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THE HUNGARIAN AGRICULTURE AND ITS OUTPUT IN THE 20th CENTURY

IVÁN OROS¹

SUMMARY

The author reviews the up and downs of Hungarian agriculture in the context of the overall history of Hungary. After a brief description of the structure of Hungarian agriculture and the socio-economic conditions surrounding it at the beginning of the 20th century, he demonstrates with statistical data the impact of the two World Wars on its productive forces and its output, respectively. He also deals in details with the three crucial politically motivated structural changes influencing Hungarian agriculture. The land reform of 1945, the collectivisation in the 50s and 60s, and the reversal of these in the 90s. Time series on the output of both crop and animal products, mostly covering the whole 20th century, are also presented.

KEYWORDS: Agricultural production; Socio-economic changes.

Hungary is one of the small countries of Europe. The altitude above sea-level of 84 percent of the area is below 200 meters, 14 percent between 200 and 400 meters and only 2 percent is above 400 meters. The natural conditions, the climate, the location, the water supply and the soil conditions provide the opportunity for a level of agricultural production which is above the European average. There were periods in the history of the past 100 years of agriculture when it was the leading sector of the national economy and it provided a level of food supply for the population well above that prevailing in the majority of European countries, and a considerable surplus was sold on export markets. The share of agricultural area in Hungary is the second among the European countries after Denmark. In 1999 the area under agricultural cultivation was nearly 6.2 million hectares, that is, two thirds of the total area. Over 5 million hectares were under field- and horticultural crops. The forest area was nearly 1.8 million hectares (19 percent).

As far as the per capita agricultural area is concerned, Hungary belongs to the group of European countries with the highest rate. It is equal to 61 hectares per 100 heads, compared with the European average of 45 hectares per 100 heads, and ranks fourth after Denmark, Sweden and France by the amount of arable land per head of agricultural population.

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At the beginning of 1999 the population of Hungary was 10.1 million. It has been decreasing from year to year since 1980, though the density (109 inhabitants per square kilometre) is higher than the European average. The rate of people engaged in agriculture compared to the total economically active population exceeded the European average until 1995 and after that it fell below the European average.

SOCIO-ECONOMIC IMPACTS ON AGRICULTURE AND ITS PRODUCTION

At the beginning of the 20th century the holding structure of Hungarian agriculture was dominated by semi-feudal large estates. More than a third of the agricultural area suitable for agricultural cultivation belonged to 4000 landlords who held more than 500 hectares. In comparison with the Western European countries, the development of Hungarian industry and other sectors of economy were retarded, therefore agriculture remained the leading sector of national economy. In contrast to the 8 percent share in England, in Hungary 62 percent of the national income was generated by agriculture in 1913. At that time the level of production increased owing to the consolidated market conditions, though capital investment in agriculture remained insufficient. Despite the favourable natural conditions, productivity of Hungarian agriculture was lower than the European average in the first half of the century. Technical progress was particularly noticeable in the capacity increase of the food industry. The progress was faster in the crop production sector.

The first World War broke the slow progress. During the war agriculture in Europe was shattered due to the damages and increasing lack of labour, production sank below the pre-war level. During the last years of war, agricultural output of Hungary dropped back to half of the pre-war output.

Among the governmental measures to counteract fallback, the agrarian reform of 1920 (involving 660 thousand hectares) was of paramount importance. A total population of 400 thousand smallholders and agricultural labourers received only a small piece of land, and building sites were given to 200 thousand families. Many farmers could hardly pay back the governmental loan, therefore their land was soon put up at auction sales. All in all, the agrarian reform in fact failed to change the semi-feudal estate structure.

The world-wide depression of 1933 hit worst the countries with growing grain, such as Hungary. During the five years of the crisis, prices of crops fell by more than 50 percent. Unmarketable stocks increased to an unprecedented level, debts and unemployment in the agricultural sector skyrocketed. Yields remained at the level typical for those prevailing 20 to 30 years before, yield rates varied depending on weather conditions. State intervention and later war profiteering globally facilitated recovery. Between the two World Wars the ratio of agricultural wage-earners in proportion to the total number of wage-earners in the national economy reduced approximately to the same extent as the share of agriculture was in the total output. World War II brought severe devastation due to the armed battles on the territory of Hungary. The state of affairs was particularly desperate in agriculture, where total losses regardig means of production amounted to 53 percent, or to the double of the agricultural national income in 1938. In the '40s the level of production and food consumption also dropped dramatically, and the share of agricul-

ture in the national income fell below 50 percent. The government established at the end of the war the objective of radically changing land tenure. The parliamentary parties agreed on the dissolution of estates of landlords, churches, businesses and farmers who possessed more than 50 hectares. More than 3.2 million hectares were affected by the agrarian reform, of which 2.9 million hectares were arable land. A total of 642 thousand people received allotments, on the average approximately 3 hectares. The minimum allotment was 0.7 hectares, the maximum 8.6 hectares. Agricultural labourers and landless agricultural day-labourers living on large estates received the largest allotments, nearly 5 hectares each. Smallholders and small farmers received only complementary allotments. Simultaneously with the allotments to individuals, on about 800 thousand hectares state forestries and on about 300 thousand hectares common pastures were established. Size structure of holdings as found by the census of agriculture in 1935 and that after the land reform is shown by Table 1.

Table 1

Distribution of holdings and land by size
(percent)

Holding size	1935			1949		
	Number	Total area	Arable land	Number	Total area	Arable land
Smallholdings	72.4	10.1	12.3	45.7	15.0	19.2
Small farms	26.8	41.8	53.1	54.1	55.9	74.4
Medium-size farms	0.7	18.2	14.5	0.2	4.2	5.6
Large estates	0.1	29.9	20.1	0.0	24.9	0.8
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

The farmers who received new allotments and the other small farmers recovered the war damages in a very short time. The impetus of progress and enthusiasm, however, faltered in the 1950s. Production dropped and in just a couple of years more than 250 thousand farmers stopped cultivation. By the end of 1952 the size of state land reserves amounted to half a million hectares. These lands were re-cultivated after a shorter or longer period of time. Between 1949 and 1952 the area used by co-operative farms trebled, and the area of state farms increased by 40 percent.

Insufficient mechanisation and soil fertilisation were the symptoms of this period. Yield rates dropped, earlier producers who quit agriculture and the farmers hit by the forced state procurement appeared as buyers of agricultural commodities on the market. Between 1949 and 1955 the volume of food imports increased severalfold.

In just three years, between 1959 and 1961, the remaining private farms were integrated into co-operative farms. From the initial 1 million, their number dropped to a mere 200 thousand, their average size fell from 3.5 hectares to 2 hectares.

With the switch to large-scale farming, the majority of assets which suited small-scale farming became useless, and huge state subsidies were required for capital investment. The net effect was an unprecedented growth in the volume of production, and Hungarian agriculture achieved development rates remarkable even by international measures. Over several years the average annual rate of growth exceeded 4 per-

cent. After 1970, the rate of growth and share of animal husbandry exceeded those of crop production. Especially, the growth of livestock feeding on grains was extraordinary. These achievements were mainly attributable to the evolving purposive co-operation of fifteen hundred large-scale agricultural plants and one and a half million small-scale agricultural producers.

As a result of the impacts of the world economy and the domestic fiscal pressure, the impetus of this development faltered by the 1980s. A symptom of perplexity of the large-scale plants was the expansion into non-core businesses, such as repair of agricultural machinery, processing, transportation, trade and hostelry. This process started in the '70s, and later the non-agricultural business lines were spun off into separate plants. In the second half of the '80s non-core businesses became significant generators of profit. After 1990 non-core activities in agriculture gradually dropped off.

After 1989 the revindication of holdings began in the framework of a so-called compensation scheme, and the process of land privatisation accelerated. A part of the cultivable area of large-scale agricultural plants was devoted for compensation. The land fund thus created was used to allot holdings to eligible persons against compensation coupons. Bidding for land was open for the members of co-operative farms involved and local dwellers. The process of compensation continued until the mid '90s, and by mid 1994 approximately half a million persons received a total of 2 million hectares through auction.

Part of the co-operative farms was liquidated, another part was converted into smaller co-operatives, and some of them carried on the business on land leased from the owners under the new ownership conditions. The majority of state farms were incorporated, the rest was dissolved.

For changing the ownership of agriculture, the financial and structural conditions of production were anything but satisfactory. Apart from the protracted process of allotment, the dropping value of compensation coupons and the excessive price increase of industrial inputs, the drought in several consecutive years also contributed to the aggravation of production conditions. The fundamental problem was the failure of attempt to find a solvent demand for agricultural goods on export markets. Eastern markets had solvency problems, the western ones were saturated, and occasionally the quality, packaging, etc. of Hungarian goods was deterrent for prospective clients. The privatisation and fragmentation of foreign trade also aggravated the situation.

Due to the described factors, the willingness and enthusiasm of newly allotted farmers did not equal those of farmers in 1945. Other problems, such as the age and health conditions of new land owners and the lack of funding contributed to the failure of creating a thriving farming, therefore the landowners rather sold or leased out their parcel. In 1994 the area of leased land was almost 1 million hectares. Thus, land ownership and land use have become considerably disconnected.

Land use and ownership

In the first half of the century land ownership and land use mostly overlapped, though starting from the 1950s the leasehold of land somewhat restructured the picture. After the institution of co-operative farmship, titles of use and sanctioned areas changed on a number of occasions.

Table 2

Distribution of the agricultural area by type of use
(percent)

Year	Share in the total agricultural area		
	State farms	Co-operatives	Small-scale producers
1960	12.1	48.6	32.1
1965	13.0	66.9	16.8
1970	12.8	67.6	17.1
1975	12.6	70.7	14.3
1980	12.7	71.4	13.2
1985	12.4	71.8	13.2
1989	12.0	70.3	14.9
1990	11.9	67.6	17.6

In the '50s the regulations relating to land use targeted mainly the consolidation of socialist ownership. By the nationalisation of land, its trading terminated. The co-operative farms could increment area from two key sources. Over one quarter of the increment originated from agricultural reserve land, and the members contributed the rest. A land-rent depending on the size and quality of land contributed was paid to the members of co-operative farms. Their general meeting determined each year the invariably increasing amount of land-rent payable to members.

Small farms were cultivated mainly by people as a subsidiary activity, complementing their main occupation. Small farms involved in animal husbandry received or bought forage from the large-scale estates. A peculiar distribution of work evolved between small-scale producers and large-scale plants in land use. Small farms specialised mainly on labour-intensive production such as horticulture, whilst the large-scale plants specialised on crop requiring high level of mechanisation, such as grains.

Due to the ban on the trade of land, it had no realistic value since 1945, and the lack of a well-developed market affected farming in a number of ways. Land did not represent a measurable value in national assets. In the trade of land among large-scale farms unrealistic and fictitious prices were used, and land was mostly swapped or offset in the books through a fictitious transaction. Apart from the building sites, private parcels were allowed to be offered to the large-scale farms only. Suppressed land prices finally resulted in squandering, the quality and agricultural potential of soil was disregarded in the construction of non-agricultural facilities. Land prices are still too low, and typically amount to a mere fraction of the same in the EU-countries.

Changes in the agricultural area by main land use branches

The amount of the cultivable agricultural area changed in various directions in the last century. In a degree exceeding the reasonable level agricultural areas were used typically for the construction of infrastructural facilities in certain periods of time. This process and the intensive forestation at the expense of cultivable areas has significantly reduced agricultural areas.

Table 3

Area by the main land use branches
(thousand hectares)

Year	Cultivable land	Agricultural land	Arable land	Forests	Grass land	Kitchen gardens, orchards, vineyards
1895	8678	7439	5103	1191	2066	270
1913	8698	7573	5578	1069	1683	312
1930	8702	7566	5587	1095	1669	321
1940	8698	7553	5617	1099	1603	331
1950	8573	7376	5518	1166	1475	383
1960	8494	7141	5310	1306	1438	393
1970	8402	6875	5046	1471	1281	575
1980	8300	6627	4735	1610	1281	598
1990	8236	6473	4713	1695	1294	598
1999	8035	6186	4708	1775	1186	331

CROP PRODUCTION

The climatic conditions of Hungary allow the production of an extremely large variety of plants. The conditions and the market demand, however, justified the development of field crop production in the first place. The bulk of horticultural production comes mainly from three horticultural branches: the vegetables, fruits and the grapes. A large number of household garden are producing mixed crop contributes to the supply of vegetables and fruits for the Hungarian population. Grass land is mainly concentrated in areas of poor conditions. The diminishing ruminant livestock also contributed to the reduction of its area. Most of the remaining area is under forests, and to a much lesser extent under reed-plots and fish-ponds.

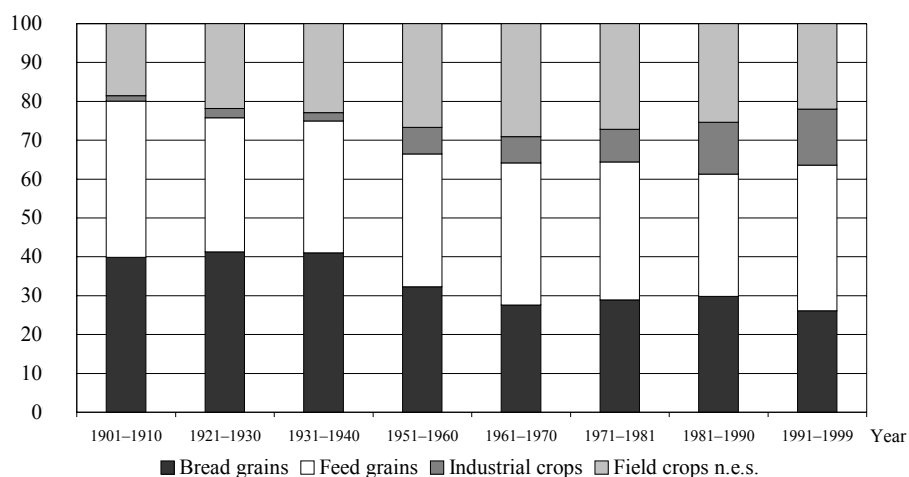
Production of field crops

At the beginning of the 20th century the choice of crops produced was rather narrow. The number of varieties has considerably extended in the last hundred years. More than three quarters of arable land was under cereals in the 1990s, and only some forage crops and potatoes were cultivated on a relatively significant area. Later on, the area under bread grains reduced, specifically the area under cereals dropped to the two thirds at the expense of the increasing sown area of maize. The most intensive was the incursion of industrial plants and vegetables the sown area of which increased to severalfold. In the past 60 years the land starchy plants have always been the most popular crop, and there was hardly any progress in the field production of fodder. Due to the frequent droughts in summer, the yield of grass land has been a limiting factor for breeding of ruminants (see Figure 1.).

Wheat is the field crop occupying the largest sown area in Hungary. At the beginning of the century wheat was grown on nearly 40 percent of the arable land. Before World War I, one third of the crop was exported in the form of grain or flour. After the peace treaty protective duties were lifted, and the succession states of the Monarchy stopped buying Hungarian wheat. As a consequence, wheat price on the domestic

market was very low in the 1920s, and then in the years of global depression it dropped another 50 percent. The price of wheat achieved the 1913 level only by the end of the 1930s.

Figure 1. Area sown by crop categories
(percent)

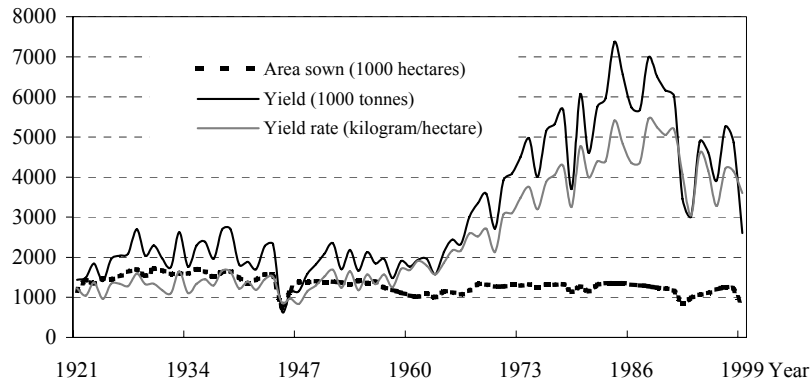


The utilization of wheat crop changed in the 20th century. Earlier most of the crop was milled for human consumption, but in the last 30 years it has been more commonly used as fodder. From 1934–1938 to 1998 the per capita consumption of wheat products significantly reduced, from 145 kg to 80 kg.

The gluten content of wheat improved over the past century. The unfavourable assortment of wheat of the 1920s called for the introduction of new, modern varieties such as Bánkúti, Székács, Fleischmann. With the advent of machine harvesting the tall varieties with a delicate straw were ousted by Italian, Soviet, Yugoslav, and later, ameliorated Hungarian varieties in the 1960s, including some forage wheat varieties, too. The majority of wheat varieties produced in Hungary are of winter type; the 20-30 thousand hectares of spring varieties has been reduced to a very small area. Durum wheat has been produced since the 1980s on a relatively small area. Despite the reduction of area sown the output of wheat increased to severalfold, as a consequence of improving yield rates. The largest amounts were harvested in the 1980s (see Figure 2.).

At the beginning of the century most of the spring barley was used in the brewing industry, and the output of winter barley used as a forage was rather low. In the 1960s the sown area of winter barley started to exceed that of the spring barley, because the yield rate of the former was considerably higher. The sown area reached its peak in the 1960s, sometimes even exceeding half million hectare. In the following years, however, it almost halved, and in the 1990s it started to grow again. In the first half of the century yield rate varied to a great extent between low limits, while after 1960 it doubled. Yield rate stabilised in the 1990s at a slightly lower level. From the 1920s to the 1990s output of barley increased from 5-600 thousand tonnes to 1.3 million tonnes.

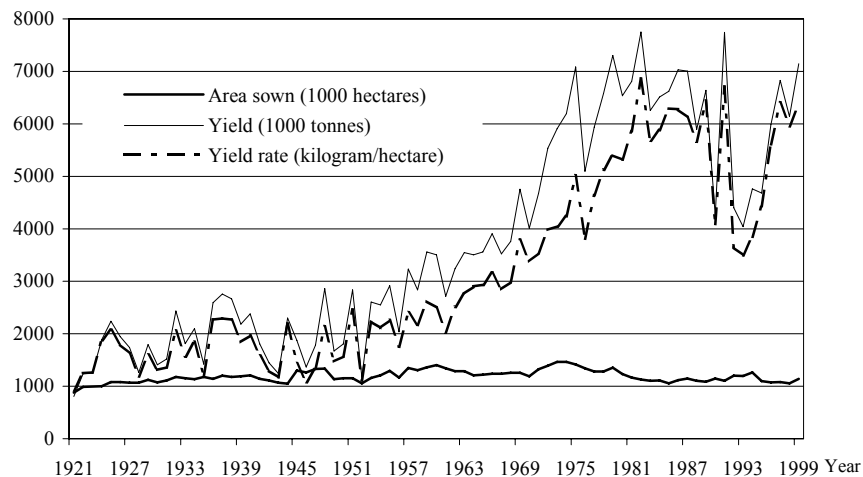
Figure 2. Wheat production



With the reduction of horse breeding the sown area of oats reduced to one fifth between 1920 and 1980. In the 1990s this trend stopped and the sown area was stabilised at a level above 50 thousand hectares. During 80 years its yield rate doubled. The total output was around 130 thousand tonnes in the last decade.

Along with wheat, maize has been the most important crop playing an important role in the feeding of all animal breeds, particularly poultry and pigs. Only a very small amount is used for human consumption. Apart from the grain, maize is also grown on large areas as a fresh fodder. At the beginning of the 20th century the sown area of maize was second to that of wheat, since then in some years it even exceeded the latter. The output has been prone to wide variations. After 1960 the yield per hectare exceeded 2.5 tonnes, and in the 1980s 6 tonnes. This notable growth is explained by the spreading of hybrid varieties of maize. Since 1975 maize output exceeded 7 million tonnes in several years. The volume of maize export has remained below that of wheat.

Figure 3. Maize production



The production of sugar beet provides the raw material for the sugar industry, with a rather large quantity of by-product used as a valuable forage and soil ameliorating material. In the first half of the 20th century the new sugar mills significantly contributed to the increase of sugar beet production. Later on crop output stabilised at a relatively even level. Due to the reducing demand in the recently restructured sugar industry, sugar beet production has also diminished.

Table 4

Changes in rye, barley, sunflower and potatoe production

Average of years	Harvested area (1000 hectares)	Total production (1000 tonnes)	Average yield (kilogram/hectare)	Harvested area (1000 hectares)	Total production (1000 tonnes)	Average yield (kilogram/hectare)
		Rye			Barley	
1921–1930	660.2	712.2	1 080	444.2	543.9	1 220
1931–1940	634.1	711.8	1 120	464.4	628.0	1 350
1941–1950	546.6	593.3	1 070	461.4	576.0	1 260
1951–1960	432.6	506.8	1 170	458.5	784.8	1 710
1961–1970	214.8	239.2	1 120	453.3	904.2	2 000
1971–1980	96.8	153.0	1 580	258.8	792.6	3 070
1981–1990	84.8	184.2	2 070	270.0	1 059.6	3 920
1991–1999	69.8	137.4	1 968	386.5	1 286.3	3 328
		Sunflower			Potato	
1921–1930	2.2	7.6	170	264.3	1 710.7	6 470
1931–1940	6.1	9.4	570	290.4	1 993.1	6 860
1941–1950	143.8	124.7	870	278.8	1 762.8	6 360
1951–1960	151.5	163.9	1 090	227.6	2 196.4	9 620
1961–1970	100.7	103.2	1 040	189.1	1 696.8	9 150
1971–1980	149.9	221.8	1 410	98.3	1 584.1	12 990
1981–1990	338.0	684.1	2 000	46.2	1 353.8	17 980
1991–1999	455.0	737.5	1 621	56.1	976.8	17 403

In the first half of the century sunflower was mainly grown as an edge crop. Later the production method changed and better varieties were grown. With the changes in the consumption pattern and the severalfold increase of vegetable oil and margarine consumption cash cropping of sunflower started to spread in the 1960s. In the last three decades both the sown area and the crop output multiplied. In 1999 the sown area exceeded half million hectares, thus sunflower ranked number three among field crops by the size of the sown area.

The importance of potato in human nutrition, in industry and as a forage has gradually reduced over the 20th century. In the first half of the 20th century the per capita potato consumption of the population was around 110 kilogram. By the 1990s this figure reduced gradually to 60 kilogram. By the 1990s the amount of crop harvested stabilised at around 1.1 million tonnes, though in the earlier years it was as high as 2 million tonnes.

With the introduction of new potato varieties the crop per hectare increased severalfold, but even so it could not offset the drastic reduction of crop area.

Tobacco is a plant grown on a small area in Hungary. In the earlier years the sown area varied between 15 and 40 thousand hectares, and by the 1990s it dropped below the earlier minimum level to approximately 6000 hectares.

Among the field roughages green maize (as silage) is the most important. As far as cattle breeding is concerned, alfalfa plays an outstanding role. In the past decades yield rate of green corn has generally grown, and that yield rate of alfalfa almost stabilised at a certain level. After the temporary growth of the 1960s, the area under roughage reduced in the past decade. The area and yield of grass land gradually reduced over the century. The best meadows were broken under field cultivation, while part of the pastures were afforested.

Despite the favourable conditions the development of vegetable production started only after the turn of the century. More and more varieties were added to the choice of vegetables. At the beginning vegetable production spread in the suburbs of large towns in market gardens, and only later did production on arable land become typical. In the first half of the 20th century specialised horticultural areas evolved, such as Szeged and Kalocsa for paprika (red pepper), Makó for onions and certain districts of Heves county for water-melon. After World War II vegetable production continued to increase. The area and output of vegetables doubled. State farms and co-operative farms specialised on vegetable varieties suitable for mechanisation such as tomato, string beans, green peas, sweet corn, etc. In the past few years layered vegetable production adopted in the 1960s, dropped.

