousand farms altogether. This way we are not going to gain many more new data in addition to the earlier ones, but for certain goals these aggregate data may be the most suitable (see table of *Total population of farms* in the Annexes). Therefore, the information below refers to the total commodity producing sector of Hungarian agriculture.

Table 8.

Main data of the profit and loss statement of farms, income indices (1000 HUF/ha UAA)

	Value	Dispersion %
Gross production value	356.24	100.00
from this: net sales	290.28	81.48
from this: arable crops	77.73	21.82
animal production	127.61	35.82
vegetables, fruits, wine and grapes	19.00	5.33
agricultural services	21.81	6.12
other incomes	46.74	13.12
activated own performance	19.22	5.40
Total costs of activities	332.27	100.00
from this: cost of raw materials	157.19	47.31
from this: purchased seeds, propagation materials	12.30	3.70
fertilisers	13.00	3.91
crop protection	12.30	3.70
purchase of livestock	13.44	4.04
purchase of feed	47.06	14.16
fuel and lubricants	20.56	6.19
labour costs	46.39	13.96
from this: wages	31.87	9.59
depreciation	25.76	7.75
Income of farming activity	23.97	
Profit on financial transactions	–6.55	
Profit before taxes	18.39	
Consolidated profit of the year	8.95	
Consolidated profit of the year per farm, thousand HUF/farm	402.03	
Return on total output %	5.16	
Return on assets %	5.61	
Return on net worth %	5.36	
Return on labour, thousand HUF/AWU	1272.81	

In 2002, average area of a farm was 48.3 hectares, from which 44.9 hectares were agricultural area. The ratio of leased land was 67 percent. (table 8.)

On the average, 1.9 AWUs were employed per farm. The average size of livestock was 16.0 livestock units. The average value of assets was 21.3 million HUF per farm, 62.2 percent of which was fixed assets and 37.8 percent was current assets. Gross production value per one hectare utilised agricultural area was 356.2 thousand HUF, while production costs per hectare amounted to 332.3 thousand HUF. This way the income of farming activity was 24.0 thousand HUF per hectare. Profit before taxes was as high as 18.4 thousand HUF, while income after taxes was 16.7 thousand HUF. Return on total output was 5.2 percent, while the return on assets was 5.6 percent and the return on net worth was 5.4 percent.

5. Results of Hungarian FADN farms in international comparison

Today the results achieved during the harmonisation of the Hungarian Farm Accountancy Data Network with EU requirements allow the comparison of farms in Hungary and in the EU member states in an identical system and according to similar indices. Table 9. includes the comparative indices of Hungary and some EU member states that are comparable to Hungary as regards the importance of agriculture in the national economy or the farm structure.

Table 9.

Results in international comparison [1]

Countries / Indices	France	Italy	Austria	Portugal	EU average	Hungary[2]
	EUR/ha					
Gross production value	1747,3	2406,9	2093,6	872,3	1837,4	1087,6
– Current productive consumption	1016,9	1007,3	1040,5	452,4	1006,1	865,4
– Depreciation	279,0	365,8	491,2	149,6	261,1	79,5
+ Balance of current subsidies and taxes	266,5	382,9	613,4	155,2	297,4	98,2
= Net added value	717,9	1416,7	1175,2	425,4	867,5	240,9
– Costs of foreign sources [3],	311,1	224,2	161,1	111,2	291,7	195,5
from this: wages	123,4	152,0	44,7	83,3	139,3	141,9
+ Balance of investment subsidies and taxes	15,6	8,6	-47,1	23,5	-0,3	18,9
= Farm income [4]	422,5	1201,0	967,0	337,7	575,5	64,4
Gross farm income [5]	545,8	1353,1	1011,7	421,0	714,7	206,3

Source: own calculations based on the FADN Public Database (http://europa.eu.int/comm/agriculture/rica),

1. Data of EU countries refer to the year of 2000.
2. 1 EUR = 242.97 HUF (average exchange rate for 2002)
3. Labour costs, social and health insurance, costs of land and building lease, paid interests of foreign labour
4. Since the costs of using family labour are not deducted (this category cannot even be defined here) nor are the costs of land and capital in the possession of the family, this index is only suitable with reservations for the comparison or aggregate examination of family farms and economic organisations.
5. For partial correction of the "errors" of the previous index, here the social and health insurance costs of employees are not deducted. (index not used in EU FADN).

In Hungary **gross production value** per hectare is 59 percent of the EU average, but 25 percent higher than the Portuguese value. At the same time, even

despite the forced economisation, the value of **current productive consumption** per hectare reaches 86 percent of the community average and is 91 percent higher than the Portuguese index. While in the European Union 1.83 Euro production value falls on 1 Euro current productive consumption, this ratio is only 1.26 Euro in Hungary. This results both from the high input prices and the weak efficiency of the utilisation of inputs.

Deducting current productive consumption and depreciation (Hungarian average per hectare is only 30 percent of the EU average) and the balance of current supports and taxes from the gross production value, we arrive at the **net added value. It is 241 Euro/ha in Hungary as opposed to the EU average of 868 Euro/ha.**

One reason of the discrepancy between the net added values is the **different levels of support** after taxes. In Hungary this is only 33 percent of the EU average. If the amount of supports after taxes reached the EU average, the Hungarian net added value would exceed the Portuguese value by 3 percent.

Because of the discrepancies in property laws and labour laws, the index of farm income is not suitable for the comparison of Hungary and the EU countries. (The possibly surprising fact that Hungarian wages per hectare are at the same level as the EU average is mostly due to that in Hungary economic organisations only employ foreign labour and their wages increase the value of the index. In the EU countries, however, family labour plays a dominant role, which does not generate labour costs.) The difficulty of comparison is also revealed by that the index shows a larger than real fallback: the EU average is 9 times higher than the Hungarian one. More realistic is the index of gross farm income, which is “only” three and a half times higher in the European Union.

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[15] If the number of farms in a certain group is less than five, data relevant for the group are not indicated.