Fruit production

Except the relatively small number of developed orchards, there was hardly any specialised fruit production at the beginning of the century. The number of fruit trees was rather high up to the end of the 1960s, but the amount of fruits was insufficient and the quality was low. In the first half of the 20th century fruit growing districts specialising first on apricots and later on peaches evolved gradually between the rivers of Danube and Tisza, and also on the hills around Buda. New varieties and state-of-the-art cultivation methods were adopted. Later on the cash cropping of apples developed, using an ever increasing area. After World War II fruit growing renewed at around 1965, when modern fruit varieties were come in, new methods of plant protection and agricultural engineering were used. Many worthless fruit trees were felled and new plantations were established. After 1970 the initial enthusiasm faltered, and no new trees replaced the felled ones. Nonetheless, the crop output increased because of the intensive cultivation method employed in the new plantations and the increased yield of the fruit trees. In the 1990s the amount of crop gradually reduced. In the decades after 1960 the production of berries, such as raspberry, gooseberry, red-currant, blackberry, etc. first increased then a downward trend was observed in the last decade. The amount of fruits produced in the household gardens is quite significant, but it is important primarily in the household consumption and in the supply of local markets.

In the decade around the turn of the century, the historical viticultural districts of Hungary suffered severe damages due to the phylloxera epidemics. Vineyards were re-established with governmental subsidies, therefore the vineyards and the wine production

of Hungary underwent a radical change. New varieties resisting to phylloxera replaced the old ones, but the vineyards on hill tops were not re-established, the new plantations were preferably located on lower hills. At this time large vineyards were planted in the Great Hungarian Plane, particularly between the Danube and Tisza rivers. The area of historical viticultural districts diminished. From the 1910s area of the vineyards was around 200 thousand hectares. After 1960 the old vine plantations were replaced by new ones of modern cultivation method on high cordon. The new vineyards were already of high-yield modern variety. After 1980 the area of vineyards nearly halved. In the 1990s plantations became highly fragmented. The share of table grapes in the annual vintage is less than 10 percent. Most of the grapes harvested is used for wine making.

ANIMAL HUSBANDRY

At the beginning of the 20th century animal husbandry developed together with the progress of farming, urbanisation, increase of the middle-class population and living standards. The domestic demand for meat, animal fat and dairy products was continuously increasing, along with their exports to Austria and the Czech lands under protective duty. This was the time when Hungarian meat and dairy industry matured.

The main objectives of animal husbandry at the turn of the century were the completion of selective breeding, adoption of new breeds and replacement of the domestic races with new ones of higher productivity. State-of-the-art methods of livestock breeding became popular. The 3 to 6 percent increase of livestock was less than modest in comparison with the 37 percent increase of the population from the turn of the century to the beginning of World War II. This is explained by various epidemics causing significant mortality. As a consequence, the Hungarian veterinary service was strengthened.

For the 1920s and 1930s stagnation of livestock, increasing inbreeding and attempts to improve product quality were the most characteristic traits. As a consequence of selective breeding the breeding and fattening time and the age of breeding fitness reduced. During the war boom of the 1940s the livestock also increased. World War II brought severe damages, but the livestock regenerated in a few years time.

From the mid '60s increase in crop production allowed the feeding the livestock far larger than the one before war. The increasing export and domestic consumption contributed to the dynamic growth of livestock and the output of key animal products. First the production of meat increased to the level of the Western European countries. By mid 1960s the pig, poultry and sheep stock doubled in comparison with the pre-war level. Nevertheless, through the adoption of cattle breeds with high milk yield, the cow stock, which hardly exceeded two thirds of the pre-war level provided nearly the double of the amount of milk by the first half of the 1980s than in the 1950s.

In the 1980s the earlier growth of agriculture faltered, and concurrently with this, the increase of livestock stopped too. In 1990 the cattle stock reduced by nearly 20 percent, the cow stock by 15, the sheep stock by 40, the poultry stock by 30 percent, and pig stock stagnated in comparison with 1980. In the 1990s further drastic reduction of stock and production took place, and the stock of some animal breeds dropped below the extremely low post-war level.

Cattle-breeding

Apart from the post World War II and recession periods, from the mid 1980s the cattle stock of Hungary did not change significantly over the past century. The relative stagnation of livestock is shown by the fact that it increased till the outbreak of World War I by 100-150 thousand heads from the two-million level at the turn of the century. Then it was around 1.8 million in the period between the two world wars and due to the war boom again increased to 2.4 million. In 1945 Hungary's cattle stock was 1 million 59 thousand heads, a mere 57 percent of the pre-war level. In the following 30 years the stock of cattle remained around 2 millions, with a very low volatility. The reduction of stock in excess of 10 percent in the 1980s, was followed by a drop after the turn of the millennium, when the stock nearly halved. From 1994 the cattle stock of Hungary is less than 1 million heads.

Table 5

The cattle-stock in Hungary

Year	Cattle, total	Of which cows	Cattle, total	Of which cows	Share of cows, percent
	thousand heads		Index: 1980 = 100.0		
1895	2062	728*	105.2	95.8*	35.3*
1911	2185	890	111.5	117.1	40.7
1938	1872	915	95.5	120.4	48.9
1942	2363	1 011	120.6	133.0	42.8
1950	2222	1 063	113.4	139.9	47.8
1960	1971	879	100.6	115.7	44.6
1970	1933	738	98.6	97.1	38.2
1980	1960	760	100.0	100.0	38.8
1990	1637	639	83.5	84.1	39.0
1999	857	399	43.7	52.5	46.6

* Including heifers of at least 3 years age.

After the integration of private farms into co-operatives at the beginning of the 1960s the majority of the cattle stock was bred on large-scale farms. By 1963 state farms and co-operative farms held 53,4 percent of the total cattle stock.

In the 1990s cattle stock of co-operative farms reduced most significantly, and by the end of the decade it fell to the quarter of that in 1986. Nevertheless, co-operatives still hold more than one third of the total stock. Most of the stock was slaughtered (see Table 6.).

At the turn of the century the first significant change of the cattle stock by species took place. The Hungarian piebald cattle of triple use (meat, milk, draught) was a result of cross-breeding at the end of the 19th century of the austerely Hungarian grey breed of high draught power and low milk yield with the Simmenthaler variety imported from Switzerland. In 1869, 92 percent of the stock, and in 1895 nearly two thirds of the stock consisted of the Hungarian grey breed. As a result of the gradual change of the species by 1911 nearly two thirds of the stock was Hungarian piebald, and in the period between the two world wars their share increased to 80 percent, whilst the share of the Hungarian grey breed dropped to a mere 10 percent.

Table 6

*Cattle stock by types of holdings**

Year	Farming companies and businesses	Co-operative farms	Private holdings	Total
Thousand heads				
1976	273	1074	540	1887
1986	332	1058	335	1725
1992	280	611	268	1159
1994	253	415	242	910
1999	288	268	301	857
Percent				
1976	14.5	56.9	28.6	100.0
1986	19.2	61.3	19.4	100.0
1992	24.2	52.7	23.1	100.0
1994	27.8	45.6	26.6	100.0
1999	33.6	31.3	35.1	100.0

* December figures.

The next significant change by species in cattle breeding began in the 1970s. From the 1960s the need for the draught power of the Hungarian piebald reduced, and after nearly 20 years of stagnation, milk production became one of the critical issues of agricultural policy.

The profitability problems of this branch forced the policy makers and the cattle breeders to replace the Hungarian piebald breed with modern races of high milk yield, and to cross-breed the existing cattle stock with this objective in mind. The Holstein-Friesian race played an important role in the change by species.

Table 7

Distribution of cattle-stock by species
(percent)

Year	Cattle, total	Of which:			
		Hungarian grey	Hungarian Piebald and Simmenthaler	Holstein-Friesian and cross-breeds	Other
1942	100.0	9.4	83.4	—	7.2
1949	100.0	7.8	78.9	—	13.3
1982	100.0	.	32.7	67.3*	.
1987	100.0	.	32.9	53.1	14.0

* Including cattle for slaughter and other breeds.

Output of cattle-breeding varied throughout the century. Beef cattle production dropped by a significant extent. The milk yield of cows showed an increasing tendency and doubled in the last 30 years. In comparison with the first half of the 1970s the milk yield per cow doubled by the end of the 1980s. Due to the reduction of the cow stock, however, the total milk production of the last 10 years has also dropped.

Table 8

Output of animal product of cattle

Year	Beef cattle production (thousand tonnes)	Cow milk production (million litres)	Milk yield per cow * (litre)
1895	–	610	830
1938	141	1525	1586
1950	195	1403	1424
1960	250	1899	2190
1970	324	1807	2420
1980	331	2471	3596
1990	250	2763	4935
1999	96	2011	5311

* Milk sucked out by calves is included.

The recession of milk production was partly due to the reduction of solvent demand and partly to lacking motivation of domestic and foreign owners of the privatised milk industry after the termination of government subsidies.

Beef cattle output diminished mainly because the procurement prices did not keep abreast with the increasing production costs, while beef consumer prices increased to severalfold. As a consequence of low profitability, cattle breeders were counter-motivated in maintaining, let alone increasing cattle stock.

Pig breeding

Pig breeding in Hungary is the dominant branch of domestic animal husbandry. In the 1980s its share was nearly 40 percent of the gross output of animal husbandry. In 1895 the domestic pig stock (converted to the current territory of Hungary) was 3 million 180 thousand heads. By the beginning of the 20th century the increasing demand on meat and animal fat of the dynamically growing population could be satisfied in a short time only by the massive development of the pig stock producing large amounts of meat and fat. The pig stock increased by 5-6 percent annually until the break-out of World War I. Between World War I and World War II the pig stock varied between 4 and 5 million heads (according to the seasons and cycle).

The significant losses of the pig stock due to World War II were recuperated by 1949, when the stock was equal again to the pre-war level. Neither government measures at the beginning of the 1950s, nor the integration of private farms into large-scale farms in the years between 1959 and 1961 prevented the increase of pig stock.

As a consequence of the boom on the Eastern European markets, and the virtually unlimited demand, the Hungarian pig stock increased to 8 million in the second half of the 1970s, and at the beginning of the 1980s the stock counted at the end of September exceeded 10 million. From 1985 the pig stock was consciously cut down through restrictive government measures. In the 1990s pig breeding evolved into a fragmented branch, exposed to ad-hoc decisions and haphazard impacts.

The number of sows, particularly that of the first farrowing ones, is directly related to the change in the farmers' willingness to breed pigs. When the farmers are motivated, the

number of first farrowing sows increases, and vice versa, the farmers first slaughter the sows and breed no first farrowing sows whenever motivation is low.

Table 9

Pig stock, 1895–1999

Year	Pigs, total	Of which breeding sows	Pigs, total	Of which breeding sows	Breeding sows as percentage of total
	Thousand heads		Index: 1980 = 100.0		
1895	3180	536	37.1	75.7	16.9
1911	3352	560	39.1	79.1	16.7
1935	4674	602	54.5	85.0	12.9
1942	4667	613	54.5	86.6	13.1
1950	5542	638	64.7	90.1	11.5
1960	5356	409	62.5	57.8	7.6
1970	5970	535	69.7	75.6	9.0
1980	8570	708	100.0	100.0	8.3
1990	8457	768	98.7	108.5	9.1
1995	4669	443	54.5	62.6	9.5
1999	5335	379	62.3	53.5	7.1

For the continuity of meat production and sales the most favourable condition would be if the pig stock did not change. Due to economic and biological reasons, the pig stock is subject to seasonal and cyclic changes. Traditionally seasonal changes take place due to the fact that the pig stock achieves the maximum level in the fall. As a consequence of the peak of household slaughters in the winter months, the minimum level of stock is measured at the end of the year. In the 1980s stock reduction in the period between September and the end of December was 1.0-1.3 million, i.e. 10-15 percent.

Apart from the seasonal fluctuation, pig breeding is subject to multi-year market cycles. The prices of pig for slaughter and fodder, and their ratio significantly impact the willingness of pig breeders, particularly those producing for sales in smaller quantities. With increasing profitability many people venture into pig breeding and fattening, and vice versa, at faltering profitability they either reduce the stock or stop breeding at all. Farmers massively respond to price variations with only a minor delay. First the sow stock increases or reduces then the total pig population changes in the similar direction.

The precondition of a stable level of pig stock is the consolidation of the profitability of pig breeding and fattening. Along with the smooth supply of fodder this can be achieved if the pigs offered at the peak of the cycle are purchased from a special intervention fund. Thus one can maintain market demand and prevent prices from dropping. At the lowest point of the cycle, however, pig breeders have the option to buy store pigs at subsidized prices. Thus one can prevent the significant reduction of pig stock from and the sudden increase of market prices. The experience of the 1970s and 1980s has proven the feasibility and pertinence of this method.

At the turn of the century a significant varietal change took place in the composition of Hungarian pig stock by species. The most popular of the heterogeneous stock composed of Bakony, Szalonta, Polish and 'mangalica' breeds was the last one of lard type.

This composition of stock was mainly due to the growth of maize production and the increasing demand on lard and pig fat. The meat varieties of pigs gained ground slowly. Even by 1948, the share of meat pigs remained around 30 percent. The varietal change accelerated only in the 1950s, therefore by 1962 more than 60 percent of the pig stock were meat pigs and a third consisted of crossbred stock. At that time the share of lard pigs fell below 6 percent of the stock.

From the 1970s the hybrid-pigs became popular, primarily in the large-scale farms. The most popular breeds were the KA-HIB and HUNGA-HIB hybrids. In 1972 less than one fifth of the Hungarian pig stock were hybrid pigs, but this share increased to 50 percent in 1991.

Change in composition by species is, of course, an on-going process, but the complete ousting of lard breeds can be considered final. The markets, particularly the export markets demand new races and hybrids with a reduced breeding time and age at the start of breeding, increased accretion at births and lower age at slaughter. With the varietal change the veterinary condition of the pig stock significantly improved. By the mid 1980s the pig stock was practically free of the three most severe pig diseases, which otherwise had been the precondition of selling Hungarian pigs and pork products on the most demanding markets.

In the 90s the production of pigs for slaughter significantly dropped along with the main performance indices of pig breeding, such as mortality and accretion rate.

Table 10

<i>Key indices of pig production</i>				
Year	Pigs for slaughter (thousand tonnes)	Accretion per sow at the beginning of the year (heads)	Mortality (percent)	Pig for slaughter per sow at the begin- ning of the year (kilograms)
1989	1317	19	9.2	1968
1990	1290	21	8.7	2065
1992	947	18	10.3	1963
1994	749	16	9.3	1784
1996	838	20	9.8	1923
1998	710	21	9.3	2056
Index: 1989 = 100.0				
1989	100.0	100.0	100.0	100.0
1990	97.9	110.4	94.6	104.9
1992	71.9	94.2	112.0	99.7
1994	56.9	87.5	101.1	90.7
1996	63.6	103.6	106.5	97.7
1998	53.9	109.9	101.1	104.5

Poultry breeding

At the turn of the century poultry breeding was a neglected branch of animal husbandry. Though Hungarian cuisine never lacked poultry, hardly any statistical informa-

tion on the poultry stock is available from this period of time. Poultry meat, egg and quill production played an important role in the everyday life, as meals and income for generations of the peasant population. (Peasants constituted a determinant stratum of the Hungarian population with a 56 percent share in 1920, and still above half of the population 10 years later.) In 1935 ninety percent of the poultry stock was held by farms below 100 cadastral yokes (58 ha), 71.8 percent, on small farms below 20 cadastral yokes (12 ha). Foreign trade became more and more important. Exported poultry products amounted to 10-12 percent of total Hungarian exports, 18 to 20 percent of agricultural exports and 30-35 percent of exports of the animal husbandry branch. In 1938 one-fifth of the live weight of animals for slaughter was meat poultry.

The majority of hens held under extensive conditions were of the traditional native breed of small size and low egg yield. From the 1930s on the agricultural administration made attempts to ameliorate the native breeds and adopt imported breeds for the utilisation of export possibilities. The destruction brought by World War II was recovered in a rather short time. By 1949 the poultry stock exceeded that of 1938. In the fifties the stock of hens further increased and by 1965 it was nearly the double of the 1938 level. The stock of other types of poultry changed to only a small extent.

Table 11

<i>Poultry stock (adult stock in spring)</i>					
Year	Gallinaceous birds	Geese	Ducks	Turkeys	Total
Million heads					
1938	14.5	1.5	1.4	0.3	17.7
1950	16.1	1.0	0.9	0.2	18.2
1955	20.7	0.9	1.0	0.2	22.8
1960	25.3	0.9	0.7	0.2	27.1
1965	28.2	0.9	1.5	0.3	30.9
Index: 1938 = 100.0					
1938	100.0	100.0	100.0	100.0	100.0
1950	110.3	66.7	75.0	56.6	103.2
1955	141.5	59.7	86.3	72.5	129.5
1960	172.8	60.9	60.1	64.4	153.6
1965	193.3	60.6	128.2	88.8	175.7
Percent					
1938	82.9	8.5	6.8	1.8	100.0
1950	88.5	5.5	5.0	1.0	100.0
1955	90.5	3.9	4.6	1.0	100.0
1960	93.2	3.4	2.7	0.7	100.0
1965	91.2	2.9	5.0	0.9	100.0

A significant contribution to the increase of the stock and production of gallinaceous birds was that the political mismanagement of the fifties had no impact on poultry breeding, and – in contrast to other animal races – breeding was not limited by breeding or slaughtering restrictions. The continuous increase of the stock of gallinaceous birds was

largely due to the fact that this type of breeding fit very well the large-scale production evolving at that time, because the highest return on investment could be achieved specifically in this branch at a relatively smaller initial investment. As a result of new technologies the poultry meat production of Hungary exceeded the pre-war level by 50 percent by the completion of integration of farms into large-scale plants, that is, by year 1965. At the same time hen egg production increased by 250 percent in comparison with 1934–1938. The egg yield per laying hen increased to 85-90 annually, which was 30-35 percent higher than the egg yield before World War II.

By the beginning of the 1970s the large-scale farms adopted industrialised production methods, therefore the composition of poultry stock by breeds changed to a significant extent. The stock of gallinaceous birds and turkeys doubled, the goose stock nearly trebled.

Table 12

<i>Poultry stock (adult stock in December)</i>					
Year	Gallinaceous birds	Geese	Ducks	Turkeys	Total
Thousand heads					
1965	27 627	648	716	218	29 209
1970	32 880	750	1 310	157	35 097
1975	36 549	611	1 275	232	38 667
1980	40 040	778	1 723	223	42 764
1985	34 780	1 077	1 929	590	38 376
1990	28 407	883	1 420	411	31 121
1995	24 961	888	1 134	566	27 549
1999	18 317	745	1 790	674	21 526
Index: 1965 = 100.0					
1970	111.8	71.8	70.2	74.3	108.2
1975	129.5	67.2	82.9	81.7	125.0
1980	141.9	85.6	112.0	78.5	138.2
1985	123.3	118.5	125.4	207.8	124.0
1990	100.7	97.1	92.3	144.7	100.6
1995	88.5	97.7	73.7	199.3	89.0
1999	64.9	82.0	116.4	237.3	69.6
Percent					
1965	91.2	2.9	5.0	0.9	100.0
1970	94.2	2.0	3.2	0.6	100.0
1975	94.5	1.6	3.3	0.6	100.0
1980	93.7	1.8	4.0	0.5	100.0
1985	90.6	2.8	5.0	1.6	100.0
1990	91.3	2.8	4.6	1.3	100.0
1995	90.6	3.2	4.1	2.1	100.0
1999	85.1	3.5	8.3	3.1	100.0

The economic stagnation which started in the mid 1980s, hit the stock of gallinaceous birds only. This stock reduced by 27 percent in the mid '80s was mostly bred by small-scale producers. The duck stock stagnated. On the contrary, the stock of geese held primarily in large-scale plants increased in comparison with 1980 by nearly 90 percent, and

the stock of turkeys by 60 percent. In the period from the beginning of the 1980s to the end of the decade the share of gallinaceous birds in the total poultry stock decreased from 94-95 percent to 90 percent. At the end of 1990 44 percent of the stock of gallinaceous birds including 26 percent of the laying stock, 56 percent of the geese, nearly 90 percent of the turkey stock and less than a quarter of ducks were in the ownership of large-scale agricultural plants.

Meat poultry production stabilized at a relatively high level, egg production and the stock of laying hen reduced and further dropped, though the egg yield per hen has improved.

Table 13

Poultry product output

Year	Meat poultry (thousand tonnes)	Hen eggs (million pieces)	Egg yield per hen (pieces)
1965	200.7	2392.8	92
1970	280.7	3280.0	113
1975	354.9	4001.0	144
1980	464.2	4384.7	138
1985	529.0	4228.0	152
1990	591.8	4679.1	188
1995	510.0	3467.0	191
1999	515.0	3200.0	203
Index: 1965 = 100.0			
1970	139.9	137.1	122.8
1975	176.8	167.2	156.5
1980	231.3	183.2	150.0
1985	263.6	176.7	165.2
1990	294.9	195.5	204.3
1995	254.1	144.9	207.6
1999	289.4	99.8	220.7

Sheep breeding

The prime of Hungarian sheep breeding was in the middle of the 19th century. By the end of the century the overseas breeders flooded the European markets with cheap wool of high quality, and the gradual reduction of the area of pastures also contributed to the significant reduction of sheep stock in Hungary. In 1895 it fell to 3151 thousand heads, which was by 4 million less than the stock in the 1870s. At the turn of the century and even in the years between World War I and World War II sheep were primarily bred for the wool. In the 1930s the government made efforts to increase sheep milk production. By some estimates approximately 50 percent of the ewe stock was milked in the mid 1930s.

Sheep breeding has always been typical for the large-scale farms, that is, manors in the pre-war years. More than 52 percent of the Hungarian sheep stock was bred on estates larger than 1000 cadastral yokes (576 ha). The fact that the sheep stock did not increase at the expected rate in the years between World War I and World War II is ex-

plained primarily by the significant reduction of the pasture areas of large-scale farms, at the expense of the corn-growing areas and the propagation of industry.

During World War II 80 percent of the sheep stock was either slaughtered or driven away. At the end of the war, in May 1945, the remaining stock was less than 330 thousand heads. There was a fast build-up of sheep stock after the war, and by 1950 it was as high as 1049 thousands amounting to 60 percent of the stock in 1942. In the 1970s and 1980s the breeding concentrated mainly on sheep for slaughter, particularly paschal lamb. By the mid 1980s marketing of paschal lamb increased by 50–60 percent in comparison with the past twenty years, while total stock of sheep remained practically the same. Wool production followed the stock variations. In the past 30 years sheep milk production was negligible, only a minor part of ewes was milked.

At the beginning of the 1970s and in mid 1980s two-thirds and more than 80 percent of the increasing output of sheep for slaughter was exported. The share of the key products of animal husbandry and the total exports was not even near to that of the exports of sheep for slaughter. Even before 1990 the total Hungarian exports of sheep for slaughter was sold for convertible currency. The highly valued paschal lambs were exported to the member countries of the European Community, while the heavier sheep for slaughter were mainly exported to the Arab markets.

Table 14

Sheep stock, wool production and output of sheep for slaughter

Year	Sheep stock*		Wool production		Sheep for slaughter	
	thousand heads	Index: 1965=100.0	tonnes	Index: 1965=100.0	thousand tonnes	Index: 1965=100.0
1955	1 690	68.7	–	–	–	–
1960	2 250	91.5	8 175	81.3	19	65.2
1965	2 460	100.0	10 060	100.0	30	100.0
1970	2 316	94.1	9 776	97.2	37	124.3
1975	2 039	82.9	8 393	83.4	35	119.4
1980	3 090	125.6	12 143	120.7	42	142.7
1985	2 465	100.2	11 118	110.5	48	161.9
1990	1 865	75.8	7 337	72.9	35	118.1
1995	1 074	43.7	3 274	32.5	19	63.3
1999	934	38.0	3387	33.7	16	53.3

* December.

After 1990 the sheep stock gradually reduced and by the end of 1999 it was less than one third of the 1965 stock. The majority of sheep stock of earlier large-scale farms is now possessed by the new companies and private breeders. While nearly 70 percent of the sheep stock belonged to the large-scale plants in 1990, their share dropped to one third in a mere four years.

At the beginning of the 1960s the annual production of horse meat amounted to 65 thousand tonnes, equal to approximately 120-130 thousand horses for slaughter. With the consolidation of production in large-scale agricultural plants the horse stock further reduced in Hungary, and at the end of the 1980s it was hardly more than 10 per-

cent of the stock level in the 1950s. Two thirds of this stock was held by small-scale producers.

Nowadays Hungarian agriculture is facing serious difficulties attributable partly to the stagnation which started in the 1980s, and partly to the redistribution of land and other means of production within the framework of privatization of the 1990s. In addition to these internal factors, the insolvency of the markets in the ex-Soviet Union countries added to the deteriorating situation. By its natural endowments Hungarian agriculture could attain again the peaks of its output but, under the prevailing size-structure of holdings, this would require significant investments.

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AGRICULTURAL CENSUSES IN HUNGARY, 1895–2000

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The author gives a historical review of the agricultural censuses in Hungary, where the first census of such type took place in 1895. After then similar surveys were carried out in 1935, 1972, 1981 and 1991. In 2000 the Hungarian Central Statistical Office carried out again a General Agricultural Census. The aim of the 2000 census was to survey the economic structure created after the reprivatization of the landed properties, but the EU and FAO requirements would also be observed at the shaping up of the programme.

KEYWORDS: Agricultural statistics; Censuses.

Regular agricultural statistical data supplying in Hungary dates back to almost two hundred years. In the first half of the last century, however, the agricultural surveys covered only some key indicators of the agricultural production. The surveys conducted from 1828 covered the land sown, agricultural production and number of productive livestock. The first land register, the so-called provisional cadaster – providing the basis for subsequent land area statistics – was introduced in 1853 while the data collection relating to vineyards and vintages was introduced in 1873. These data collections referred only to certain sections of the agriculture.

At the end of the past century a growing demand emerged all over Europe for a more exhaustive and comprehensive survey of the production and state of agriculture. One could even say that the Hungarian statistical service – under the personal direction of the first head of the office *Károly Keleti* – was the first to develop the programme of an agricultural census. The implementation of this census – due to lack of financial resources at the time – took place only after *Károly Keleti*'s death.

Agricultural censuses, 1895–2000

The first detailed agricultural census was ordered by statute VIII passed in 1895. Data were collected partly by enumerators partly by census commissions under the supervision of officials of municipal authorities. The work performed was revised by the municipal boards. The survey covered every owner occupied farm. The questionnaires in

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cluded questions regarding the following: farmers' personal data, number of people working on the farm, cultivated land area by land use categories and by types of ownership, plant cultivation by sown area and yield, livestock by species, age and gender, and number of fruit trees by fruit varieties. The questionnaires contained more than five hundred questions.

Five bulky volumes were published from the census data until 1900. (The fifth volume was a register, called 'Farmer's directory'.) As soon as 20 months after the census day the most important data were published by settlements as well. Taking into account the level of development of the then existing analytical methods, the analysis of the survey results may be considered a masterwork presenting a true picture of the agricultural branch in Hungary of that period. With this census Hungary preceded the statistical offices of several countries in Western Europe.

In the period following the first World War the economic environment and structure of the country, as well as the conditions of agricultural production changed considerably compared to the conditions at the turn of the century. Consequently, the execution of another fact-finding investigation seemed to be justified. The Hungarian Central Statistical Office (HCSO) proposed as early as 1923 that an agricultural survey should be conducted. This proposal was renewed again in 1928. However, the census could not be carried out mainly because of financial difficulties.

The census was accomplished finally in 1935 when it was recommended by the International Institute of Agriculture (IIA) in Rome, the predecessor of FAO.

Aside from some details, the 1935 census, in its general scope, is highly valued to the present day. The survey revealed that in the period between the two censuses i.e. from 1895 to 1935 agriculture developed only on a modest scale in Hungary. The figures gave proof of the underdevelopment of agriculture relating to international standards and it became apparent that besides the deficiency of funds the system of land tenure was the cause of the stagnation. The census in 1935 covered the number and land area of the holdings, data on activity and production of farms, manpower supply, use of agricultural machinery, fruit-tree stock including numerous data on animal husbandry, too. In the frame of the census a special statistics on the holdings was produced focussing on the level of indebtedness of farms. The data were published in five volumes, with the first volume issued 22 months after the survey.

In 1942 there was one more attempt at surveying the state of agriculture, however, the scope of that survey was much more restricted than those of the previous ones. The census covered only the livestock, agricultural machinery and equipment. The census data could not be published because of the war, nevertheless, the most important results were published in the statistical yearbook 1943–1946.

Following the war, in conjunction with the reorganisation of the HCSO the agricultural statistical data collection system has also been restructured. Part of the data supplying became regular, or more frequent than earlier. For example, surveying the agricultural land area as well as the method and the extent of land utilization became regular. Livestock census became more frequent, one livestock census was taken annually at the beginning, later, by introducing sample surveys, the livestock was estimated four times a year. The idea of taking an overall, extensive agricultural census was also proposed. Namely, by taking an appropriate survey, it would have been reasonable to record the

situation after the land reform. However, both the required funds and the statistical organisation were lacking at that time. The population census taken in 1949 covered many agricultural data but it could not substitute an agricultural census.

At the end of the 50s, FAO requested countries to join the world agricultural census of 1960, and in view of that fact and of the growing domestic demand for information, the question of an agricultural census was put on the agenda again. Following some deliberations the census was postponed after all. However, since the investigation of certain details required prompt action, in 1959 a national stock-taking of fruit-trees was carried out, followed by a census of agricultural machinery in 1960, while in 1965 a nationwide census of vineyards was taken.

In the sixties, due to the accelerated introduction of large-scale farming, the structure of agriculture has changed substantially in Hungary. Owing to the stabilization of the accounting system, detailed and accurate statistical information became available on big estates (mechanized farming). However, the large-size state farms and agricultural co-operatives provided only a part of the agricultural production. Among the rural population, which suffered from the centrally and badly organized poor food supply and from low wages – small-scale household farming started gaining ground. Between the two sectors a well defined division of labour developed. It was deemed necessary to carry out a comprehensive agricultural census in order to reveal the situation in accordance with the real facts. In addition to our domestic needs, FAO came forward with an increasingly more pressing demand for data meeting international requirements. The Hungarian government announced in 1970 its intention of joining the world census.

The census was ordered by a Cabinet decision No 3401/1970 and a governmental decree No 2/1972 regulated its execution. In compliance with the government's decision the census took place in 1972. As the statistics already available on the production of large holdings was satisfying for the most part, only data supplementing the already existing basic information were collected (e.g. data referring to the business organisation, fragmented land area, production technologies, degree of concentration etc.). Whereas, regarding small-scale production the objective was to collect primary production data and to get an overall picture of the social aspects and infrastructure of production as well. In the case of small-scale producers the technical accomplishment of the survey included the execution of one census survey followed by eight sample surveys which were conducted on the basis of the census.

The surveys supplied information on several features of the agricultural industry which were earlier unexplored. Especially, data relating to small-scale production were surprising. It came to light that almost half of the country's population is engaged in agricultural production and also consuming the goods produced on their household plots. The social stratification demonstrated that small-scale farming can by no means be considered as an activity practised exclusively by peasants, on the contrary, all classes of the society were heavily involved in that kind of activity. The census data contributed substantially to the reformulation of the policy with respect to small-scale producers in the seventies. The census data were published in 15 volumes (one volume being published in English). The first volume appeared 7 months after the execution of the survey.

Hungary joined the world census in 1980 without debating the request, merely indicating to FAO the applying of cost-saving methods which implied narrowing down the

data collections of 1972. Besides the supplementary surveys taken of large scale agricultural holdings, the data of a census and five sample surveys relating to the small-scale producers supplied the information required. In addition to the cost-saving achieved by reducing the programme, i.e. coverage of the survey, the restriction of the sample size also resulted in considerable savings. The data of the census were published in 9 volumes, with the first volume appearing 5 months after the survey.

Taking into account the data requirements of national institutions and FAO every five years, the HCSO, in conjunction with the livestock census in 1976 and 1986, collected information also on the most important data of small-scale producers (number of holdings, agricultural land area, livestock, major data of production etc.).

The subsequent agricultural census in 1991 was ordered by a government decision dated 2 August 1990 and the execution of the census was regulated by decree No 36/1991 of 1 March 1991. The objectives of the census were realized by the harmonized accomplishment of several surveys.

Agricultural large-size holdings supplied their data within the framework of the regular annual reporting system which were supplemented with the following surveys.

In 1991:

- a)* main data on the fragmentation of the land area (June),
- b)* detailed data on commercial orchards and vineyards (June),
- c)* rearing of dam-stock and distribution by species (October).

In 1992:

- d)* costs and return from sales of crop production and animal husbandry in 1991 (March),
- e)* data on technologies of producing principal crops (March),
- f)* supplementary data on the agricultural machine stock (March),
- g)* supplementary labour data (March).

The observation of households engaged in small-scale production in 1991 was implemented by relying on three data collections.

In April 1991 a census of agricultural small-scale producers was conducted as first step in the data collection procedure. The census was well organized and took place smoothly on schedule. The population proved to be co-operative and the response rate was on the whole satisfactory.

In October 1991 the HCSO, using sampling technics, collected additional data on the performance of small-scale producers. This time the enumerators visited 70.000 data suppliers randomly selected from the directory of the census conducted in the spring of that year. At the same time a sample survey of the livestock was also taken.

Within the framework of the unified system of household surveys (ELAR), in December 1991 the census data were completed by a sample covering 30.000 households which were randomly selected relying on the data of the 1990 population census. As in previous years, some characteristic features of the households' participation in small-scale production were registered providing an overall picture of the small-scale farming conditions

and issues relating to land-property. This sample survey of households included also the agricultural production of family kitchen garden owners and small-scale producers working on household plots, which were not taken into account when the census took place.

The Office published the data of the census in 4 volumes. The first volume was issued 18 months after the survey.

The main reasons of the next-in-line Agricultural Census planned at the turn of the Millennium can be summarised in the following:

- the political changes have made probably the deepest influence on the agricultural production – the ownership has been radically changed, the main point of the production has been removed from the former large scale farms (co-operatives, state farms, agricultural specialised units) to private holdings; more or less the structure of the land-ownership has been stabilised after the termination of the privatisation process – and it is an indispensable task to prepare an inventory in order to receive a complete, well based, accurate and authentic view on the agriculture following the close of the transitional process;

- without doubts it is essential to carry out a farm structure survey in accordance with the EU-legislation;

- to carry out an Agricultural Census joined to the FAO World Census 2000.

Besides these reasons the aims of the Hungarian Central Statistical Office also were:

- satisfy the data-need of the Hungarian economic, political and scientific research institutes;

- give an opportunity to the modernisation of the agricultural statistical data-collection and recording system;

- lay the foundation of a data-collection system appropriate for the EU;

- satisfactory ensure the data-need of the EU and the FAO.

The Parliament ordered the fulfilment of the Agricultural Census 2000 in the Act XLVI. of 1999 (4 May).

All the persons with natural and legal entity as well as the organisations without legal entity in Hungary were enumerated. In case of the organisations with or without legal entity all the units carrying out agricultural activity were enumerated irrespective of their NACE classification. The organisations fulfilled their data-supply in accordance with the National Program for Statistical Data-Collection (NPSDC). In case of the natural persons the unit of the enumeration was the household.

The census had two parts: a full-scope one for all the units that carried out agricultural activities and sample surveys based on the full-scope part. The reference date of the full-scope survey was 31 March 2000, the sample surveys were carried out in the succeeding August and in December. In the frame of the full-scope survey the following characteristics were observed: identification data of the household (holding); number, gender, age and economical activity of the persons belonging to the household (holding); number and activity of the non-family labour force; size of the used land area by land use categories, by title of use and by geographical situation; the characteristics of the inten

sive land utilisation (permanent crops, glass houses, plastic covers, etc.); the livestock kept on the holding by sort, gender and age; the data of agricultural machinery, equipment and buildings and the non-agricultural activities.

The main subjects of the sample survey on crop products were: the sown area of the field and horticultural crops, the yield production by crops, the area of the fruit tree orchards and the vineyards (wine and table grapes), number of fruit trees by species, area and yield production of the berry plantations, characteristics of the production under cover (area, yield production), the main agro-technical characteristics (soil-management, plant protection, irrigation, organic production).

The main themes of the livestock and livestock products sample survey are: livestock by sort, variety, age and gender; data on propagation (increase, change of stock); volume of the production of the livestock products and the keeping technology.

Concerning the agricultural machinery, equipment and buildings the most important technical characteristics were observed in the sample survey. At the same time this observation is the part of the survey on fixed assets of the entire national economy.

The role of FAO in agricultural censuses

Since Hungary is a FAO member, except for the period between 1953-1968, FAO has been playing for decades a decisive role in developing the programs of agricultural censuses.

The Agricultural World Census at this millennium is the eighth in the series of programs recurring every ten years. The first and the second programs were organized by the IIA in Rome in 1930 and 1940, respectively. Following the dissolution of IIA in 1946, the next six census programs in 1950, 1960, 1970, 1980, 1990 and 2000 were and continue to be supported by FAO through giving professional advice.

The recommended frequency of world censuses is once in every ten years, however, in developed countries, furthermore in countries where changes are rather frequent, it is recommended to carry out censuses in every five years.

The agricultural world censuses cannot be interpreted so that the required surveys are simultaneously taken in the same year in every country. The participating countries were requested in the 1930 Programme to take their national agricultural censuses as follows: countries lying in the northern hemisphere in 1929 and those in the southern hemisphere to accomplish it in 1930. The same request was made in 1940 as well. Nevertheless, the countries concerned could not at once fulfil this requirement. The national statistical censuses of the 1980 Programme, for example, were accomplished between 1976–1985.

FAO's ambition is, that countries should provide their census data for a year as close as possible to the millennium.

Striving for economy is another goal. In general, there is a minimum and a maximum programme drawn up for the countries, furthermore, their attention is called for investigating their national peculiarities. The execution of the maximum programme is recommended for more developed countries. (The programme implemented in Hungary in 1972 essentially satisfied the requirements of the maximum programme.)

All programmes formulate a new aspect, different from the previous ones. Accordingly, the 2000 Programme also includes some new elements. For example, in the past ten

years, societies' and governments' interest in environmental protection has markedly increased. Therefore census of the year 2000 is also making an attempt to extend the scope of observation to some new aspects relating to environmental protection. In the course of previous censuses some data have already been collected referring to environmental protection (e.g. land use of the holding etc.), however, the program of 2000 recommends the investigation of additional topics on environmental protection. Another new subject for investigation is the goal of production. Do households engaged in agricultural activities produce primarily for own consumption or for sale? Closely attached to this set of questions is also the inquiry about demographic characteristics (e.g. family status and educational level of the persons belonging to the household etc.). The role played by women in agricultural production is recommended as subject for examination and analysis at the millennium. The reason for this is that in many countries single elderly women are often engaged in 'agricultural activities' as plot holders for supplementary income. The quality of the arable land, agricultural techniques and organic farming are among the high priority issues to be surveyed.

The impact of EU on the system of agricultural statistics

Considering that agriculture has the greatest proportional share of subsidies of the Union's budget, the European Union makes special requests and demands to the agricultural information system. A decisive majority of the information is supplied by agri-statistics which constitutes one of the best developed subsystems of the European Union's statistical system.

Agricultural statistics is based on EUROSTAT's statutes, agreements and recommendations.

The most important documents are the Acquis Communautaire and the Statistical Requirements Compendium which combined volume contains nearly 1200 pages. Further guidance is provided by the methodological handbooks numbering over ten.

The statutes, agreements and recommendations of the EU continually change, in accordance with the Community's agrarian policy (CAP) needs. Considering that the CAP is presently undergoing fundamental changes (becoming holder oriented instead of produce oriented) the near future may be expected to bring further and more pronounced changes.

In order to fulfil the harmonization related tasks the HCSO and EUROSTAT have defined the framework of co-operation in the so-called 'Common Declaration' in 1994. The strategy up to the year 2000 has been worked out subsequently. In the course of accession related negotiations the screening of the Statistical Chapter (12) took place in July 1998 in Brussels, within multilateral and bilateral frames. The Hungarian delegation had declared that Hungary accepts in the field of statistics the *acquis communautaire* and does not request a transitional period.

In the field of agricultural statistics the most important tasks were the following:

- full-scope agricultural census to be taken not later than 2000,
- development of the farm register (the Agricultural Statistics Department of the HCSO is working on the establishment and development of the register since 1991, based on previous agricultural censuses).

- development of a farm typology that satisfies equally the domestic and European Union's needs,
- fulfilment of a fruit-orchard and vineyard census prior to accessing the European Union,
- setting up a fruit-tree and vineyard register prior to accessing the European Union,
- revision and development of agricultural products statistics,
- observation of processed agricultural products,
- development of the system of agricultural accounts,
- development of the forestry information system.

Task schedules are shown in the following tables.

Assumed schedule of full harmonization

Denomination	2000.	2001.	2002.
	year		
1. Responsibilities of the HCSO			
Land use statistics			
Agriculture Census	■		
Farm register		■	
Eurofarm data-base		■	
Vineyard census		■	
Fruit orchard census			■
Agricultural price statistics			■
Agricultural Labour Input statistics (ALI)			■
Crop production statistics			■
Livestock statistics		■	
Food industry statistics – agriculture related			■
2. Joint responsibilities (HCSO and MARD*)			
Typology		■	
Vineyard register			■
Fruit orchard register			■
Economic Accounts for Agriculture (EAA)			■
Income of agricultural households			■
Sectoral production and model for agriculture (SPEL)			■
Farm Accountancy Data Network (FADN)			■
Supply balance sheets for crop products			■
Supply balance sheets for animal products			■
Feedstuffs (fodder) balance sheets			■
3. Responsibilities of MARD*			
Remote sensing		■	
Crop yield forecasts			■
Forestry statistics			■
Fishing statistics			■

- recently harmonized, for the most part
- recently harmonized in part
- new task at present

* Ministry of Agriculture and Rural Development.

New data-collections within the time frame of medium term planning

Denomination	Planned launching date (year)				Remarks
	2001	2002	2003	2004	
Vineyard census	◆				In every 10 years (full-scope survey)
Fruit orchard census	◆				In every 5 years (full-scope survey)
Farm structure survey			◆		In every 2-3 years (sample survey)
Characteristics of agricultural production methods		◆			In every 2-3 years (sample survey)
Flower and ornamental plant growing		◆			In every 4-5 years (full-scope survey)
Production of milk and dairy products in agriculture	◆	◆	◆	◆	Monthly continuous (sample survey)
Slaughtering statistics	◆	◆	◆	◆	Monthly continuous (sample survey)
Organic farming		◆			In every 4-5 years (sample survey)

The undertaken dates mean an enormous duty for the Hungarian statistical service. Whereas only the Agricultural Census 2000 can give a complete view on the organisations, enterprises and households carrying out agricultural activity after the radical transformation of the 1990s, this is considered as the basis in case of all mentioned agricultural-statistical topics. Hence the successful fulfilment of the census is the precondition for the establishment of a EU-conform agricultural statistics in the forthcoming years.

THE HUNGARIAN AGRICULTURAL SECTOR AND STATISTICS IN THE PRE-ACCESSION PHASE

SÁNDOR TASSY¹ – LÁSZLÓ VAJDA²

The database of agricultural statistics and the analyses prepared there from constitute the key decision supporting tool of agricultural policy. This is particularly true in the pre-accession phase, when various screening tests are conducted. In terms of harmonisation it is indispensable that the national reporting and information systems are updated to meet the reliability and quality criteria of EU-membership.

During the accession talks the Hungarian party abstained from derogation in price statistics and committed itself to complete legal harmonisation by the time of the accession.

This paper describes in detail the conceptual, strategic and tactical objectives of agricultural policy. Weighted analyses by product line, the two basic documents of accession, the National Plan on the adoption of *Acquis Communautaire* (ANP) and the Position Document determining the Hungarian position at negotiations are discussed in chronological order.

Due to its close relationship with all professional fields agricultural statistics is an essential issue of accession negotiations. Among the statistical tasks those in the scope of competence of the Ministry of Agriculture and Rural Development are described in detail. The objectives and tasks of agricultural statistics, professional projects supported by PHARE such as the System of Agricultural Accounts, the Market Information System, the Test Operation Network, the Integrated Management and Control System and Agricultural Reports prepared under the Act on Agricultural Development are reviewed. Finally a brief summary of related cartographic issues and the pre-accession SAPARD program is given.

KEYWORDS: Agricultural statistics; EU-accession.

The prominent historical role of the agricultural and food sector in the Hungarian economy accrues from the favourable physical environment and age-long traditions. The cultivated area amounts to 70 percent of the total area of this country while the farming population represents 8 percent of the active earners. The total share in the GDP of Hungary of the *agricultural sector* including agriculture, game and forest management, fishing, and the food, drinks, tobacco and timber manufacturing exceeds 10 percent. In this total the shares of agriculture and the food sector are estimated at 5.9 percent and 3.7 percent, respectively. In spite of the recent massive and often unfavourable changes in the

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economic environment the Hungarian agriculture has been able to maintain its position in the domestic economy and in the international markets.

The privatisation of co-operative and state farms started in the 1990s has led to significant changes in the agricultural business structure. The resulting pattern includes family farms, companies and co-operatives with a growing share of family farms controlling medium size areas between 30 and 100 hectares. Before the 1990s state-owned food manufacturers were accounted for 75 percent of the total food production in Hungary. By now the privatisation sale of the food industry has been largely completed with substantial international participation.

In Hungary agriculture traditionally plays a key role in country development. Rural areas represent 96.1 percent of the total area and 73.6 percent of the total population of Hungary (the area share of cities is 3.9 percent). Based on OECD definitions the absolute rural area (lowest population density equal to 59 per square kilometre) amounts to 62 percent of the total area of Hungary including 92 sub-regions and 33 percent of the total population, and typical rural areas – another 49 sub-regions representing 34.1 percent of the total population. In the rural areas of Hungary agriculture is the dominant form of land use. The land fits for intensive cultivation at favourable soil and climatic conditions is estimated at 50 percent of the total rural area. However, agriculture alone is unable to keep the people of the relevant areas at acceptable living standards even in case of intensive cultivation.

Agricultural Policy Goals

The key agricultural policy objectives have been defined on the basis of the existing status and the opportunities of the sector as follows.

I. Policy Objectives. Development concept of the Hungarian agricultural sector as provided in Act CXIV of 1997 Sub-section 3. (1):

- improve the competitiveness of production;
- assure sufficient supply for the population;
- improve the investment and income generation opportunities of people working in agriculture in proportion to those of people employed in other sectors;
- assure conditions for cost-efficient and export-oriented production;
- help employment, income generation in rural areas to lift retentive capability;
- protect and maintain the natural environment and ensure the viable growth of the agricultural business;
- develop human resources and assist innovation in agriculture.

II. Strategic objectives. Requirements of policy goal achievement (Sections 4 and 5):

- formulate an estate policy to encourage a holding pattern dominated by private ownership;
- develop co-operative and integrated forms of assistance in agricultural production;
- increase and stabilise agricultural incomes;
- develop private farms supporting subsidiary employment, income generation and self sufficiency;
- improve parity through agricultural subsidy schemes.

III. Tactical objectives.

- establish an EU-conform institutional, agricultural subsidy and country development system;
- support institutions set up by the producers or distributors for increasing agricultural competitiveness, such as co-operatives or integrated businesses;
- subsidise handicapped agricultural areas to assure acceptable incomes for producers;
- maintain and improve the quality of arable land and forest assets;
- support agricultural innovation and human resource development;
- encourage and support participation in social security systems for the social security of agricultural producers;
- support EU-accession;
- harmonise the system of taxes and charges with the EU-practice.

The successful due diligence process in preparation for EU-accession is an important target. The Hungarian agricultural sector can easily be harmonised with and adapted to the EU agricultural system. The total output of the Hungarian agriculture is not more than 2 percent of the total output of this sector in the EU and the share of food imports from Hungary amounts to 1 percent of the total food imports of the EU from third countries. The already manifold and growing co-operation in distribution and research activities may be noted as another benefit.

By the date of its accession Hungary is willing and able to adopt the *acquis* (Acquis Communautaire) in the agricultural sector of the Community, and after the accession Hungary agrees to implement all regulatory tools used in the EU under the Common Agrarian Policy (CAP). In respect of the use of *acquis* in this sector Hungary will not apply for short-term derogation unless reasonably required for the full and reliable enforcement of the relevant laws and regulations, the integration of this business sector in the integrated internal market, and the full implementation of CAP standards.

We are convinced that in the case of agriculture any short-term derogation would conflict with the objectives of immediate participation in the integrated market of agricultural and food products as well as the full implementation of CAP standards from the first day after accession.

Furthermore, by the date of accession Hungary will be able to establish and operate the institutional system required to guarantee the full conformity of the agricultural and food products with the veterinary and plant health, quality, hygienic and food security requirements of the EU. The inspection and control agencies already operate on high European standards and full compliance with EU-requirements will be assured by projects included in the National Integration Plan of the *acquis*.

Screening negotiations in the agricultural sector

The pre-accession negotiations with Hungary and four other associated Central-Eastern European Countries (Poland, Czech Republic, Estonia and Slovenia), and with Cyprus started on March 31 1998. The first negotiation phase named *Acquis Screening*, includes the review of the level of integration of EU-legislation such as *acquis*, directives, guidelines, decisions, court decisions etc. in the laws and regulations of Hungary and the

other candidate countries, and the ability to enforce these provisions after accession. This screening was completed on basis of schedule of laws and regulations prepared by the EC. The relevant EC Directorate General delivered the regulations applicable in different sectors in the form of spreadsheets. By completing the spreadsheets the candidate countries indicated whether the specific items of the common regulations have already been codified or if not, by what date integration in the domestic law would take place. Applications for eventual short-term derogation were proposed under the appropriate title. Any requests for technical adjustments, such as the mentioning of the name of Hungary in a regulation or publication of the Hungarian text of certain regulations were also indicated in the spreadsheets.

Prior to each round of the screening talks the negotiating missions had to obtain mandates from their respective governments. Each proposal to the Government was required to analyse the EU and Hungarian regulations concerned and the differences between them, and to evaluate adoption opportunities. The proposals to the Government were drafted through inter-departmental consultations. The schedules of regulations mentioned above were annexed to each proposal to the government to be represented by the missions at the talks.

The screening rounds were held in two phases. Phase 1 was held as a multilateral screening or reporting phase according to the EC terminology and was attended by the missions of each of the 6 candidate countries. At these meetings the regulations of the given areas were reviewed by the relevant experts of the commission, highlighting the critical issues and regulations to be adopted and prepared for implementation as a condition precedent to accession. Questions and answers and the clarification of any ambiguous EU-regulations followed these reviews.

Bilateral rounds (problem identification sessions) were held separately between the Community and the missions of each candidate country. At these meetings the schedule of regulations to be screened delivered by the candidate countries were reviewed. The Commission mainly sought information about the progress of preparations in a given area. Thus in case of agriculture the agenda usually included institutional issues, farm development and financing requirements. The reasons of any short-term derogation were also to be presented at these meetings.

The screening rounds were expressly not meant to be negotiations, thus no issues were discussed. The candidate countries and the Commission both recorded the proceedings. The comments of the Commission were limited to noting if any issue raised by the candidate was actually not a problem and did not require any derogation (e.g. the concerned exception is allowed by the EU-regulations). The Committee recorded the proposals presented by the candidates and it often requested supplementary information or statistical data about certain sectors or as underlying data of the issues to be negotiated. After the presentations the Commission noted its concerns about the smooth integration of the laws of the Community, if any.

The comprehensive review of statistics was held separately in the pre-accession negotiations. In the area of agriculture this was followed by 6 consultation sessions held in an agreed schedule. The outcome also defines the tasks of the next phase of preparations.

Agricultural Screening 1 was focused on field plants (cereals, oily seeds and protein plants), on fresh and processed vegetables and fruits. The principles were defined (acces

sion without any transition phase and equal rights and obligations with the farmers of the other EU-member countries) and the probable areas of short-term derogation were identified. The Hungarian mission also named the areas in which consultations would be required in the actual negotiation phase. The Commission explained the requirements of intervention, market regulation and information systems in conformity with EU-standards, and the development of the land registration system. In the context of vegetable and fruit market regulation frameworks have to be set up for the forming, acceptance and supervision of the activities of farmer co-operatives, and in case of exports the existing quality control system has to be rolled out to imported and domestic products.

Agricultural Screening 2 focused on animal health. Short-term derogation requests have been made in six areas. These requests included two in the field of animal breeding with a view to conserve the propagulum tests at Hungarian insemination centres at sterility levels higher than in the EU. Three requests in the field of animal protection addressed the need to extend the grace period available for animal keepers and slaughterhouses to upgrade their plants to EU-standards.

Agricultural Screening 3 covered the following topics:

- EAOGF (European Agricultural Orientation and Guarantee Fund) Paying Agency – Organisation structure, supervision, management and control system of the national administrative agency of payments from the European Agricultural Orientation and Guarantee Fund Guarantee Section;
- Integrated Administrative and Control System to be implemented for the control of compensation subsidy ;
- country development;
- EAOGF Orientation Section – financial issues (development actions) – Improvement of agricultural efficiency, support of the processing and marketing of agricultural products, support of farmer groups, Common Initiatives;
- EAOGF Guarantee Section – financial issues (follow-up actions) (agricultural environmental actions, early retirement and forestry);
- forestry.

After accession Hungary will also be required to use the operating institutions of EAOGF including market intervention (intervention procurement and storage, export subsidy), and the payment systems of farmer income compensation and structural actions (purchasing or environmental projects).

As to the subsidies of the agricultural sector, the following differences between the current Hungarian scheme and the EU structural subsidies were emphasised by the Commission:

- in contrast to the annual frequency of Hungarian budgeting the EU-budget is prepared for several years;
- as opposed to the objective-oriented EU-philosophy the Hungarian subsidies are based on allocation by instruments (titles).

The Hungarian mission announced that the EAOGF Paying Agency would be established by the accession date and after accession it would manage the payments to be re

ceived from the EAOGF Guarantee Section. As for the accession date Hungary is willing to participate in each project co-financed by the EU according to EU-standards. Furthermore, it has been requested to classify Hungary to Objective 1 considering that the per capita GDP is lower than 75 percent of the EU-average

Agricultural Screening 4 was focused on milk, meat of cattle, calf, sheep, goat and poultry, eggs, albumin (simple proteins), and honey.

The high priority issues noted by the Hungarian mission are summarised in the following.

– The SEUROF price reporting system based on cut body quality rating is reported to be started on January 1, 2000, i.e. on the date when SEUROF rating becomes mandatory in Hungary.

– Hungary is willing to use the option provided in EC Directive 2456/93 Sub-section 5 (2). Considering the domestic structure of slaughterhouses typically including cool storage and chopping workshops, these plants should be reasonably used as intervention centres.

Agricultural Screening 5. In this round the marketing mechanisms, quality policy, the agricultural monetary system, government subsidy, the Farm Accounting Data Network, agricultural statistics, (processed) products not regulated in the Rome Treaty Annex II, and issues left open in Screening 4 (meat of sheep, goat, pig and poultry, eggs, albumin and honey) were evaluated. Assuming due preparations the common laws relating to the pork market standards can be adopted and used latest from the date of accession. Community standards of poultry are provided in the Hungarian Food Code – Standard No. 1-3-1906/90 effective since January 1 1998. Considerable measures have been taken to implement distribution and sales standards, too. However, the technical infrastructure required to meet standards relating to the classification of marketable eggs by quality and weight, marking, packing and labels is yet to be implemented.

In the area of marketing mechanisms, assuming equal participation in the standard subsidy scheme of the EU it is essential to use the EU marketing processes starting from the day of accession. What may be still more important, the Hungarian exporters must be able to benefit from them. However, this requires some profound changes in the existing domestic system.

The EU agricultural monetary system will also be used from the day of accession. Concerning Farm Accountancy Data Network (FADN), the Hungarian mission reported on the successful progress of implementation, however, the outstanding domestic components of the network (national team, eventual regional teams and the co-ordination agency) would be set up short after accession, probably by a ministerial order. The marketing policy problems of adopting the marketing system of Annex II products are not as significant as to indicate any need for short-term derogation.

Agricultural Screening 6. In this round the following items were discussed: wine, sugar, raw tobacco, rice, hops, bananas, cotton, olive oil, silkworm, flax and hemp, seeds, flowers and live plants, and dry feed. In the sugar segment the use of community standards will mean much higher income levels for farmers and manufacturers alike. However, from the point of view of users sugar costs will surge by 70-80 percent after accession.

Raw tobacco production can be an important business creating jobs in the regions facing low employment rates. If the quota can be negotiated far above the existing production level the tobacco business can be an important raising factor in these regions.

The supplementary review of open issues (plant health, protection of breed and strain rights, qualification of seeds and propagulum) and the evaluation of the agricultural market reforms included in AGENDA 2000 closed the review / screening process before the end of December.

In conclusion, short-term derogation was indicated in a few cases only, and the Hungarian mission stressed its willingness to continue negotiations in any area concerning quotas or reference areas that may affect the level of production or the subsidy available to the Hungarian agricultural sector.

Two Pre-Accession Documents

ANP is the Hungarian National Plan for the Integration of *acquis*. ANP was delivered to the EC in March 1999. Thereafter the negotiations between Hungary and the EU have successfully progressed and so have the domestic preparations. Therefore ANP has been updated in the light of this progress. ANP is based on the strategic goal set by the Hungarian Government, i.e., to complete preparations by the end of year 2001. The Government approved the update on June 29, 1999.

ANP specifies the institutional development milestones of setting up the administrative capacity required for the adoption of the *acquis*. The implementation schedule is also defined. Finally ANP also specifies the infrastructure development and other projects needed in the specific sectors for the integration of the Achievements. ANP includes detailed financial plans in each tranche with substantial financing requirements. The government funds, the expected EU-subsidy and other sources of finance have been planned in a co-ordinated approach.

In the framework of ANP the agricultural tasks have been designed vertically and horizontally according to the nature of the task. Thus e.g. animal and plant health, land registration, the food sector, agricultural environment control or country development would be developed horizontally, while the specific sub-sectors will be developed vertically through the regulation of their respective market standards. Thus ANP actually covers the whole set of the actions to be made as part of the integration process is covered in ANP. The pre-accession phase means to perform immediate institutional development tasks and it requires substantial government funds to be committed to farm development. These requirements must be duly considered in the budgeting process. The completion of an indicative 7-year financial plan in the pre-accession phase is also recommended by ANP in order to support the adoption of the EU institutional and regulatory systems as well as the assertion of the agricultural strategy. This draft financial plan with 2000 as starting year will include the key financial, production, sales, cash flow, investment and employment estimates of the period.

Joining Europe (*Felzárkózás Európához*) is a strategic document adopted by the Government in June 1999. This strategy will be the basis of the economic policy defined in ANP. The National Development Plan to be prepared for PHARE, the Special Accession Programme for Agriculture and Rural Development (SAPARD) Farming and Country

Development Plan and the Instrument for Structural Policies for Pre-Accession (ISPA) Environmental and Transport Plans will also be annexed to and form part of ANP.

The Position Document

On November 29 1999 the head of the Hungarian EU Mission in Brussels delivered to the representatives of the EU Commission the document defining the position to be represented by Hungary in the negotiations. The Position Document is summarised as follows.

a) In the area of agriculture Hungary wishes to access without any overall transition period and with a limited amount of requests for derogation.

Some requests for derogation are intended to allow more time to the production sector to prepare for and adapt to community standards, such as animal protection standards relating to laying hens, calves and pigs, veterinary standards of slaughterhouses, beef quality classes of intervention procurement actions. Eligibility for specific subsidy for establishing Farmer Organisations (FO); exemption from FO membership in the procurement of tomato for processing, or marketing of historical wine types using off-standard bottles and labels are also issues to be addressed. The farmers will have to make heavy investments to implement community standards. If the requested derogation is granted, these investments can be extended in time to be more readily affordable.

The other part of derogation requests relates to the short-term conservation of non EU-compliant domestic standards which Hungary is reasonably interested to keep or which are related to existing user patterns. Such standards include animal health standards of breeding boars and breeding bulls and weed seed tests of more rigorous nature than their EU-counterparts, or the domestic sale of milk with 2.8 percent fats for a temporary period.

A conditional derogation request will be made concerning the amount of subsidy to be committed by the Government to the agricultural sector. Assuming that Hungary will be entitled without limitation to the subsidy available under CAP to present member countries, the EU-standards concerning national subsidy will be maintained, i.e. no subsidy except the types compliant with CAP in the opinion of the EU will be paid with the prior consent thereof. However, Hungary is committed to existing liabilities under agreements relating to interest subsidy, underwriting or debt rescheduling signed before accession and still effective on the date thereof, as well as the subsidies for young farmers and farming businesses under a scheme other than that of the EU. The Hungarian production pattern and the conditions in specific sectors often largely differ from the EU-average. This can lead to situations where critical problems arise even if the EC instruments for subsidy and regulation are fully utilised. In these cases the consent of EU will be requested for funding any contingent corrective actions from national funds. In addition to the requests for short-term derogation several technical adjustments are also required in the common laws and regulations. These proposals are also included in the Position Document.

b) As it follows from the principle of equal treatment Hungary expects to receive every form of subsidy available to the farmers or farms of other EU-member countries on the date of accession, and agrees to every obligation arising from EU-membership.

The subsidies paid under CAP are assumed to form part of the *acquis*, therefore Hungary expects eligibility for every form of subsidy otherwise available for a country of similar conditions and production pattern.

The Hungarian Government believes that Hungarian farmers must be eligible for all forms of compensation (direct income subsidy). In the EU these forms of subsidy have developed into invariable, inherent and cardinal instruments of CAP. These instruments have been effectively used with the objective to stabilize the markets and the income levels of producers and they are no longer intended to compensate the impacts of an institutional cost reduction effort carried out many years ago.

The application of CAP including the compensation schemes is also required by the principle of equality as well as the principle of fair competition and identical rules of game for all member-countries on the integrated European market.

c) Basis of production quantity restrictions and subsidies pegged to quantities

The amounts proposed by Hungary as the basis of production volume restrictions and subsidies have been defined so as to maintain a level of agricultural production which,

- reflects the current production environment and its development potentials,
- enables the utilisation of areas with favourable conditions,
- assures the specific function of agricultural production in rural life,
- assures the attainment of environmental and landscape conservation objectives,
- covers the requirements of domestic market on the long run, and
- allows the export of products which Hungary is able to produce cost-effectively in amounts exceeding the demand on the domestic market.

These objectives perfectly correspond to the objectives defined in the Agricultural Act and in the agricultural policy of the Government. Thus the quantities defined for most of the relevant products as the basis of reference of CAP measures are higher than the current production levels and generally reflect the positions before 1990, i.e., the first year of the agricultural crisis. In defining quantities special attention was paid to future opportunities reasonably expected on the domestic and international markets while duly considering the principles and regulatory practice of CAP.

d) Hungary is committed to take the necessary measures and set up by the date of accession the required institutional system for the operation of CAP.

In preparing for EU-membership the agricultural sector requires special actions due to the specific features of the sector and the significant differences between the Hungarian and EU-regulations. The country's undertakings relating to the adoption of CAP will require considerable effort beyond what has already been completed, particularly in the fields of harmonisation, implementing the necessary institutions, and Government assistance for the sector in preparations. In particular, development projects to be completed in the pre-accession phase and Government subsidies must be carefully designed to support the preparations for implementing CAP as effectively as possible.

*Agricultural statistics as a critical factor of the agricultural policy
and a pivotal issue in accession negotiations*

In the screening phase Hungary made a commitment to the adopt by the date of accession the complete set of statistical regulations effective in the EU without requesting any transition period. This is a compelling challenge for the statistical and information sys

tems in Hungary. Practically each and every area is profoundly impacted. The administration of agriculture in the EU is based on the flow of vast amounts of processed data. Decisions made on the basis of these flows may bring huge benefits, or lead to material disadvantages and even sanctions in various countries. Therefore each member and candidate country is innately interested in maintaining extremely rigorous standards of data reliability, quality, comparability and strict adherence to reporting deadlines. This implies the need for updating the existing agricultural databases operated for many years at large organisations and implementing new ones. One must get prepared for reporting far more data in far more details than the current domestic practice.

The operating and ownership structure of the Hungarian agricultural sector has changed dramatically during the recent years. In the earlier years the sector was controlled by a rather limited number of commercial farms and manufacturers fully covered by statistics. Following the privatisation of land and the state-owned companies, and the transformation of co-operatives, a large number of small- and medium-size farms came into existence, however, no reliable and comprehensive data are available to statistics.

Several historical data collecting systems were terminated and, owing to detrimental historical experiences the respondents are reluctant to disclose their data. This situation asks for the drastic revision of the technical and legislative backgrounds of statistical and information systems in agriculture and their re-establishment in updated and integrated frameworks.

Agricultural information technology and agricultural statistical systems are expected to meet various requirements categorised in three groups. These systems must

- satisfy the requirements of agricultural administration, provide information and decision support;
- assure conformance with EU-standards and integration with the current European statistical and information systems, and
- provide information, assist in decision support and efficient reporting to obtain subsidy for farmers and businesses.

The Information Strategy Plan of the Ministry of Agriculture and Rural Development (MARD) has been defined in the light of these objectives. The Plan embraces the activities and functions of the systems operating in the sector. The very exacting standards of agricultural information and statistical systems follow from the fact that, according to CAP, agricultural subsidy schemes represent more than 50 percent of the total community expenditures. The agricultural statistical system for the collection and processing of the bulk of data and co-ordinated by EUROSTAT is one of the most sophisticated and complex sub-systems of the Union. The reporting liabilities of member countries are specified on various levels and in various forms in approximately 1200 regulations, focused the Compendia and a number of manuals. Based on the breakdown of statistical tasks by functions and products several task forces representing all member countries have been set up at EUROSTAT for the exchange of experiences and for assuring compliance to standards in system development. Statistical offices and sectoral ministries of countries in the pre-accession phase are also expected to delegate their representatives to these task forces.

The high priorities noted in the negotiations included a comprehensive agricultural census, the completion of census and registration database of grape and fruit plantations, close co-operation and clear division of responsibilities between MARD and Hungarian Central Statistical Office (HCSO). With this end HCSO and MARD defined the functional responsibilities and elaborated the harmonisation schedule with the assistance of the Research and Information Institute for Agricultural Economics (RIIAE) and the finalised documents were officially delivered to the relevant EU-authorities.

Some guidelines to be carefully considered in the development of statistical and information systems are summarised in the following.

- Access to various sources of CAP subsidy assumes the implementation of reliable and strictly verified reporting systems. According to the experiences of present member countries the rate of return on these investments financed by governments is exceptionally high.

- The conflicts prevailing in the use of certain definitions and indices must be eliminated in the framework of statistical harmonisation. European classifications must be adopted; the reliability of production forecasts and monetary statistics must be improved; apart from major censuses supply balances must be completed by EU-compliant deadlines and using standard EU-methods.

- Apart from the close co-operation between HCSO and MARD institutional development projects stipulated in ANP must be implemented, the required domestic funding must be raised and the available EU opportunities must be effectively utilised for assuring compliance with the reporting liabilities stipulated in the regulations.

- EU regulations concerning statistics must be monitored for on-going changes and amendments and integrated in the domestic legislation.

- Respondents must receive detailed information on EU reporting practice for preparing to the increasing administration burden.

- Along with European harmonisation include in the data collection systems providing input for agricultural decision support of the Government Hungarian peculiarities such as the distinct business structure, specifics of farm sizes, etc. must be taken into account.

- The databases will be required to provide verifiable input for impact analyses and arguments of the Hungarian party to be presented at accession talks.

- The growing reporting liability requires a standard and agreed reporting process towards the EU-authorities, OECD, FAO and other agencies. It is essential to prevent the reporting, in whatever form, of any unsound or disagreeing data to any international organization.

Development of statistical systems at MARD

Pursuant to the effective law on agricultural statistics the main responsibility for agricultural statistics rests with HCSO in the framework of official statistical services. MARD typically collects operational data. Key areas include forecasts, expert estimations and collection of production cost data. Furthermore, MARD is responsible for statistical projects in forestry, fishing and remote sensing. Other tasks added in connection with accession include e.g. the implementation of a subsidy registration and payment system and a market data service system.

PHARE projects for the development of statistical systems

PHARE projects were launched several years ago to implement or update statistical systems run by MARD. Teams set up by RIIAE have carried out the work with the assistance of HCSO. Systems implementation takes several years; therefore the tasks allocated to various projects under the annual approval schedule of PHARE.

RIIAE joined as a payee to the PHARE-project started in 1995 (Implementation of the Complex Agricultural Information System - HU 9505.07.02.) From the target areas of this project RIIAE managed the following areas:

- Economic Accounts for Agriculture (EAA);
- Market Information System (MIS);
- Farm Accountancy Data Network (FADN).

The specific objectives and activities of each segment of this project have been defined. An integrated approach was required considering their closely interwoven data flows and administrative requirements. This must be emphatically noted because it also applies to Agricultural Statistics as the No. 4 target area of the project. In this segment HCSO was the payee.

The progress in specific areas managed by RIIAE is reviewed in the following.

- The objectives of this project component include the implementation of Agricultural Accounts System in compliance with the EU-standards (EAA), and the completion of model runs according to the reporting requirements of the Hungarian Government and the EU. The results and outputs of this project component are as follows.

- The Hungarian translation of the new EAA Manual has been completed. The Hungarian version of the Manual published by EUROSTAT can be a critical factor in the updating the domestic EAA in compliance with the EU-requirements.

- The 1999 forecast has been prepared using OPAL, and presented to the relevant MARD Divisions.

- The EAA data of years 1994, 1995 and 1996 have been updated using the processes specified by EUROSTAT.

- During project implementation the EAA-OPAL application was installed at MARD sites and the staff was trained to use it under production conditions.

- Model runs for scenarios defined by MARD have been generated using EAA.

The objective of this project component is to implement an efficient Market Information System (MIS) for maintaining the data of the key agricultural and food products and supplying the authorities, market players and other users with timely and up-to-date information. The achievements of this project component are summarised as follows.

- MIS has been consolidated and the related database has been developed on the basis of discussions and consultations with the organizations involved. The incoming data flow of the centralised MIS has been consolidated. Market and price data flow continuously from respondents.

The current coverage rates of key product lines are as follows:

1. beef and pork	approximately 40 percent
2. dairy	20–25 percent
3. grain	60–65 percent
4. vegetable and fruit	60–80 percent

– In the area of market data analysis staff skills have improved and they are now able to prepare short-term or medium-term estimates. A market-forecast model was developed and has been on stream since October 1999. Starting from year 2000 the Beef and Pork Bulletin is expected to include market forecasts and supplementary evaluations of market data.

– The gradual adjustment of the recent Hungarian MIS was started as part of the project and reached an advanced stage by the completion of the project. For example the EUROP qualification data collecting and processing system has been implemented in the pork product line. Furthermore, MIS Hungary is a member in IMDE (International Market Data Exchange) supervised by ZMP, Germany. As it appears from IMDE reports, the market and price information published in Hungary meets more closely the EU-requirements than the similar data published in other CEE countries.

– The long term financing proposal of MIS has been drafted.

– The key objectives of this project component are to develop a representative Farm Accountancy Data Network (FADN) that can equally satisfy the national and EU-requirements and gradually increase the base of test farms. The outputs and progress of this project components are summarised in the following.

– The proposed FADN management structure has been drafted. In this context the Management Team of FADN Hungary has been defined as part of this task. This team will be responsible to communicate with Brussels. Once it is formed Hungary will have access to all data relating to FADN. The reasons of setting up regional FADN teams and the recommended method of approach are explained in another proposal.

– A communication plan has been drafted describing the communication process between FADN and its users (farmers, accountants, the Ministry, and agricultural chambers).

– The Standard Contribution (SC) methodology has been developed in accordance with the related specifications of the EU. It is an accepted European practice to conduct SC assessment based on three-year averages and the classification of farm types is based on these data. In Hungary too, the system should be reasonably based on the same data to refine the presentation of agricultural production. Currently FADN Hungary is in the building phase and the number of farms is growing year after year. However, the total area of Hungary is not yet covered reducing the reliability of the available FADN statistics.

– During 1998 nearly 1200 complete databases were received from the FADN staff from farms. These data were processed and published in the Annual FADN Bulletin. Although the total area of Hungary is not yet covered, the overall position of the agricultural sector is already portrayed.

The institutional development efforts of agricultural statistics and agricultural information technology include the PHARE projects HU 97/03.03 and HU 98/06.03 are expected to be launched in 2000. Among the areas of the projects launched in 1995 MIS and FADN were included in the scope of 1997 and MIS, FADN and EAA were included in the scope of 1998.

Project HU 98/IB-AG-01 is a twinning project aimed at the establishment of the CAP system of institutions. This 2-year project started in November consists of 4 project components, one of which is dedicated to the statistical information system in general and 3 areas in particular.

– The implementation process of FADN, EAA and MIS started in bilateral and thereafter in PHARE projects as already outlined in the preceding is continued by the existing task teams. In the task consultations the Hungarian party indicated the intention to rely on these task forces in the further development of the completed EAA-OPAL model as well as in completing the SPEL model.

– This area of the project component concerns statistical reporting services specified by EUROSTAT but not controlled by HCSO. These reporting obligations will either be the sole responsibility of MARD or joint responsibility of MARD with HCSO. During the consultations further steps and specific requirements have been defined in the light of tasks specified in the EUROSTAT Compendium.

Thus the following EU-harmonisation tasks will be reviewed in the framework of this twinning program and based on tasks defined in the EUROSTAT Compendium:

- 681 Forestry statistics
- 694 Fish breeding statistics
- 612 Remote sensing (use of this technique in crop estimates)
- 652 Animal products statistics (including the information requirements of slaughter and egg production)
- 642 Supply statements of plant products (estimated data through the year and forecasts)
- 653 Supply statements of animal products (see 642)
- 654 Feed statements (see 642)
- 643 Crop forecasts
- 635 SPEL model.

– Complete mapping of the non-EUROSTAT statistical and information requirements of the EU, identification of tasks and conditions for typically non-regulatory reporting are required. The information requirements mainly relate to the operational data on products such as production, procurement, prices, inventories, etc., however, they impact a number of areas such as statements or forecasts, where exact information about the expectations and the accepted practices of the specific member countries are not yet available. Owing to its nature this task is closely linked with another twinning pillar aimed at the establishment of market organizations.

Land administration and cartography

The field plant monitoring system built on satellite remote sensing has been on stream since 1997. Geographic Information Systems (GIS) and Remote Sensing (RS) have evolved to become indispensable decision support tools in agricultural management. State-of-the-art engineering solutions are efficiently used in the mapping of excess surface

waters, too. The domestic achievements and opportunities in the field of RS and GIS can also be utilised in implementing specific modules of the EUROSTAT Compendium. Agricultural information technology including agricultural statistics will benefit from projects launched in connection with the integration of *acquis*. In the field of land administration and cartography these projects include national priorities in developing the Information Technology (IT) systems and services of the Land Registry, such as updating of map databases, managing inputs for Integrated Administrative and Control System (IACS), and the countrywide air survey to be used in the agricultural census as well.

The Integrated Administrative and Control System (IACS)

IACS is a highly sophisticated, very costly mandatory system introduced in the CAP reform of 1992. MARD is responsible for implementing IACS in Hungary. Essentially IACS is designed to manage the data of farmers receiving subsidy in specific product lines or under objectives defined in CAP and to provide the basis for compensation payments.

Based on the effective EU specifications IACS is used for the administration and control of the following subsidy schemes for

- field plant producers – mainly with respect to the production of cereals, protein plants and oily seeds, and land regeneration (fallow),
- bonus payments – beef, veal and sheep producers, and
- farmers cultivating areas or keeping cattle, sheep, goats and hoofed animals under exceptional conditions, such as hills or other adverse areas and eligible for compensation payments.

The five modules of IACS are as follows.

1. Alphanumeric identification system of agricultural holdings.
2. Alphanumeric identification and registration system of animals.
3. Requests for subsidy (RFS).
4. Electronic database.
5. Integrated database.

The alphanumeric identification systems of agricultural holdings and animals provide the key link between the RFSs submitted by farmers and the integrated database. The IACS control module verifies the RFS details against the data maintained in the ID systems.

In an effort to eliminate duplication MARD currently investigates the possible use of data stored in IACS for statistical purposes. According to the directive issued by the Council for Agricultural Economy national authorities may authorise the use of IACS data, however, rigorous data security laws and regulations restrict this option in certain countries. As it appears from the experiences of some countries, a part of IACS data is fit for statistical use. In these countries data flows between the ministry of agriculture and the statistical office are managed in the framework of a project. No data may be transferred without the prior consent of the relevant farmers, however, the farmers have the benefit of not having to participate in subsequent surveys on land utilisation.

SAPARD – The pre-accession support program

As a condition precedent to participation in SAPARD the seven-year agricultural and country development forecast (program) for the years 2000 through 2006 referred to in the section on ANP should be prepared according to the requirements and specifications of the Commission. The program may be co-financed by EU under SAPARD.

As another condition precedent the subsidies granted by the EU should be managed by a financial entity approved by the Commission. This entity managing all subsidy payments after accession is the Paying Agency to be set up under the supervision of the Agricultural Intervention Centre. The legal background of operations, the data communication and processing systems of the Paying Agency must be designed and implemented as soon as possible.

Report on Agricultural Accounts

In the majority of EU member countries it is a common practice to prepare the annual Report on Agricultural Accounts used as an input to technical decision making on objectives and allocation of resources.

Apart from setting agricultural policy objectives the obligation to compile annual reports is also stipulated in the Act CXIV of 1997 on Agricultural Development. MARD and HCSO carry out this comprehensive annual assessment based on the data of the preceding calendar year. The report is approved by the Government, the Council for Agricultural Economy, and finally by the Parliament. The first Report was completed in 1998. It is planned to refine the database used for preparing the report on basis of statistical data to be collected in the coming years and considering the relevant international experiences.

COMPONENTS OF THE AGRICULTURAL INFORMATION SYSTEM IN THE LIGHT OF EU-HARMONISATION *

ISTVÁN KAPRONCZAI¹

The EU-harmonisation of agricultural information systems is a pressing task. These systems may facilitate the accession of Hungary to the EU, and their output may contribute to the negotiating efficiency at the accession talks. This paper offers an outline of agricultural information structures and key information systems of the European Union, and addresses the key components such as Statistics, Market Information System, Test Operation System, Integrated Management and Control System and the Economic Accounts for Agriculture. The current status of harmonisation in Hungary is also reviewed. Finally, the study draws conclusions, including some recommendations, obligations and opportunities for respondents in relation to the information systems.

KEYWORDS: Agricultural information system; EU-harmonisation.

In the last three to four years the Hungarian agricultural information systems, including agricultural statistics, have been largely upgraded. The implementation of some key system components compliant with their EU-counterparts, which should be in place as the prerequisite of Hungary's accession to the EU, has been started. The efforts have already yielded the first practical results while others require heavy efforts to come on stream in the coming years as part of the development of information systems.

EU-harmonisation of information systems, including the statistical ones, is a pressing task also because achievements in these areas can underpin the efforts of the Hungarian mission at the accession talks and, on the other hand, safeguard the interests of Hungarian agriculture after accession. Moreover, an up-to-date information system developed on scientific grounds is appreciated already now as an important tool of operative decision making and strategic planning.

In the adaptation or development process of a state-of-the-art EU-compatible agricultural information structure the modules of the system are components of an integrated entity, therefore the system design is integrated, as well. This means a preferably consistent

* Some issues are reviewed in more detail in the paper of the author prepared for the Integration Strategy Task Force of the Office of the Prime Minister titled 'Development of the agricultural information system in the light of Hungary's EU accession' (No. 56, 1999 Budapest).

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hierarchy of subsystems with connectivity in all directions, starting from business organisations through regions up to the level of governmental and supranational agencies. Consequently this system development phase will concentrate on the structure of the information system and the interfaces between the subsystems.

The objective of this paper is to facilitate the development of a state-of-the-art agricultural information system conforming to the policies and aims detailed above. In this context the existing European systems will be outlined and the issues of scope as well as management already addressed or to be resolved are explored below.

IT Structure in the European Union

The design and implementation of an EU-compliant registration system and information network are determinant among the criteria of EU-integration of the Hungarian agriculture. Apart from accession there is an obvious need for a new information system for the decision support of agricultural administration. The existing information service is no longer capable of fully satisfying the emerging new needs. *Gyula Varga* is absolutely right to say that the development of agricultural information system must be completed even if '...Hungary will be never join the EU, and will not even negotiate accession'.²

Administration of the EU agricultural sector is supported by the controlled flow of a vast amount of carefully agreed and standardized data. Member States are linked with the EU decision-making centres via information channels. Decisions relying on these data can lead to considerable benefits or heavy losses to the concerned countries therefore the reliability and comparability of data is not merely a rigorous standard but also an inherent concern of the existing or prospective EU Member States. Thus the Hungarian agricultural information system must meet the EU-standards even in the phase of accession talks. In the negotiation phase, however, Hungary should only agree to the harmonisation of the agricultural database without the mechanical adaptation of any existing European system. This approach is indicated by the specifics of the Hungarian agricultural structure, namely, the perpetuance of large, medium- and small sized businesses and the consequent requirements, such as the need for mandatory standards of higher accuracy and detail applicable to legal entities.

This requires strategic decisions in the first place. The tasks of this phase profoundly differ, even in terms of philosophy, from the operational ones falling due only after accession (such as quotas, support granted on basis of set aside areas, extensive animal keeping, regional support including handicapped area support or structural support). In turn, these tasks require reporting data of perfectly unknown accuracy detailed by producers and expressed in terms of value and physical units. While the negotiations can benefit from finding the answers to the implied questions as soon as possible these solutions are mainly needed because they will determine the support made available to the Hungarian agriculture after accession. If the preparations are not made in time, and this may take at least 3 to 5 years, then the EU support scheme will be out of reach. However, there is an

² *Varga, Gy. (1996): Az agrárgazdaság és az agrárpolitika helyzetének kérdőjelei és legfőbb teendői az EU-csatlakozás tükrében. Az Integrációs Stratégiai Munkacsoport Agrárgazdasági Témacsoportjának helyzetfelmérő tanulmánya. Budapest.*

uncertainty to be considered, and the preparations for these tasks must be weighted against the realistically expected benefits.

Compared to the Common Agricultural Policy (CAP) the structure of European Information Technology (IT) systems has been rather stable. CAP is revised at 5-7 year intervals depending on the actual trends in the agricultural sector of the member countries and the impact of these trends on the regulation. Nevertheless, certain components of the CAP information system have remained more or less unchanged. Certainly this does not mean that the system has 'petrified', on the contrary, it has the ability to accommodate additional components, such as the Integrated System of compensation support management. The development of this information system, however, is far more balanced and predictable than the CAP itself, therefore it may be easier to satisfy the IT requirements than to successfully negotiate at the accession talks the ongoing CAP reform and the assertion of Hungarian interests.

The EU information systems are manifold, but they actually fall in the following two general categories: Primary Information Systems, Secondary Information Systems.

Primary information systems include the large European data collection and data processing structures. These structures actually provide the basis of the European agricultural information system. The four key modules of this category are as follows.

1. Agricultural Statistics providing statistical information under EUROSTAT co-ordination on EU processes and trends in many areas;³

2. Farm Accountancy Data Network (FADN) for the monitoring of financial processes and income position of farms, one of the key data systems of the EU (following the German practice better known in Hungary as the Pilot System);

3. Market Information System for providing market trend data for producers and also vital information for the Brussels staff; and finally the

4. Bulk of systems used in the allocation of support, including, in particular, the essentially 'technical' Integrated Administration and Monitoring System used for in the administration of EU for the posting and monitoring of payments.

Secondary information systems typically have no built-in massive data collection features but they rather use the databases of primary systems. They are designed to meet the specific information needs of certain 'narrower' areas. Only the system of Agricultural Accounts, a mandatory EU-system, is addressed of these in this paper. The tasks based on the system of accounts combine output, input and process figures of product categories specified by the EU to provide short-term forecasts of output, value added and income positions, and the expected impact of agricultural policy actions.

Agricultural Statistics

The very exacting standards and requirements specified for the system of agricultural statistics exemplify the high share of agricultural support in the budget of the EU. The system of agricultural statistics is one of the most state-of-the-art sub-systems of the sta

³ This complexity is illustrated by the inclusion in the EUROSTAT Compendium of Geographic Information Systems (GIS) and field monitoring by Remote Sensing (RS).

tistical system of the EU and it supplies the overwhelming majority of data used in the European Union.

Directorate General Agriculture is one of the 23 General Directorates of the European Commission (EC). DG AGRA is responsible for the implementation, 'direction' and development of the common agricultural policy. The necessary input information is transmitted via two channels, i.e., the EUROSTAT and the direct link from the Member States. Data received directly from the Member States typically include detailed and up-to-date market information used mainly in operative management.

The agricultural statistical information used in formulating the agricultural policy, in economic analyses and for general information, reaches the Commission via EUROSTAT. EUROSTAT accepts exclusively reporting received from the official statistical agencies of the member countries. Practically it means that the data reported by national statistical offices are attested by EUROSTAT before forwarding to the Commission. Thus, in the case of Hungary, the Hungarian Central Statistical Office (HCSO) is the approved source of agricultural statistical data reported to EUROSTAT and only these data are accepted as valid in the EU. EUROSTAT, however, is not merely a passive receiver and forwarder of data service but rather the official statistical service of the EU. It is also responsible, among others, for developing and upgrading the EU information systems, for designing data collection methods, providing support and guidance to member countries in statistical activities. Directorates control the various special statistics, e.g. Directorate F supervises agricultural, forestry, fishing, environmental and energy statistics.

The detailed explanation of the issues of agricultural statistics is beyond the scope of this paper,⁴ however, the following issues should be noted here.

The strongest pillar of the European system of agricultural statistics, i.e. the surveys of business structure, is as an abundant source of information about the position and structure of European agriculture and the social and financial positions of farms. In order to meet the critical professional requirements and to obtain a realistic picture of ownership- and business conditions of the Hungarian agriculture an Agricultural Census is required.⁵ Furthermore, a successful census is also a prerequisite for the realistic evaluation and use of data from other databases created from samples. Thus a carefully prepared and implemented agricultural census is a cornerstone of Hungarian agricultural statistics and information system.

The existing production statistics of adequate reliability and rate cover land and animal assets as the two key factors of production, and the key data of plant production and animal production. The existing Hungarian agricultural statistics can satisfy 75-80 percent of the European statistical requirements.

Among the gaps of the Hungarian statistics vis-à-vis the EU requirements special note should be made of the regular survey of the operation and performance of agricultural businesses in general and the private farms of various sizes and profiles in particular.

⁴ For detailed information about agricultural statistics please refer to the proceedings of 'Agricultural Information Technology 99' event held at the Agricultural University of Debrecen, in: *Laczka, É.*: Agricultural Statistical Information System (pp. 32–35); *Szabó, P.*: Economic Accounts for Agriculture in the light of National Accounts (pp. 36–39); *Gyimesi, K.*: Agricultural Census 2000 (pp. 40–43).

⁵ The General Agricultural Census was carried out in April 2000.

Monetary statistics is closely related to this issue. These gaps are especially apparent in the information subsystems used in economic studies. Among sub-systems of monetary statistics price, labour and income statistics by minor adjustments are required to meet the EU-standards.

The field crop monitoring system using satellite based remote sensing came on stream in 1997. By now GIS and RS techniques have become indispensable decision support tools in agricultural administration. The efficient use of these state-of-the-art methods is particularly indispensable in the realistic mapping of excess surface waters. The agricultural information system including agricultural statistics will also benefit from the efforts launched in connection with the adoption of *acquis* in the areas of land administration and cartography. This includes high priority national tasks supported by the Land Registry IT and service development.

The Market Information System

Market information systems are mainly designed to ensure market transparency as a critical precondition of effective competition. Market information systems may prevent the accumulation of unreasonably high earnings at certain levels of a commercial chain, typically to the detriment of other. From the aspect of producers market transparency means the ability to sell products at fair market value. For improved efficiency and higher performance distributors and manufacturers also need market transparency.

Agricultural market information may improve the competitive positioning of agricultural producers in the first place. Based on the information on low supply or surplus they can find the best opportunities of sale. However, if the market prices are to truly reflect the actual market positions, this information must also be available to all of other parties.

The EU market and price information structure grouped by the two key categories of users includes information systems serving the information needs of market agents and central agencies, especially DG AGRA of the European Commission.

There is a certain level of connectivity between the two categories, therefore they are closely linked in several EU-countries. This is illustrated by the example of France where SNM (Services des Nouvelles des Marchés – Market Information Service) is directly supervised by the Ministry of Agriculture and satisfies the information needs of national authorities, the EU-administration and market agents alike. In contrast, the information needs of German market agents are served by a dedicated agency, ZMP (Zentrale Markt- und Preisberichtsstelle für Erzeugnisse der Land-, Forst- und Ernährungswirtschaft GmbH – Central Market and Cost Monitoring Service of Agricultural, Forestry and Food Products). Still another structure has been implemented in the Netherlands where the market and price information systems are operated by trade organisations (Produktschappen), associations and sales co-operatives.

The Brussels administration has defined in detail for the Member States the market (statistical) reporting mechanism. The reporting obligations specified by the EC are different by product categories. Reports are delivered to DG AGRA. In each Member State reporting is the responsibility of the respective ministry of agriculture.

In Hungary the Research and Information Institute for Agricultural Economics (RIIAE) (Agrárgazdasági Kutató és Informatikai Intézet – AKII) operates the market in

formation system and it is widely accessible through the media. The key target groups, data and other features of the RIIAE system are reviewed in the following.

In a recent development project co-ordinated by PHARE the EU-compatible Market Information System for the sectors of wheat, maize, pig for slaughter, cattle for slaughter, and milk was implemented. Data are collected fortnightly or monthly (in the case of milk).

The lead-time between data collection, processing and finally publication of results is 3 days at most. Reports on the market position of product categories are generated at similar frequency and promptly published through the media as well as in printed bulletins. In line with the accepted international practice the respondents are manufacturers and procurement organisations. The range of collected data includes procurement (input) prices and quantities by grade as well as producer and consumer (output) prices. Informal information and data on key market processes and trends are also collected. Furthermore, the bulletins include Hungarian and international commodity exchange rates and reviews covering certain market trends in the trend-setting EU-countries.

A module of this system implemented in the first half of the 1990s provides data collected on peasant and wholesale markets of vegetables, fruits, and cut flowers. Fifty of the most important retail markets and five of the eight wholesale markets operating in Hungary are covered. These markets represent about 40 percent of the overall vegetable/fruit and cut flower production in Hungary. Prices are transmitted to the RIIAE mainframe daily or two times via modem. Processing is on-line; the output is broadcast via the Hungarian television's Teletext pages on the day of entry. The weekly summary figures are published in a printed form. On-line access via modem is also available. This module provides also weekly data on the key German markets, Vienna, Milan and several nearby cross-border cities.

In 1997–1999 the potato information sub-system produced biweekly publications. The data collecting, processing and publishing structure of this sub-system was developed in a joint Dutch-Hungarian project. Upon the completion of the project the independent Potato Bulletin was terminated, however, its main components were integrated in the bi-weekly Vegetable and Fruit Bulletin.

The pig forecasting system is operated in the framework of the Market Information System. A forecasting application was developed using for input the actual data published by HCSO every 4 months, the technical and process parameters of pig breeding and the market trends.

As it appears in the foregoing, the reporting system focuses on tightly regulated product categories. This system will be rolled out in the future to cover other product lines. The roll-out tasks scheduled for year 2000 include the following product categories: chicken for slaughter, sugar beet, sunflower, apple and onions.

Most of the data describing the market activities of the food economy are supplied by RIIAE, HCSO, Kopint-Datorg, the Agricultural Intervention Centre (AIC) (Agrárintervenciók Központ – AIK) and the Office for Agricultural Market Regime (Agrárrendtartási Hivatal – ARH). ARH operating under the supervision of the Ministry of Agriculture and Rural Development (MARD) (Földművelésügyi és Vidékfejlesztési Minisztérium – FVM) is not involved in data collection directly, however, pursuant to applicable law it strongly relies on market data collected from the Product Councils.

*The Farm Accountancy Data Network*⁶

For political initiatives and decision support the European Commission uses information on farm income levels, and analyses of the expected impact of political decisions.

For this purpose the EC implemented the Farm Accountancy Data Network for the collection of representative data from all EU member countries. FADN supplies annual output for the EC covering all types of agricultural activities of farms. Further on, data about certain non-sectoral activities, such as village tourism or forestry, are also collected.

The sampling design is a key factor in representative data collection, however, this design must be prepared in the light of the population, i.e., the total population of farms under survey. The Commission defines the scope of FADN observations on practical grounds, therefore only full-time entities are covered. Full-time entities are defined as farms or businesses large enough to absorb most of the working hours of the farmer and generate sufficient income to keep the household. The characteristics of the population are derived from the business structure census surveys of national statistical offices.

The farms covered by FADN show considerable variability. In order to reflect this diversity the population is stratified prior to sampling. Stratification is a statistical method to increase sampling efficiency in order to minimise the number of entities included in the sample. In the stratification process entities are categorised in more or less homogeneous groups and the sample is composed of entities selected from each group.

The stratification used widely by the EC is based on the following three variables: geographic location (region), business size, and business type.

The implementation and operation of the Farm Accountancy Data Network started in Hungary with the assistance of German experts in 1996. The host organisation, RIIAE, is responsible for managing and supervising the operation; liaising with the relevant organisations such as the EC, MARD, HCSO, unions and chambers; validating, processing, analysing the data and publishing the output. With the assistance of other agencies RIIAE is also responsible for the methodological development tasks following from the overall harmonisation of the system with EU-standards.

Test holdings are selected from voluntary respondents. Farm Accountancy Data Network data are collected and evaluated on changes in

- holding size and ownership structure (viable business size, land holding and land use);
- financial and technical assets of production, including capital projects, plant upgrading and replacement;
- production pattern and production structure to support sustainable growth of production, higher efficiency in the utilisation of natural assets, or higher operating income;
- employment, operating performance and agricultural income;
- local and international competitive strength of products and production processes;
- physical inputs used in agricultural production;
- costs and profitability of production,

⁶ In the elaboration of this issue I have relied on the paper by Kovács, G. and Keszthelyi, Sz. (1998): A Mezőgazdasági Számítéki Információs Hálózat az Európai Unióban. *Gazdálkodás*. No. 2. pp. 52–57.) and the document entitled 'Farm Accountancy Data Network, An A – Z methodology' (Brussels – Luxembourg, 1989).

and also on the impact of agricultural support schemes on competitive strength and profitability.

RIIAE publishes an annual report comprising the output of food processing industry and matched closely with the Profit and Loss Statements used by the EU Commission to present practically all information on the management of the reviewed farms.

In 1997 data were collected from six counties (Békés, Borsod-Abaúj-Zemplén, Fejér, Hajdú-Bihar, Somogy, Vas) and covered 500 farms. These holdings included individual holding and businesses managing more than 5 ha land or an animal stock exceeding 5 stocking units. With Pest, Bács-Kiskun, Tolna, Szabolcs-Szatmár-Bereg, Zala and Baranya added in 1998 a total of 12 counties and approximately 1200 entities were covered with the assistance of 7 accounting agencies. The network was further enhanced by two counties, Heves and Győr-Moson-Sopron, in 1999 and an additional three counties in 2000.

According to historical data of the HCSO to be further refined and improved by the general census of for 2000 there are approximately 70 000 holdings with more than 5 hectares cultivated area or more than 5 notional livestock units in the Hungarian agricultural sector. Most of these farms are operated as part-time individual businesses, however, they represent a considerable share not to be ignored in the sample. These 70 000 holdings are estimated to use 72 percent of the total cultivated area and keep 68 percent of the total livestock. In contrast to 1.5 percent used in the EU the assumed overall sampling rate in Hungary will be 3 percent for the time being. Under such conditions 350-400 legal entities including agricultural businesses and co-operatives, 1600-1800 individual farms, i.e. a total of approximately 2000-2100 farms will be selected for voluntary reporting at the complete roll-out of the FADN. This may be achieved by 2001 or 2002.

In the counties the regional work is performed by accounting agencies. This structure based on the co-operation of the Ministry with the accounting agencies corresponds to the German model, and the same approach is used in Spain and Luxembourg. Other EU-countries, however, show a considerable diversity of test farm data collection systems and various ways of co-operation among different agencies and organizations. Regional agencies of ministries, farmers' associations, agricultural chambers, agro-economic management centres, universities and consultants are also involved in this activity. All in all, the 15 member countries use 9 co-ordination management approaches.

The Integrated Administrative and Control System

The Integrated Administrative and Control System (IACS) is the fourth module of the primary information system of the EU. The objectives of IACS largely differ from those of the other primary systems. While the Statistical System, the Market Information System and the Farm Accountancy Data Network are mainly used in decision support and decision follow-up, IACS is a technical information system designed primarily, moreover, exclusively to support a key component of the Common Agricultural Policy. This component is the allocation and compliance review of compensation support (or direct support).

However, the introduction of the compensation support scheme means an enormous additional workload for the organisations of the European Union, national and regional organisations and the individual farms alike. Regulation, submission and evaluation of

applications for support, authorisation of payments, the payment process, and the detection and sanctioning of any abuses asked for an integrated system of detailed reports, complex registries and reliable identification of the supported items, such as cultivation areas or animals. To meet these requirements and to support monitoring and supervision IACS was implemented⁷ e.g. to verify if the farms submit applications under a certain title only once a year. Furthermore, for the purposes of support IACS also serves as a farm registry. For any support managed under IACS a form including the details of the applicant farm is completed so as to ensure detailed information on all producers receiving compensation support. By completing this form the producer becomes completely 'transparent'.

The rigorous verification data collected in the IACS puts a heavy workload on the clerical staff of the EU. 5 percent of the land support applications and 10 percent of the animal support applications are inspected on site by the EU-staff. If material offences been revealed during the earlier reviews in a specific region, these percentages may be increased. 'Errors' are heavily sanctioned, too. In case of any misrepresentative data remedial actions are taken against the relevant producers as well as their home countries. If a farmer makes a mistake in the completion of the form and subsequently receives additional support, the penalty is the double of the surplus in the 3-20 percent error range. If the error exceeds 20 percent, no support is paid and farmer is disqualified from the compensation support scheme for the next year. Member countries are punished by the Brussels administration by reducing the compensation budget by a percentage defined by the rate of errors found in the detailed audit of the sample.

The least progress made in Hungary has been made in the implementation of IACS. In fact, no technical or organisational measures have been made towards this end. This is unacceptable even if it is clear that there is no agreement in the EU regarding to the access of candidate countries to compensation support. Several officers of the EU and some Member States have hinted unofficially that candidate countries did not suffer any price losses in connection with the CAP reform in 1992 therefore they are not eligible for compensation support, and anyway, the local producer price levels will increase after their accession. On the contrary, candidate countries argue that exclusion of the future members from the area-based and animal stock-based support schemes is a discrimination conflicting with equality principle under the Rome Treaty constituting the basis of the EU.

No matter how the internal power relations of the EU or the standards of CAP may change by the date of accession there is no chance of support without an adequate in-depth information system documenting the actual eligibility of producers and farms. Consequently the adaptation, implementation and commissioning of the Integrated Administrative and Control System is one of the most urgent tasks in Hungary to be commenced as soon as possible. This is a grand project probably taking several years. In France the design and implementation of the technical infrastructure alone, including hardware and software, required two years effort of the 70 member IT staff.

In my view IACS should be closely linked to the management of support payments. According to the current proposals the Hungarian Agricultural Intervention Centre (AIC) will

⁷ EC Directive No. 3508/92 issued on November 27 1992 instructed the member countries to implement the Integrated Administrative and Control System in order to enhance the efficiency of administrative and control mechanisms and adapt them to the changing environment.

be upgraded to receive, transfer and manage support payments in the period before accession, as the local Paying Agency. This proposal along with the relevant EU-standards should be considered in any organizational decisions relating to the implementation of IACS.

Agricultural Accounts

The Economic Accounts for Agriculture (EAA) is a satellite account of the System of National Accounts, EAA has been defined according to the information needs of the EU agricultural policy. This system provides comprehensive and detailed evaluation reports on agricultural activities, where the latter term includes all agricultural activities performed in any sector of the national economy. EAA must be defined and operated on national as well as regional levels. EAA describes the generation, use and inputs of agricultural production and the relevant cash flows in a consistent system.

Since autumn 1996 RIIAE has been developing the EAA, including models and simulations, according to the EUROSTAT Guidelines. RIIAE was responsible for data processing, eliminating problems due to aggregate amounts or insufficient statistical data collection, preparing draft estimates and developing evaluations for use in agricultural policy options. Partner organisations including HCSO, the Ministry of Agriculture and Rural Development, the Ministry of Finance and the Gödöllő Agricultural University made the completion of this arduous task possible through their committed assistance.

The completed system is already capable of generating quarterly forecasts and estimates, and it has the capacity to conduct impact analyses in the future.

HCSO proposed to operate the EAA several years ago. The required infrastructure was implemented in 1999 consequently HCSO has been managing EAA in co-operation with the mentioned agencies. EAA-based forecasting and impact analyses, however, will remain the responsibility of RIIAE. Arguably the reporting structure evolved recently in the EU is the most widely used approach, however, this is mainly attributable to the circumstance that at the level of the EU EAA is managed by EUROSTAT rather than DG AGRA.

Conclusions

This paper makes it quite clear that currently HCSO and RIIAE supply the most critical decision supporting information. Agricultural data, however, are also collected and processed by several other organisations. In my view the responsibility for the future development and operation of agricultural information systems must be divided vertically and horizontally among the existing agents.

Horizontal division means that juxtaposed and co-ordinated databases are operated in the agricultural information system by various 'host' organisations according to their own specific requirements, however, other parties may also need their data. For example, it stands to reason that tasks falling in the circle of competence of the Ministry of Agriculture and Rural Development are associated with the responsibilities of its special departments. It is also evident that the responsibility for the supervision and operation of the majority of databases for economic and sectoral management tied to the management information system of agricultural administration should lie with HCSO and RIIAE. Public

agricultural chambers (or unions), on the other hand, should also have the right to create databases for the direct information of producers.

Vertical division means that the different contributors can also co-operate the various databases. This co-operation is particularly helpful in case of economic or sectoral control. For example it seems feasible that agricultural universities collect sectoral factor-product and cost-income data under the supervision of RIIAE. In other sub-systems this function can be assigned to other suitable organisations. Universities and colleges as regional information centres promise a wealth of potential benefits. There is no need for a new specialised organisation; thus cost benefits are apparent, and it is easier to build confidence between the collectors of data and the respondents. The data collected, pre-processed and loaded into a database can be utilised in university education and research. (Such structure is similar in several respects to the UK model).

According to the proven EU-practice the systems are supported by sound regulatory background providing a solid framework for the specification of tasks and interfaces, and for decisions on systems funding. Hungary has some backlog in this respect as well. Statistical data collection is regulated primarily in the framework of the National Program for Statistical Data Collection (Országos Statisztikai Adatgyűjtési Program – OSAP), whereas a separate Act has been passed for the Agricultural Census. The reference conditions of operation of the Farm Accountancy Data Network are regulated by the Act on Agricultural Development adopted in 1997. However, the lack of regulations relating to the development, operation and funding of the Market Information System and the Integrated Administrative and Control System is a source of considerable uncertainty.

Last but not least the obligations and access opportunities of respondents to information systems are also worth mentioning. Information should be made equally accessible for every producer. Equity, with no bias for or against any particular type of business, in access to vital information must be assured for decision making based on identical information.

Producers do need information. Where does this information come from? It is partly composed of data reported by the farmers themselves and collected in statistical or other information systems. It is evident that producers and entrepreneurs carry a heavy reporting burden in an information society. Any conduct or position of the farmers to refuse reporting on the grounds of the notional exploitation by the government is indefensible. Producers must understand that information systems are not intended to render their living more difficult, on the contrary, in countries with advanced agriculture they serve the very objective to equalise personal income levels of the agricultural and other sectors.

At the time of accession to the EU Hungarian producers must be prepared for the encounter with the EU information system. If they want to utilise the financial opportunities offered under the Common Agricultural Policy, i.e. access to support schemes, they must be open and ready to report. This reporting is certainly far more detailed, more 'delicate' and relevant than the one known in the Hungarian practice of agricultural information and statistics.

This brief sequence of thoughts may illustrate the magnitude of the challenge to face. Farmers will have to develop skills in finding their ways in the information society. Whether smallholders or employees of big farms they must equally be aware of their rights and obligations, and they must know and be able to utilise the opportunities. Farmers have the right to get all assistance and training to achieve this objective.

THE FARMING SYSTEM OF AGRICULTURE IN THE CONTEXT OF THE AGRICULTURAL POLICY OF HUNGARY AND THE EU *

ERZSÉBET TÓTH¹ – GYULA VARGA²

SUMMARY

With an overview of the Hungarian farm structure and an attempt at thematic systematisation and conceptual classification, the study has undertaken to demonstrate the complexity of the Hungarian farm structure. The authors have emphasized especially the fundamental differences between subsistence, part-time farms and competitive farms or companies, and based on this, they want to make an attempt to enlighten the necessity to handle differently these different structures in the agricultural policy.

In the study the farm structure of EU member countries and various practices are described in detail. The conclusion is that there is no perfect EU-conformity and there is no such standard of farm structure regulating precisely every detail to which Hungary should adapt entirely.

KEYWORDS: Farm size; EU agricultural policy.

In addition to provide an overview of the farm structure of Hungarian agriculture and an attempt at thematic systematisation and conceptual classification, the study also undertakes to outline the existing farm structure as it has developed to date. Special emphasis is laid on the fundamental difference between

- part-time subsistence farming serving as a subsidiary source of income, and
- farms and companies that belong to the commercial or competitive sector.

Then, based on this fundamental difference, special attention is paid to the necessity of treating these types of farms with distinction in the context of agricultural policy, as the failure to make such distinction is very much to the disadvantage of both groups. The

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competitive sector is disadvantaged because state subsidies have been withdrawn and reallocated for social purposes. At the same time non-competitive farms are usually unable to meet the eligibility criteria of subsidy schemes, or the available resources are of such a limited scale, to begin with, that they are not at all sufficient to improve the living standard of the family. On the other hand, this rather insignificant available ‘agricultural subsidy’ – while creating the phallacy that these families are sustained by the state as its dependents – excludes them from the groups that are otherwise eligible for social benefits and aids, despite the fact that their production remains far less than what is adequate for the minimal farm size.

The authors are convinced that the same tools cannot be equally efficient to influence both types of farms, i.e. subsidiary subsistence farms on the one hand, and competitive, commercial businesses that produce for and follow closely every little change in the market on the other hand. However, it must be noted that this distinction represents neither value judgment nor hierarchy; it embodies a strictly neutral approach.

The practice followed by the member states of the European Union (EU) is significantly more colourful and versatile than what the Hungarian public generally believes and even what would logically follow from the EU-regulations that are equally hold in each member state. The reasons behind this situation go back to differences in levels of economic development, differences in the role of the agricultural economy, and sometimes only differences in the historical backgrounds. The rather versatile solutions adapted in the various member states is one of the reasons why perfect ‘EU-conformity’ does not exist; in fact, the EU-accession process offers us quite a wide margin in adjustment. There is no precise – down-to-the-details – standard in the world of farms that Hungary should adapt entirely and by all means. The agricultural farming system of the member states of the European Union is not at all homogenous; there is no such a thing as a standard for farm structures.

In the EU, family farms play the leading role; however, if we take a look at the prominent majority of these family farms, that is the mass of farms that contribute the largest share of the total agricultural output, we see highly specialized and capital-intensive businesses with modern equipment. Small farms exist in large numbers but play only a subordinate role in terms of output. Not only in the EU-member states that, as an exception to the rule, have less developed economies, but also in our own region the reasons behind their existence are fundamentally the overpopulation of the agricultural society and the difficulties of employment. In more developed countries farmers are forced to carry on their agricultural activities only as a subsidiary source of income for reasons such as the diminishing size of farms due to partitioning or the challenges of the rapidly increasing minimal farm size that represents the threshold of equitable income.

In some regions and countries (e.g. in the United Kingdom) large farms that employ, in addition to family members or in many cases exclusively, wage earners and/or employees play a predominant role in agriculture. Germany represents yet another variety in that in its Eastern provinces the farm structure of agricultural production is dominated by the successors of the former agricultural co-operatives, that is companies who currently operate as legal entities (primarily co-operatives, and secondarily limited liability com-

panies) with the so-called ‘civil partnerships’³ – formations of three to five families without legal entity that are in many respects much like Hungary’s deposit partnerships – also play a rather significant role.

HUNGARY’S FARMING SYSTEM

The knowledge and experiences accumulated on account of the problems of the Hungarian farm structure and the efforts dedicated to rectifying them come most handy in shaping and developing Hungary’s farming system. The most obvious and clearly visible phenomenon that nevertheless is routinely disregarded by the Hungarian observers is the speeding up of farm concentration. No country is exception to this trend; at the same time, there are startling differences between certain countries, and they seem to widen rather than to diminish as time passes. More modernised producers dictate a speed of farm concentration that is impossible to follow for countries whose agriculture is less developed, is characterized by a fragmented farm structure, and is struggling with the necessity of providing labour for the agricultural society. If we disregard these circumstances during the upcoming years of our preparation for accession, and fail to promote the necessary level of farm concentration within the competitive sector – partly by saving existing larger farms and companies and partly by creating new ones – we may have to face a grave disadvantage and substantial losses after our accession.

Apart from the concentration of farms producing for the market another trend that one can readily observe is that more and more small farms of the competitive sector fall behind. They are either forced to continue their operation merely as a non-competitive subsidiary source of income, or, often enough, to terminate their agricultural activities altogether. In an attempt to handle this effect of the laws of economy, the European Union offers economic subsidies and favourable legislation in order to promote the formation of economically viable units, while treating those excluded from the competitive sector as a social issue (relying on such tools as early retirement, a number of separate support schemes, or the promotion of activities offering alternatives to agricultural production).

Small farms that have both the desire and the ability to grow face the same single perspective everywhere: producing for the market and entering the competitive sector. Designing forms of subsidy for these small farms, what must be realistically considered first and foremost is whether they indeed have a chance to grow and to survive in a competitive environment. If the answer is yes, capital concentration must be promoted, small farms must be enabled to increase their resources (lands and production equipment) while, on the other hand, it must be verified that they do indeed have the required capabilities (start-up capital, expertise, etc.).

We believe that today in Hungary the conditions are either not given or are extremely limited for this trend of concentration to become a general rule (see Table 1.). In Hungary, because of the lack of other means of survival, the owners of small farms serving only as a subsidiary source of income have no other choice but to keep their farms, while they hardly have any chance to expand or develop their businesses. The

³ These formations exist primarily because by forming ‘civil partnerships’, co-operative members who, for various reasons, are not willing to work alone as self-managed individual farmers, or persons who belong in the group of ‘re-starters’, can avoid corporate taxation, which all economic companies operating as legal entities and all co-operatives are subject to.

situation is very similar in EU-member states, where – despite the fact that incomparably more funds are available for subsidies than in Hungary – small farms are shut down in massive numbers.

Table 1

The structure of individual farms in terms of the size of the land they use, in Hungary, 1994

Farm size (hectares)	Number of	Distribution (percent) of	Total land area (hectares) of	Distribution (percent) of total land area of	Percentage of the total area* represented by	The average size of one farm (hectares)
1 or less	978 101	81.4	231 665	16.8	3.7	0.2
1.1 to 5.0	173 182	14.5	378 912	27.4	6.1	2.2
5.1 to 10.0	28 723	2.4	198 303	14.3	3.2	6.9
10.1 to 50.0	18 922	1.6	359 588	26.0	5.8	19.0
50.1 or more	2 087	0.1	214 737	15.5	3.4	102.9
<i>Total</i>	<i>1 201 015</i>	<i>100.0</i>	<i>1 382 205</i>	<i>100.0</i>	<i>22.2</i>	<i>1.2</i>

* In comparison to the total agricultural area.

Source: *Az élelmiszergazdaság 1994. évi fejlődése*. (1995) Hungarian Central Statistical Office. Budapest. 47. p.

Hungary cannot afford to shut down masses of small farms within a short period of time. The reasons are social and societal. Consequently, the state must act as a social welfare care provider. At the same time, the future of these farms is an issue to be addressed and managed also from the aspect of agricultural production. While rationalisation of production must be promoted also among small farms that are not viable on their own and are not competitive because of their size. In our view the following options are available to choose from:

- we promote their growth and support farm concentration among those who have the necessary capabilities, that is, we help them enter the competitive sector;
- we support land selling and ‘farm shut-down’ whenever it leads to the development of more viable production units; or
- we provide separate support for those subsidiary farms that are not suitable for, or not even interested in, survival on their own, provided they are willing to join a modernization process based on voluntary co-operation (‘joining forces’) in production and sale, or even in processing.

If we take a realistic look at Hungary’s situation today, the first two solutions can barely become widespread, partly because of the lack of capital, and partly because of the circumstances, namely the farmers’ dependence on subsidiary farms for their mere livelihood. However, the third version – joining forces or co-operation – is indeed a viable solution, and, all things considered, it is undoubtedly the cheapest method of small farm modernisation. We believe that this method is also the most cost-efficient and effective way for the state to exercise its function as a social welfare care provider.

Small farmers who wish to carry on their agricultural activities in the ‘traditional way’ – that is, small producers primarily involved in subsistence farming – receive state support in the form of tax benefits, a system that has evolved gradually over the past few decades. This practice, of course, must be maintained, but must be extended to also include small farms that venture, alone or in co-operation, to produce for the market. This policy of extension must also be followed in the case of all other employment and non-migration type subsidies that draw their resources from the social and regional development budgets. In other words, all persons engaged in small-scale production should be eligible for all these types of state subsidies, whether small production is their sole activity or not, whether they produce only for subsistence or also for the market. The amount of subsidies, however, should depend on the volume of such production, the income generated and the total family income. By all means, this is an issue where the principle of social justice must absolutely prevail.

We believe that today’s ‘mixed set’ should first of all be grouped into two categories on the basis of the scale of production, distinguishing between producers under the minimal farm size and producers larger than the minimal farm size; then we should further categorize the latter to establish the following groups of individual farms:

- household farms that are under the minimal farm size and are therefore not considered *per definitionem* agricultural farms;
- individual farms that are larger than the minimal farm size and that fall within the definition of the category;
 - part-time and second-job subsidiary farms;
 - full-time family farms; and
 - private agricultural businesses.

Drawing the line at a certain threshold,⁴ the production of families, whether they are engaged in agriculture solely or in addition to other activities, is negligible to the extent that it is not even worth treating them separately for reasons of either taxation or statutory agricultural regulation. Therefore, their exclusion from the circle of *per definitionem* agricultural farms offers an opportunity not only to discontinue taxation that is known to never generate a return, but will also legalize the tax-free status of certain insignificant incomes that today the tax subjects must either state or ignore in their tax returns, making taxation a ‘matter of good conscience’. It is nevertheless necessary to collect statistical information also about those producers who are not considered *per definitionem* agricultural farms; however, this must be done in a more cost-efficient way such as by sampling. We must be aware of their role in all issues that are relevant to them or that concern them in any way; however, this is something very different from the present requirements of the process of taking account of agricultural farms for statistical and tax administration purposes.

If we attempt to set up a realistic and lasting classification of the farming structure, we must first define clearly and unambiguously what an agricultural production unit is. The core unit is the family, which is a ‘production unit’ in itself, just like a workshop

⁴ This limit may be 1 hectare of arable land, or a plantation of equivalent capacity, or equivalent livestock, or even value of production.

in small-scale industry, a shop in retail trade, etc. We believe that maintaining today’s obsolete practice is becoming more and more unacceptable; there is no reason why a single household should be considered – even if only ‘on paper’ – as many small agricultural production units as there are adult family members sharing the income generated by their joint agricultural activities. Therefore the category of the ‘farm’ must represent a lasting frame of reference – similarly to the household or the family – in which the number of persons could just as easily change as the nature of the production activities and all this without the farm itself changing.

If we consider not only private producers but also farms involved in collective production, or even producers with a legal entity, the farm and company structure of Hungarian agriculture can be categorized as follows:

Agricultural production	Not businesslike, household farming, hobby farming		Of which: subsistence, ‘social agriculture’ aiming at supplementary incomes
	Private farmers	Private businesses	
			Full-time family farms
		Agricultural private businesses	
	Agricultural companies, legal entities	Joint businesses	Deposit companies, unincorporated associations
			Agricultural co-operatives
			Limited liability
			Stock companies
		Public utility companies, foundations, experimental and educational farms	

After the political and economic transformation of the 1990’s, agricultural production in Hungary, yet another time, had to assume social responsibilities, and even to a larger extent than in previous decades. However, because of the necessity to preserve the financial balance of the country, this can only be a realistic objective if the competitive sector is strengthened. After the adoption of the statutory regulations concerning the conversion of agricultural co-operatives and the privatisation of state farms, the institutional structure of Hungarian agriculture mostly loosened or broke up. However, the distribution (reallocation) of agricultural assets and the compensation of former landowners through land redistribution rarely created the ownership and farm size necessary for the birth of independent, self-sustaining, viable farms. Today, about one and a half million small landowners exist, most of them retired and/or urban citizens, who partly let their small lands on lease, partly produce for their own consumption.

Besides the diminishing of the farm sizes due to farm partitioning, rural unemployment in Hungary is about to reach the level of the 1930's. At the same time, the rural population bears an increasing load. Despite the fact that the productivity and profitability of their work as well as the level of the social benefits they receive are by far under the average of the Hungarian society as a whole, 100 active earners support 250 to 280 persons. By today, the idea that agriculture could play a primary role in employment policy has proven quite an obvious misconception. Further, it is also obvious that the earlier rates of employment of the sector cannot be reinstated, and, in fact, sectorial rates of employment will continue to decrease. While household farming and part-time small-scale production for subsistence may be able to provide some sort of basic livelihood for the rural population, it is entirely unsuitable for making a living independently, let alone for stepping into the place of the society's social welfare providing system.

THE FARMING SYSTEM OF THE EUROPEAN UNION

If we study the agricultural statistics of the EU, we can observe the following proportions and major trends of change:

- the number of those living from agriculture and the employment capacity of the agricultural sector are continuously decreasing;
- there is a rapid decrease in the number of farms;
- all production indices reflecting concentration are increasing at a rate of speed never expected;
- there are great differences between the average farm size indicators of the different countries and regions that do not seem to decrease despite the common agricultural policy;
- the differences between the outputs of the agricultural sector of the various countries prevail in the long run; in fact, they are growing in the case of certain countries;
- farm incomes vary greatly across the various member states; differences grow rather than decrease despite the subsidy system.

One must therefore accept that the agricultural policy of the EU, which is probably the most resolute globally in its attempt to preserve traditions even at the price of financial sacrifices of a scale never seen before, is moving away from its declared principles. The traditional model of the family farm is falling apart, or, at least, it is in turbulent conversion. The majority of full-time family farms are not small-scale farms any more; they are more and more often capital-intensive businesses.

Taking the average of the 15 member states of the EU, those working in agriculture only represented 5.3 percent of all earners in 1995 (down to 4.8 percent in 1998). This average, however, hides great national differences, the extremes being the United Kingdom at 2.1 percent and Greece at 20.4 percent. In comparison, Hungary's 8.5 percent is a bit more than one and a half times bigger than the EU-average, while Greece's national figure is almost twice Hungary's. However, while in Hungary 1 percent of those working in agriculture contribute 0.93 percent of the country's GDP, this rate of contribution is only 0.45 percent in the EU. In other words, one full-time worker in Hungary's declining

agricultural sector still contributes about twice as much to the gross domestic product as his or her counterparts within the EU.⁵

We get a more realistic comparative picture if the index selected as the basis of comparison is not or not only the ratio of agricultural workers, which is totally insensitive to the density of population, but also the number of people working in agriculture per 100 hectares of agricultural area (see Table 2). In this comparison, the EU-index of 5.7 persons per 100 hectares is inferior to Hungary's more 'favourable' 5.0 full time working persons per 100 hectares. However, if we try to convert the number of part-time workers into the 'Annual Work Unit' (AWU) used within the EU, the Hungarian index will increase significantly, but hardly more than by 40 to 50 per cent. Using this method of computation, Hungary's figure at about 7 persons per 100 hectares is right in the middle range of the member states, more or less in the same category as Austria, Belgium and Finland. In the light of this, the complaint that is often heard both in Austria and in other countries about a massive workforce being released by Hungarian agriculture is based on a grave lack of information rather than on any justifiable actual threat. Nevertheless, one should not forget to mention that Hungary is hardly doing its best to combat these common delusions by publishing realistic information of this nature.

Table 2

The supply of agricultural labour and its changes within the member states of the EU

Country	AWU per 100 hectares of agricultural area			Change in the supply of labour 1995/1980 (percent)	
	1980	1990	1995	per 100 hectares	per farm
Austria	—	9.9	5.5	—	—
Belgium	8.7	7.0	5.8	66.7	100.0
Denmark	5.9	3.4	3.8	64.4	107.1
United Kingdom	3.4	2.9	2.3	67.6	72.7
Finland	—	7.5	8.5	—	—
France	6.3	4.5	3.6	57.1	93.3
Greece	22.5	18.6	17.8	79.1	100.0
the Netherlands	11.9	11.2	10.5	88.2	118.8
Ireland	6.1	5.6	5.1	83.6	100.0
Luxemburg	7.0	5.0	4.2	60.0	94.4
Germany	8.6	6.0	4.1	47.7	108.3
Italy	13.8	12.9	12.4	89.9	87.5
Portugal	34.9	21.1	14.9	42.7	86.7
Spain	—	4.7	4.3	—	—
Sweden	—	3.1	2.9	—	—
EU 12	—	6.7	5.7	—	—
EU 15	—	6.7	5.7	—	—

Source: EUROSTAT. Agriculture Statistical Yearbook, 1997.

The number of people working in agriculture is rapidly decreasing in every member state of the EU, and, in spite of several supporting measures, fewer and fewer people find

⁵ The Hungarian data are biased and seem more favourable than they are, as there are millions of part-time workers who are not taken into consideration when defining the size of the labour force.

their livelihood directly in agriculture. Although farms are becoming larger and larger, technological advances mean that less and less human labour is necessary. Consequently, farms offer a living for less rather than for more people as time passes.

As it is fairly obvious from the figures of Table 3, the average area of farms is increasing in rather small steps, but quickly, if taken in the average of the EU-member states. This 'average of averages', however, says very little about actual farm sizes and changes in the distribution of farms by size, not unlike the often-quoted indicator of 17.5 hectares of agricultural area per farm. The major reason is that part-time farms, which represent quite a large number, are also included in the denominator, while their actual output is rather insignificant.⁶

Therefore it is inevitably important to look behind the all-enveloping average figures. In order to facilitate this, two detailed tables have been included, which represent, on the one hand, the changes in the size of farms over the past few years (see Table 3), and, on the other hand, the change in the distribution of the total agricultural area as a function of farm size, which indicates a rather significant change over the past one and a half decades (see Table 4).

Table 3

Changes in the average farm size in EU-member states

Country	Average farm size (hectares)			Change 1995/1980 (percent)
	1980	1990	1995	
Greece	3.6	4.3	4.5	126.0
Italy	5.5	5.6	5.9	107.5
Portugal	4.3	6.7	8.7	202.2
Austria	–	–	15.4	–
the Netherlands	13.7	16.1	17.7	128.9
Belgium	12.3	15.8	19.1	154.5
Spain*	12.9	15.4	19.7	152.4
Finland	–	20.7	21.7	–
Ireland	22.6	26.0	28.2	124.8
Germany	14.4	26.1	30.3	210.6
Sweden	–	32.9	34.5	–
France	23.3	30.5	38.5	164.9
Denmark	23.8	34.2	39.6	166.5
Luxemburg	25.0	31.7	39.7	158.5
United Kingdom	63.7	67.9	70.1	110.2
EU 12	12.8	15.0	17.3	134.7
EU 15	–	–	17.5	–

* As for Spain, only the 1983 figure is available.
Source: EUROSTAT. Agriculture Statistical Yearbook, 1998.

Apart from the decrease of the number of farms the most important phenomenon observed between 1980 and 1995 in the average of the 12 EU-member states that we can

⁶ Both in Germany and in France, about two fifths of the agricultural farms belong to the category of part-time farms, and their output is about 10 and 5 per cent of the total agricultural output.

study is the decrease by about 30 percent of the agricultural area cultivated by farms smaller than 20 hectares. This category of farms only held 20 percent of the total cultivated area. The farms of size between 50 and 100 hectares increased by over 20 percent, while those over 100 hectares in size increased the area cultivated by over 50 percent. In other words, whether we like it or not, the privilege of growth is reserved for the larger farms. Table 4 serves well to illustrate the point that the growth threshold – the dividing line between farms that decrease in number over time and farms that increase in number over time – is only lower in countries that struggle with agricultural overpopulation; however, this ‘watershed’ is higher than 20 hectares everywhere, even in Mediterranean countries, with the single exception of Portugal.

Table 4

The average change in the agricultural area cultivated by farms of the various farm size categories in EU-member states between 1980 and 1995

Country	Less than 5	5 to 20	20 to 50	50 to 100	More than 100	Total
	hectares of agricultural area (Index: 1980=100)					
Belgium	58.4	52.4	102.3	160.4	183.1	95.3
Denmark	10.2	48.0	59.9	136.5	217.9	93.4
United Kingdom	67.2	90.0	83.6	94.4	100.1	96.2
France	59.5	37.5	54.2	116.6	215.2	96.5
Greece	72.7	93.1	177.8	190.8	274.4	97.6
the Netherlands	83.9	57.1	103.8	186.5	200.6	98.1
Ireland	45.9	60.5	88.3	101.9	106.4	85.7
Luxemburg	55.6	41.7	38.0	147.3	530.8	97.5
Germany	57.8	54.0	79.0	209.2	1012.9	140.5
Italy	83.2	82.2	122.2	115.0	83.8	92.6
Portugal	76.5	136.6	174.6	158.4	118.8	118.4
Spain*	65.9	79.0	87.0	107.0	138.6	107.3
EU 12**	72.7	66.8	78.0	121.1	150.1	103.1

* As for Spain, only the 1983 figure is available.

** The reunification of Germany affects the average figures. Without the German figures, the average of the 50 to 100 hectares category would be 114 percent instead of 121 percent; the average of the more than 100 hectares category would be 129 percent instead of 150 percent.

Source: EUROSTAT. Agriculture Statistical Yearbook. 1998.

Even in the case of the Netherlands and Belgium – both capital-intensive but lacking in available agricultural area – growth only begins at 20 hectares, although this growth is minimal, exactly because of the lack of available agricultural area. In the United Kingdom, the picture is somewhat different than in other countries, primarily because the formation of healthier farm sizes already concluded in the United Kingdom, where present-day changes are less spectacular.

Since the area of agricultural lands is limited, farms in most countries of the European Union can only increase their lands to the disadvantage of one another. At the same time, livestock can be increased comparatively freely, at least up to the limits the EU was recently forced to introduce because of environmental considerations. Today, there are rather large differences between the various member states in terms of stock-

ing density indices, and these are most of the time in negative correlation with the supply of agricultural area.

In Mediterranean countries, the index is 0.4 to 0.8 animal units per 1 hectare of agricultural area; in Germany, this index is 1.1; however, in Belgium it is up to 3.2, while in the Netherlands it is as high as 4.0. In these latter two countries, as well as in the western provinces of Germany, livestock can hardly be increased any more as agricultural subsidies are tied to the maximum stocking density, and/or there are special incentives for keeping stocking density at lower levels.

Animal breeding also shows significant concentration in the countries of the EU. What is primarily worth paying attention to is the rather amazing rate of increase in the levels of livestock in hog farms primarily in Belgium, Denmark and Ireland. It is also worth mentioning that there is no country that can be an exception to this speeding process, while the differences between the individual countries are astonishing, and they are growing rather than diminishing. More modernised producers dictate a speed of concentration that is impossible to follow for countries whose agriculture is less developed, is characterized by a fragmented farm structure, and is struggling with the social necessity of providing labour for the agricultural society instead of facing the challenges of competition.

The actual distribution behind the average livestock figures is, again, worth taking a closer look at. For this purpose, we processed head of stock figures for dairy cows, for the total cattle stock, and for the pig stock (excluding piglets). In six of the 12 member states of the EU, over 90 percent of the pig stock is raised in farms with an average head of stock of over 200; in seven countries, over 80 percent of the total pig stock is kept on farms with a total head of stock in excess of 400; what is more, in eight countries over half of the pig stock (and in three of these countries, over two thirds of the total pig stock) is fattened by farms keeping over 1,000 animals each.⁷

In the European Union, farms are not only categorized on the basis of the size of the agricultural area they cultivate, as this is inaccurate and often incomparable. Therefore, in addition to size categorization, a homogeneous measuring system is set up on the basis of the value of the normative indicator of the farm's profit generating capacity, namely its Standard Gross Margin (SGM). A common unit of measure is used for this comparison, specifically, the so-called 'European Size Unit' (ESU); one ESU equals 1200 ECU which is approximately equal to 300 thousand HUF. The results of these measurements are also published.

Table 5, which includes the details for each country, is based on these published results. There are great differences between various member states of the European Union in terms of the farms' capacity to generate income. The Netherlands leads the list, followed by the other two Benelux states with the United Kingdom right behind them. In these countries, about one third of the farms realize over 40 ESU worth of income, that is, contribution, which is approximately 13 million Hungarian forints. At the other end of the scale we find Italy, Portugal, Spain and Greece; in these countries, half or even more of the farms are under the annual income level of 4 ESU, that is, their income is less than 1.3 million HUF.

⁷ *Situationsbericht 1996*. (1996) Deutscher Bauernverband, Bonn.

Table 5

*The distribution of farms on the basis of their capacity
to generate income in 1995*

Country	Under 4 ESU	4 to 40 ESU	Above 40 ESU	Total
	percent			
Austria	37.0	59.6	3.4	100.0
Belgium	17.1	46.2	36.7	100.0
Denmark	6.2	57.2	36.6	100.0
United Kingdom	25.7	46.6	27.7	100.0
Finland	25.4	69.0	5.6	100.0
France	25.2	51.0	23.8	100.0
Greece	45.1	54.2	0.7	100.0
the Netherlands	1.7	40.3	58.0	100.0
Ireland	26.7	64.2	9.1	100.0
Luxemburg	20.6	47.0	32.4	100.0
Germany	29.3	52.9	17.9	100.0
Italy	59.0	38.1	2.9	100.0
Portugal	58.1	40.5	1.4	100.0
Spain	49.9	47.2	2.9	100.0
Sweden	29.7	54.2	16.1	100.0
EU 12	46.4	45.4	8.2	100.0
EU 15	40.0	40.6	19.4	100.0

Source: EUROSTAT. Agriculture Statistical Yearbook, 1997.

Table 6

*The variation of the farm income (in real terms) per one full-time worker
and its growth as compared to the 1980 level in the average of the 12 member states*

Country	In farming years			
	1980/81	1985/86	1990/91	1994/95
percent, EU 12 = 100				
Belgium	180	225	232	185
Denmark	168	213	210	205
United Kingdom	139	151	182	183
France	122	127	167	145
Greece	41*	51	47	39**
the Netherlands	224	244	275	187
Ireland	73	79	92	87
Luxemburg	138	158	173	145
Germany	93	112	131	111
Italy	66	67	83	73
Portugal	–	29	22	14
Spain	–	80	69	97
EU 12	100	100	100	100
EU 12 (Index: 1980=100.0)	100	110.8	109.8	133.3

* 1982 figure.

** 1994 figure.

Source: Agrarbericht, 1982 and 1987 figures.

Considering the rather scattered distribution of farms with different capacities to generate income, it is hardly surprising that there are also significant differences among the various countries in terms of actual farm income figures, and, consequently, in the income levels of the farmers (see Table 6.). Unfortunately, the EU has no statistical surveys concerning part-time farms, which means that, yet another time, we must rely on the data available for Germany. But even Table 6, which is an overview of full-time farms, will give the reader a sense of how greatly the small size of the farms effect their farm income per one full-time worker. It is also worth mentioning that these great differences between the individual countries did not balance out over the 15 years period under review. True, Ireland and Spain significantly improved their past disadvantaged situation; however, Greece only managed to keep its position, while Portugal suffered further decline. Since incomes increased in real terms, countries that kept their positions witnessed an improvement in the living standards of their farmers.

These differences are, however, not only characteristic of the member states of the EU, but also – and even more so – of the agriculture of the various regions. A fairly recent study that analyses changes in farm income levels on the basis of net value added figures per one labour unit (LU) compares two periods (1978 through 1989 and 1991 through 1993) and groups the regions into two categories. The first category includes the regions where the net value added per one labour unit is lower than the average of the 12 member states, while the second category consists of those regions where it is in excess of the EU average. Then the study proceeds to further group the regions in both categories based on the direction of the trends observed. Among other things, the study concludes the following.

– The differences between various regions in terms of farm incomes are significantly greater than the differences between countries. Despite all efforts, the differences among the regions continue to grow, as a result of keen competition. Within the period under review, the income of farms located in regions that enjoy good local conditions increased by 26 percent as compared to the average, while regions with unfavourable local conditions saw a 15 percent decline in farm incomes, with mountain farms suffering a decline of 45 percent as compared to the average.

– Regions with a higher than average income include all regions in Denmark, the Benelux states, France and Western Germany, the whole of the United Kingdom without Northern-Ireland, but even three regions (Lombardia, Emilia-Romagna, Sicily) in Italy and four (Castilla-Léon, Castilla-La Mancha, Navarra) in Spain. However, the group of regions with a favourable overall result includes regions where farm income levels are on the decline. These include Belgium, Luxemburg, and the Netherlands, plus a few regions in France, Germany, Italy and Spain. These regions are either mountain regions or regions that are disadvantaged for other reasons.

– Nevertheless, even the group of lower than average farm income levels includes regions where the programmes designed to even out differences have been successful and the profitability of farms is improving. Most of the regions showing improvement are in Ireland, while certain regions of Spain, Italy are also successful at improving their agriculture.

In the group of lower than average farm income levels, all the regions of Portugal show a trend of further deterioration, as do some regions in Northern-Ireland, most re-

gions in Greece, and some of the disadvantaged (mountain) regions of Spain and Italy. The major reasons – and this is an invaluable lesson for us – are the lack of capital and the overly fragmented farm structure, which in itself is already an obstacle of modernization and a barrier in front of reasonable capital involvement.

RECOMMENDATIONS – IDEAS

If we follow the practice of the EU and, taking Hungarian reality as a starting point, we decide that producers having an agricultural area of 1 hectare or equivalent production capacity do not qualify as *per definitionem* farms, then – on the basis of the 1994 census of Hungary's economic structure – we 'separate' approximately 4 percent of the total agricultural area, while at the same time forming a group that includes over 80 percent of what are today considered 'small farms'. Considering Hungary's economic and social circumstances realistically, we can prove that the group of farms having an agricultural area of 1 to 5 hectares are also unable to offer socially acceptable opportunities for independent farming. If families owning small farms do not have any income other than the farm income, then even farms belonging to this group will be primarily defined by their social function, therefore it is obvious that their production activities will never be competitive.

These farms represent the second largest sub-group of what is today understood as the group of private producers; in figures, they amount to 15 percent of the total of private producers, holding another 6 to 8 percent of the country's agricultural area, based on the 1994 data. Put together, the two groups still do not represent too much in comparison with the agricultural areas at the disposal of the competitive sector. There is, however, a real danger. Specifically the trend of farm partitioning that has prevailed since 1994 may go on and small farms may massively become non-viable if large farms continue to lose their agricultural areas, be shut down and liquidated one after the other. Considering the results of our most recent survey, whereby agricultural co-operatives lease an average of 2.6 hectares from 662 individuals each, it is easy to anticipate that every liquidated co-operative farm contributes significantly to the mass of non-viable farms that do not even reach the minimal farm size or are very small in size. In essence, our recommendations are as follows.

1. Household farms (smaller in size than 1 hectare of arable land, or 0.2 hectares of plantation, or 400 square meters of cultivable area covered by glass or plastic or – in the case of livestock farms – 2 notional livestock units) should not be considered *per definitionem* agricultural farms in the future. Production carried out on household farms should not be subject to taxation; on the other hand, household farms should not be eligible for receiving any sort of agricultural development subsidy either. Their eligibility for social aids should be determined on the basis of their income from other activities. Families should be classified as falling within this category on the basis of the physical size of production resources as stated by the registers and certificates of the municipalities.⁸

2. The second category includes part-time or second-job subsidiary farms larger in size than household farms but having no more in terms of production resources than 5

⁸ Those belonging in this category can also be defined on the basis of the present system of taxation: families where the annual farm income is less than HUF 250 000 are not considered to have an agricultural farm subject to taxation. Taking into account that in the European Union – for purposes of simplification – the 1-hectare farm size (or the equivalent plantation size, livestock etc.) is usually considered the threshold limit, we believe that this is the method we should follow.

hectares of arable land, or 1 hectare of plantation, or 1,000 square meters of cultivable area in a glass or plastic film greenhouse, or – in the case of livestock farms – 10 notional livestock units.⁹

This farm size should also be taxed on the family basis, either using a flat rate assessed on the basis of the farm's production resources, or in accordance with the effective personal income taxation, declaring the income and writing off documented expenses up to a maximum of 20 percent. Part-time or second-job farming is always considered to fall within the category of social farming whenever the family's agricultural income (which is estimated as a certain percentage of the farm turnover) is not less than 50 percent of the total income of the family, but the family's total income is not more than the minimum guaranteed wage multiplied by the number of wage earners in the family.

In the current situation, it may easily happen that certain families have no significant income from any other source. Therefore if the family's farm income is in excess of 75 percent, and the total annual income per one adult family member is less than the minimum guaranteed wage, it is justified to provide the family with separate social aid.¹⁰ It is, however, very important to emphasize that these aids should not come from the agricultural development funds but from the social funds.

3. The third category is the family farm. This category is larger in size than the first two but the production resources do not exceed 30 hectares of arable land, or 3 hectares of plantation, or 5000 square meters of cultivable area covered by glass or plastic or – in the case of livestock farms – 50 notional livestock units, with a turnover of HUF 15 million or less. Family taxation should be applied, with significant additional tax benefits if – and only if – farming is carried out as a full-time activity. Taxation, as in the second category, should either be presumptive taxation depending on the size of the farm's production resources, or taxation based on cost itemisation. Family farms do not fall within the target category of long-term social aids.

Nevertheless, we must admit that a family with production resources just above the minimal farm size is hardly able to make a decent living today in Hungary. Therefore if the total of all incomes (including the farm income and all other incomes from external sources) per one family member of working age is under the minimum guaranteed wage, the family may be a justified target for temporary social aid. In their case, the state is first and foremost responsible for promoting the modernization of production and the provision of development subsidies designed to assist the formation of farms of a size that makes them fit for competition. Quite obviously, this kind of subsidy must be funded from the system of agricultural subsidies.

4. The fourth category is the agricultural private business. Such business is either larger in size than the family farm, or is considered as such based on the owner's decision electing to operate, despite the limited size, in this form for other considerations such as eligibility for VAT refund on documented cost items. Agricultural private businesses should be taxed on the basis of cost itemization, with significant additional tax benefits if

⁹ Again, we can define this group on the basis of the present system of taxation: this category includes farms or farm-owning families whose annual turnover is not more than HUF one and a half million.

¹⁰ Primarily, this is the category that is especially affected by the disadvantages of the elimination of stable agriculture jobs. Therefore if they must make their living primarily from their inadequate agricultural production, and the family has no other significant source of income, they must be eligible for increased benefits, complete tax-free status, and additional separate subsidies.

– and only if – farming is carried out as a full-time activity.¹¹ Although this group of farms would not be eligible for flat rate taxation – such an arrangement would be in conflict with their eligibility for claiming back value added tax amounts, which is done on an itemized basis – they should represent the primary target group of agricultural benefits promoting development and modernization in line with the general society's interests in improving the competitiveness of production.

This grouping, and especially its quantitative size criteria, must be thoroughly revised from a professional aspect; what is more, the quantitative criteria must be increased from time to time. Our experiment may seem rather ambitious; we still decided to carry it out, driven by our intention to contribute to the professional discussion of the issue as soon as possible. Also, we hope that the work we have done will contribute to the success of the general agricultural census. We expect to be able to elaborate a more solid foundation for our recommendations and to formulate them in a way that yields itself easier to practical use once we have the results of the comprehensive survey of Hungary's farm structure.

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¹¹ We believe that persons who have an appropriate source of income and are engaged in agricultural production activities as a secondary source of income should not be eligible for any agricultural subsidies and other benefits granted for social considerations. However, they should be eligible for all agricultural modernization subsidies, provided they meet all other relevant criteria (registration, farm size, trade qualification, development plan, etc.).

DEFINITION OF FARM IN THE AGRICULTURAL STATISTICS OF HUNGARY AND THE EU

ÉVA LACZKA¹ – PÉTER SZABÓ²

The article gives an overview of the concept of farm (focusing on the small holdings), as an observation unit of the present system of agricultural statistics in Hungary. The authors describe the EU's methodological requirements of two main areas of agricultural statistics (farm typology and Economic Accounts for Agriculture) and the possible ways of adapting them according to the Hungarian circumstances.

KEYWORDS: Farm holding; Classification of farms.

The analysis of results of the Agricultural Census to be implemented under the Act XLVI of 1999 and appropriate conclusions are difficult challenges for both users and statisticians even in the current preparatory stage of data collection and analysis. In the course of preparing for a census the statistician must apply the national and international methodological specifications of statistical science and make sure that the analyses cover many different facts of the national economy and society for meeting the needs of future users. This paper discusses some of the issues facing statisticians and users and offers alternative solutions.

Generic classification of farms

The objective of agricultural censuses is to provide the possibly most accurate picture of a country's agriculture. For this purpose all respondents, that is all farms must be included in the scope of the census. The question as to what exactly a farm is has already emerged in the past but recently has become even more imperative. The underlying reason is that the classification of business units tends to vary in a broad spectrum of the purposes of production and the processes, regarding plant and equipment used.

No uniform-across-the-board practice for defining the relevant boundaries exists in the EU either. On the one hand, full coverage of all activities of farms is required, whereas only farms over and above a certain output threshold are included in the scope of

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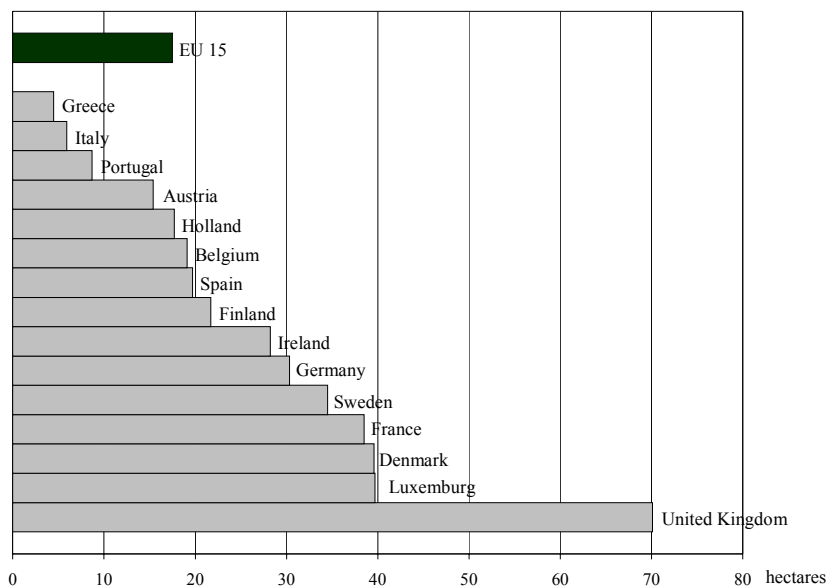
observation on the other. This is a key issue both from the point of view of typology and the system of agricultural accounts.

The scope of respondents can only be determined in terms of the size of respondents to be covered by the census, in other words, as a threshold level under which units active in the relevant field are excluded from the scope of observation. These entities forming the population of the agricultural census are the farms.

According to the EU methodological specifications agricultural censuses must cover all self-contained technological–economic units producing agricultural output and operating under independent management. At the same time, the threshold level must be defined bearing in mind that the total contribution of units excluded from the census to the Standard Gross Margin (SGM) must not exceed one percent. In order to meet such ‘coverage criterion’ the EU-member countries define various threshold levels. The common feature is that all units involved in agricultural activities should use at least one hectare land area or less but sell a certain volume of their products or exceed some other defined physical or value limits.

An interesting example is the threshold level accepted in the Netherlands that sets the lowest limit of a farm as three European Size Units (ESU). Such size of farms is the equivalent of approximately a 3-hectare autumn wheat or respectively 1.6-hectare sugar beet output. It must be emphasized that under the Dutch threshold level, which otherwise tends to be too high for Hungary, all units contributing to 99 percent of the gross agricultural output are covered by the census.

Average size of farms in the EU-member countries, 1995



In the EU-member countries adopting the effective regulations the average size of farms exceeds 17 hectares (see the figure.).

The large number of small farms – similar to the ones in Hungary – is typical in the Mediterranean EU-member countries, primarily in Greece and Italy. (The Hungarian average figures including also the agricultural enterprises calculated on the basis of the 1991 and 1994 censuses show a similar picture.) Despite the change in ownership structure over the recent one hundred years this structure has prevailed in Hungary, and the ‘household’ farms in the seventies added to the increasing number of family farms.

Hungary’s peculiar farming structure differs largely from that of the average EU-member countries, and currently it can only be presented in terms of the findings of the latest comprehensive census conducted in 1991. This census registered 1576 state-owned farms and companies, 1501 co-operatives and 1396 thousand small farms. The application of new methodological considerations to agricultural enterprises (including state farms, agricultural companies and co-operatives) is not free from all problems yet it is one of the less complicated tasks. Appropriate coverage and threshold definition along with the closely related classification of farms pose a substantially more difficult task for the nearly one-and-a-half million small farms.

Over the post-census years production structure analyses of the 1.4 million ‘small farms’ registered in 1991 were carried out in the framework of a research project funded by OTKA (National Fund for Scientific Research). The prime targets of analyses were the size of farms and, in a broader sense, the activity types.

Since no SGM calculations were carried out in the early ’90s the gross production value of the agricultural production was estimated for analyzing the size of farms. The estimated gross production value was based on average prices and yields rather than the actual output of individual farms. Product balance sheets were used as the basis of calculation. At that time gross production value was the only value indicator for summarizing data expressed in terms of various different natural units, such as land area by cultivation types, livestock by types of animals, etc.

Table 1

*The number and distribution of small farming units
by gross production value, 1991*

Gross production value (HUF)	Farms	
	number	share (percent)
1 – 25 000	270 072	19.3
25 001 – 50 000	341 646	24.5
50 001 – 100 000	364 988	26.2
100 001 – 200 000	234 254	16.9
200 001 – 500 000	148 887	10.6
Above 500 000	35 906	2.5
<i>Total</i>	<i>1 395 753</i>	<i>100.0</i>

In our investigations size groups of farms were defined on the basis of gross production value. Our findings showed that 70 percent of the farms turned out extremely low production value, below 100 thousand HUF (see Table 1.). The ratio of farms where the majority of income of a small farming household originated from agricultural production

came to only a few percent on the basis of the production value net of costs. Household dependence exclusively on agricultural production could be assumed only in the case of the largest farms while in the case of the majority of farms other sources of income also contributed to make a living. Part-time agricultural activity, which has become a world-wide phenomenon, is widely practiced in Hungary, too.

This picture is even more colorful if gross production value is investigated in terms of main activity types. The units observed were grouped under the following three categories:

- *mixed farms*, where both the land area used and the livestock owned exceeded the threshold level applied in the Agricultural Census;
- *animal husbandry farms*, where only the livestock was equal to or higher than the threshold level applied in the Agricultural Census;
- *plant cultivating farms*, where only the land area used was equal to or higher than the threshold level applied in the Agricultural Census.

Of the registered farms 46 percent was qualified as mixed, 41 percent as plant cultivating and only 13 percent as animal husbandry farms. The farms falling under these three categories significantly varied in terms of size and production structure. Among the farm types the mixed ones had the highest average production value. Many of the animal husbandry and plant cultivating farms fell into the group of farms with the lowest production value.

Table 2

Distributions of farms by gross production value and type, 1991
(percent)

Gross production value (HUF)	Total number of units	Of which:		
		mixed	animal husbandry	plant cultivating
1 – 25 000	19.3	0.5	14.5	41.9
25 001 – 50 000	24.5	10.2	40.9	35.1
50 001 – 100 000	26.2	32.9	26.6	18.5
100 001 – 200 000	16.9	30.3	10.7	3.7
200 001 – 500 000	10.6	21.1	5.8	0.6
Above 500 000	2.5	5.0	1.5	0.2
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Number of farms	1 395 753	637 754	185 383	572 616
Share (percent)	100.0	45.7	13.3	41.0

Mixed farms had the greatest economic strength. The gross production value per unit of animal husbandry farms was below 50 percent of that of the mixed ones, and farms surviving nearly exclusively on plant cultivation had only one sixth of this performance. In the case of mixed farms some three-quarters of the gross production value originated from animal husbandry. Along with the increase of gross production value per farm this ratio shifted markedly toward animal husbandry. The average production value of plant

cultivation of small farming units came to the same orders of magnitude for both mixed and plant cultivating units (HUF 21 thousand and HUF 52 thousand respectively). Due to the land ownership and conditions of use prevailing at that time animal husbandry was certainly the most effective activity of small farming units in the early nineties.

Varying types of plant culture and animals were typical for various sizes and types of farms. The 1000 square meters average size of gardens was independent of the size and type of the farms. The size of mixed farms was primarily related to the total size of arable land and livestock, but the most significant cattle breeders also belonged to this group of farms. The share of cattle farming in the group of animal husbandry units was less than that of the mixed ones. Most of the gross production value of these farms came from pigs and chicken, but geese, ducks, turkeys and rabbits also played an ever increasing role in this group.

Table 3

Key indicators of small farming units, 1991

Description	Gross production value (thousand HUF)								Total
	below 25	25–50	51–100	101–200	201–500	501–1000	1001–3000	above 3000	
	Total farms								
Number of farms (thousand)	270	342	365	234	149	29	6	1	1396
Share of farms (percent)	19.3	24.5	26.1	16.8	10.7	2.1	0.4	0.1	100.0
Share in gross production value (percent)	2.0	7.6	16.4	20.9	31.0	12.9	7.1	2.1	100.0
Per one farming unit									
arable land (hectares)	0.22	0.34	0.46	0.71	1.11	2.03	3.88	9.02	0.67
vineyard (hectares)	0.08	0.13	0.17	0.25	0.36	0.52	0.56	5.16	0.20
orchard (hectares)	0.07	0.11	0.14	0.20	0.26	0.38	0.60	2.16	0.15
garden (hectares)	0.09	0.09	0.11	0.12	0.12	0.14	0.17	0.19	0.10
cattle (heads)	-	1	1	2	4	7	14	48	4
pig (heads)	1	2	3	5	12	27	54	91	6
horse (heads)	1	1	1	1	2	2	2	4	2
sheep (heads)	2	4	6	11	20	43	130	388	22
poultry (heads)	10	15	25	37	43	67	568	5107	33
	Plant cultivating farms								
Number of farms (thousand)	240	201	106	21	3	2	0	0	573
Share of farms (percent)	41.9	35.2	18.5	3.7	0.5	0.2	0.0	0.0	100.0
Share in gross production value (percent)	1.4	35.0	37.2	14.6	4.9	6.9	0.0	0.0	100.0
Per one farming unit									
arable land (hectares)	0.23	0.40	0.68	1.35	3.55	7.64	7.61	3.22	0.50
vineyard (hectares)	0.08	0.14	0.25	0.61	1.60	3.17	1.51	0.25	0.20
orchard (hectares)	0.07	0.12	0.21	0.40	0.91	2.30	2.00	1.94	0.15
garden (hectares)	0.09	0.12	0.16	0.20	0.23	0.39	0.20	0.12	0.12
cattle (heads)	-	-	-	-	-	-	-	-	-
pig (heads)	-	-	-	-	-	-	-	-	-
horse (heads)	-	-	-	-	-	-	-	-	-
sheep (heads)	-	-	-	-	-	-	-	-	-
poultry (heads)	10	16	18	19	19	15	15	18	18

(Continued on the next page.)

(Continuation.)

Description	Gross production value (thousand HUF)								Total
	below 25	25–50	51–100	101–200	201–500	501–1000	1001–3000	above 3000	
Animal husbandry farms									
Number of farms (thousand)	27	76	49	20	10	2	1	0	185
Share of farms (percent)	14.6	41.1	26.5	10.8	5.4	1.1	0.5	0.0	100.0
Share in gross production value (percent)	2.0	16.9	21.9	17.8	20.7	8.9	11.8	0.0	100.0
Per one farming unit									
arable land (hectares)	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.08
vineyard (hectares)	0.03	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.04
orchard (hectares)	0.03	0.03	0.04	0.04	0.03	0.04	0.04	0.04	0.03
garden (hectares)	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.04
cattle (heads)	-	1	1	2	4	8	15	73	4
pig (heads)	1	2	3	7	16	35	63	109	5
horse (heads)	1	1	2	2	2	2	3	3	2
sheep (heads)	2	4	7	13	20	42	122	102	14
poultry (heads)	8	14	26	37	43	96	1291	6853	32
Mixed farms									
Number of farms (thousand)	3	65	210	193	136	25	5	1	638
Share of farms (percent)	0.5	10.2	32.9	30.3	21.3	3.9	0.8	0.1	100.0
Share in gross production value (percent)	0.0	1.9	12.5	22.8	37.4	14.7	7.9	2.8	100.0
Per one farming unit									
arable land (hectares)	0.20	0.25	0.40	0.67	1.08	2.01	3.84	10.79	0.80
vineyard (hectares)	0.07	0.08	0.12	0.20	0.29	0.46	0.52	7.32	0.20
orchard (hectares)	0.06	0.07	0.11	0.17	0.22	0.33	0.54	2.28	0.17
garden (hectares)	0.08	0.09	0.11	0.13	0.14	0.15	0.19	0.25	0.12
cattle (heads)	0	1	1	2	4	7		46	4
pig (heads)	1	1	2	5	11	25	53	86	6
horse (heads)	1	1	1	1	2	2	2	4	2
sheep (heads)	2	4	6	11	20	43	131	433	25
poultry (heads)	9	12	22	36	43	59	304	3332	36

In the group of plant cultivating farms the 'large' farms were active in vineyard, orchard and production on glass/plastic covered area or had plant cultures in the arable land areas of best quality of Hungary.

Specific indicators per one farming unit (see Table 3) clearly show what sizes of farms produced primarily for own consumption. These were farms producing less than HUF 1 million of gross output.

Due to the large number of petty farms producing exclusively for family consumption compliance with the statistical coverage specification was an extremely difficult methodological task. At the same time, comprehensive monitoring of agricultural activity provides vital information for decision-makers, analysts and agents of the market. For instance, the livestock kept at commodity producer farms is insufficient for determining the total livestock. The exact definition of the commodity producer unit would also bring up numerous problems, not mentioning comparability. In terms of size, activity or degree

of specialization commodity producer farms under Hungarian circumstances probably would not fall in the same category prevailing in the Netherlands or Denmark.

In Hungary commodity production of petty farms producing mainly for own consumption was not negligible even at the time of earlier censuses conducted in 1972 and 1981. This was kept in mind in defining the threshold levels for earlier censuses. For comparability almost the same threshold levels were used in statistics over the recent 30 years.

Table 4

Thresholds applied in censuses

Description	1972	1981	1991	1994	2000
	year's census				
Total arable land (hectares)	0.15	0.15	0.15	0.15	0.15
Orchard, vineyard, garden (hectares)	0.08	0.08	0.08	0.08	0.05
Cattle (heads)	1	1	1	1	1
Pig (heads)	1	1	1	1	1
Horse (heads)	1	1	1	1	1
Sheep (heads)	1	1	1	1	1
Poultry (heads)	50	50	50	50	50
Bee colony (pieces)	20	20	25	25	5
Rabbit (heads)	20	20	25	25	25
Other small domestic animals (heads)	–	–	25	25	25

Hence statistical coverage has been comparable for nearly 30 years. But how could and should the classification of Hungarian farms be interpreted and managed in terms of the EU-typology and the Economic Accounts for Agriculture (EAA) system?

The EU-typology of farms

By the decision of June 7, 1985 the EU embarked on the creation of standard typology of farms. This EU-typology is a farm classification by SGM based on type of farming and economic size.

According to Article 2 in Section 1 of the EU-decision the typology was designed to meet the information needs of the common agricultural policy, including the

- analysis of the situation of holdings based on economic criteria,
- comparison of the situation of holdings
 - among the various classes,
 - among member states and member state regions,
 - among different periods.

The typology is based on data collected through Community Farm Structure Surveys (agricultural censuses) and the Farm Accountancy Data Network (FADN).

According to Article 3 in Section II SGM shall mean the balance between the standard value of production and the standard value of certain specific costs, this balance shall be determined for the various crop and livestock characteristics within each region.

The EU-decision stipulates in detail the methods of data collection and calculation as well as the frequency of SGM calculations. SGM is defined as the mean value of the calculated basic data for certain periods over three years.

By the stipulations of Section III farm type is determined by the relative contribution of different activities to the SGM. Four levels of farming are defined in the typology:

- general types of farming (9 types),
- principal types of farming (17 types),
- particular types of farming (50 types),
- subdivisions of certain particular types of farming (32 sub-groups).

The subdivisions shall be optional for those member states in which the number of holdings in this type of farming is small.

Paragraph IV stipulates the classification of farms by size. Accordingly the size of farms must be expressed in terms of the European Size Unit (ESU) based on the total SGM.

The degree of specialization of the two top levels of farm types (general and principal) is rather high from the Hungarian perspective. Hence one can rightfully ask whether it makes sense at all to impose this classification on the Hungarian farming households producing for own consumption, such as those keeping a 1-2 pigs, and whether the stipulated comparability of farms of different member countries and regions can be met.

The results of censuses conducted in 1991 and 1994 suggested the need for breaking down this group of nearly one-and-a-half million units. Also a second threshold was needed for the classification of farms by EU-terms rather than for coverage. The so-called *reporting threshold* is required to assure the coverage needed for authentic information at national level on agricultural performance, total livestock, cultivated arable land area etc. The so-called *farm threshold*, however, is required to define the size of commercial farming in EU-terms. For clarity the units falling between these two thresholds could be called *small farm* similar to the term ‘minor holding’ used in some EU-member countries, such as the United Kingdom and Sweden. It is true, however, that small farms in these countries are of substantially larger than small farms in the Hungarian context. It does not mean, however, that small farming would not be monitored and analyzed in terms of activity and size, but rather this is an expression of need for monitoring and analytical criteria other than those pertaining to the large ones. Hence a clear picture comparable in the international context could be available for the formulation of agricultural and social policy, and regional development could draw on the wealth of ideas generated.

The critical point here is naturally the definition of the second threshold for farm size. For this purpose pilot calculations were carried out on the basis of data of the 1991 and 1994 agricultural censuses and the data available from that of the Farm Accountance Data Network (FADN). The essence of these calculations is briefly reviewed in the following, while emphasizing their preliminary and experimental nature.

In the EU farm size is expressed in terms of Euro calculated as the total contribution of products and services to SGM. This indicator, not unlike the value added, is converted to European Size Units (ESU). An ESU is currently equal to 1200 Euro.

Table 5

Number of farms and SGM-values in the EU-member countries by size categories, 1995

Description	Number of farms, thousand SGM (ESU)	SGM per one farm (ESU)							Total
		-2	2-4	4-8	8-16	16-40	40-100	100-	
		distribution by size categories (percent)							
Belgium									
Number of farms	71	10.3	7.8	10.0	11.1	21.0	30.0	9.8	100.0
SGM	3 025	0.3	0.5	1.4	3.0	13.5	45.0	36.3	100.0
Denmark									
Number of farms	69	0.5	6.0	16.0	17.4	21.3	24.1	14.7	100.0
SGM	3 557	0.0	0.4	1.8	3.9	10.6	31.1	52.2	100.0
Germany									
Number of farms	567	20.8	12.0	12.0	13.2	22.0	16.3	3.7	100.0
SGM	15 845	0.8	1.2	2.5	5.5	21.0	35.2	33.8	100.0
Greece									
Number of farms	802	33.9	20.4	22.1	16.0	6.7	0.8	0.1	100.0
SGM	4 866	5.3	9.8	20.9	29.4	25.3	6.8	2.5	100.0
Spain									
Number of farms	1 278	39.9	18.6	16.3	12.8	9.0	2.7	0.7	100.0
SGM	10 973	4.5	6.1	10.6	16.7	25.1	18.3	18.7	100.0
France									
Number of farms	735	18.6	8.7	9.0	12.2	25.7	20.3	5.5	100.0
SGM	23 015	0.6	0.8	1.7	4.6	22.0	39.4	30.9	100.0
Ireland									
Number of farms	153	15.3	15.3	19.8	18.6	20.4	9.4	1.2	100.0
SGM	2 526	0.9	2.7	7.0	13.0	31.9	33.1	11.4	100.0
Italy									
Number of farms	2 482	51.9	16.3	13.2	9.1	6.2	2.5	0.8	100.0
SGM	18 535	5.8	6.1	9.8	13.4	20.5	20.1	24.3	100.0
Luxemburg									
Number of farms	3	12.0	8.9	10.8	10.2	23.5	32.7	1.9	100.0
SGM	96	0.4	0.9	2.1	3.8	22.5	62.5	7.8	100.0
the Netherlands									
Number of farms	113	0.1	1.7	9.7	12.1	17.4	31.9	27.1	100.0
SGM	8 931	0.0	0.1	0.7	1.8	5.9	28.0	63.5	100.0
Austria									
Number of farms	222	27.4	14.3	16.6	18.6	18.8	4.0	0.3	100.0
SGM	2 463	1.9	3.7	8.7	19.3	41.5	19.4	5.5	100.0
Portugal									
Number of farms	451	47.7	24.7	14.4	7.2	4.2	1.4	0.4	100.0
SGM	2 438	8.8	12.9	14.8	14.8	18.9	14.9	14.9	100.0
Finland									
Number of farms	101	14.9	14.0	16.3	21.9	26.4	5.5	1.0	100.0
SGM	1 565	1.3	2.7	6.1	16.7	41.8	20.4	11.0	100.0
Sweden									
Number of farms	89	18.5	15.7	15.7	13.7	17.8	15.1	3.5	100.0
SGM	2 055	0.9	2.0	3.9	6.7	20.3	39.9	26.3	100.0
Untied Kingdom									
Number of farms	235	18.3	9.5	12.0	12.3	17.4	19.0	11.5	100.0
SGM	9 996	0.2	0.6	1.6	3.3	10.9	28.5	54.9	100.0
EU-15									
Number of farms	7 370	36.6	15.8	14.5	12.0	11.8	6.9	2.4	100.0
SGM	109 883	2.2	3.0	5.5	9.1	20.0	28.6	31.6	100.0

In our experimental estimates the categories of the last agricultural census were converted to ESU expressed in terms of gross production value using the pilot data provided by the Research and Information Institute for Agricultural Economics for the year 1998. The FADN-system provided the production value and SGM-figures of 21 products, making up 80 percent of the total agricultural output of farms and agricultural enterprises covered, including their share. In the first step the ratio of average SGM and the production value were calculated using the share of the given product in the respective outputs of two agricultural groups as a weight factor. Then the aggregate figure of individual products based on their share in the total output was calculated. Hence the ratio of SGM and production value to the total agricultural output was determined, and the result was adjusted by the ratio of value added to the output shown in the national accounts. The calculations showed that SGM was equal to some 40 percent of the production value.

The ESU value of individual categories was determined by adjusting the size categories expressed in terms of production value with the SGM-ratio using the exchange rate of ECU prevailing in 1995. The result was astonishing: in the first half of the nineties the 99.5 percent of farms fell into the smallest size category and generated 91 percent of the total SGM. At that time two ESUs were approximately equal to one million HUF production value.

For accenting the specifics of the Hungarian agricultural structure the average farm sizes of the current EU-member countries are given in Table 5.

We must point out again that the previous estimation is based on a large number of assumptions, therefore by no means can it replace the accurate and detailed calculations to be carried out on data collected under the Agricultural Census.

Small farms in the Hungarian EAA

Under the new EUROSTAT EAA methodology, it was decided by EU-member states to exclude units which produce solely for own consumption. Such regulation meets the agricultural structure of the current EU-member countries, however, the farming structure of Central European countries substantially differs from that. In these countries the number of small farms and their share in the total output are extremely high. (For the same reason this issue was raised at the EAA meeting of the OECD countries held in February 2000, in Paris.)

The Hungarian Central Statistical Office (HCSO) has also implemented a recent change in methodology. The earlier method was based on the absolute gross approach: all types of intra-unit consumption and intra-industrial flows were recorded under EAA. The 'old' Hungarian data were identical with the term 'usable output' (column 3quintal of the elaboration table of the new EUROSTAT manual).

The current Hungarian methodology for measuring the output is actually the adoption of the EUROSTAT-method as part of the EU-harmonization process, therefore the output does not include a part of the intra-unit flows, and production solely for own consumption is also excluded. In applying the new regulations most of the problems arise in the handling of small farms, therefore their definition in the Hungarian context is quite extraordinary.

The relevant EUROSTAT EAA regulations are quite ambiguous. Several sections referring to it are in conflict. Let us demonstrate the problem by briefly reviewing the key sections (*italics*) and their applicability in the Hungarian environment.

1.16 Since the purpose of the EAA is to measure, describe and analyze the formation of income from agricultural economic activity (which, in the Member States of the EU, is almost exclusively a commercial activity), it was decided to exclude units which produce solely for own consumption (e.g. kitchen gardens and private livestock rearing). This type of 'small' unit should be recorded if it is above the minimum threshold used in the survey on the structure of agricultural holdings. The appropriateness of using a threshold higher than this minimum threshold, though perfectly possible, must be justified. It should, however, be pointed out that agricultural production for own final consumption by holders whose holdings are larger than the minimum size must be recorded in the EAA.

The first bracket in the first sentence of this section is rather intriguing. According to this definition agricultural activity in the EU member countries is almost exclusively of market producer nature. Certainly, this is not the situation with the Central-Eastern European countries, therefore the exclusion of farms producing exclusively for own consumption is not compatible with the Hungarian conditions either. Currently we can only estimate the number of units producing solely for own consumption, but the accurate answer will come from the data of the Agricultural Census of the year 2000.

For the method of approach we used data of the latest agricultural census. The estimations are based on the Agricultural Census of 1991 and the product balances (see Table 3.).

The first three categories of this table (each below one hundred thousand HUF gross production value) include farms, which – in our view – produce solely for own consumption. It was also assumed that the remaining farms produce and, in general, sell the surplus (while, of course, consumption was not neglected either). Under such conditions 70 percent of Hungarian 'farms' are units producing for own consumption.

Table 6

The share of own consumption in the Hungarian EAA

Product	Output	Own consumption	Share of own consumption (percent)
	million HUF		
<i>Total agricultural products</i>	999 641	115 071	11.5
Processed vegetable products	506 935	37 760	7.4
potato	35 569	7 697	21.6
fresh grocery	93 883	11 730	12.5
fresh fruits	46 015	12 013	26.1
Animals and animal products	492 706	77 310	15.7
pig	170 689	41 474	24.3
poultry	111 783	18 104	16.2
eggs	40 967	9 968	24.3

The average arable land area used by these farms is less than 0.46 hectare, their vineyard area is less than 0.17 hectare. On average they own less than 1 head of cattle, or 3 heads of pigs, or 25 heads of poultry. The output achieved with such land area and livestock (including animal products) is more or less sufficient for the consumption of one family. Despite their small size, however, these farms have a 26 percent share in the total output. It is likely that this share has reduced since 1991 but it is still significant, therefore leaving them out from the calculations would reduce the validity of results.

According to the second half of the quoted section of the Manual Farm Structure Surveys, such as the Agricultural Census, should cover the production of units above the threshold level along with own consumption, for inclusion in the EAA. The farm threshold applied in the Hungarian agricultural statistics is traditionally very low and this section of the Manual allows the inclusion in the EAA of the majority of farms producing exclusively for own use.

Appendix XI of the Manual explains the relationships between EAA and the National Accounts.

1.05. ESA 95 asks for the inclusion of the own-account production of agricultural products by households in the industry account (ESA 95, 3.08 and 3.21). However, agricultural units below the minimum threshold of the farm survey (production solely for own consumption in kitchen garden and private livestock rearing) are excluded from the EAA, whereas agricultural products retained by farmers are generally included. Where the household production not covered in the EAA is significant (quantitatively important in relation to the total supply of that good in a country) the corresponding values are to be added to the EAA data (compare ESA 95, 3.08).

The last sentence of this section is relevant from our point of view because it contradicts the former quoted section 1.16. Accordingly the output of farms below the threshold level contributing to a significant extent to the total output of a particular product must be estimated in addition to that of farms exceeding the threshold level. The manual offers no specification as to exactly what extent or share is deemed significant. Consequently this statement allows the inclusion in the EAA of the output of all farms below the threshold level.

Due to such interpretation of the rules the Hungarian EAA covers the total output of all farms, including the production for own consumption. In Hungary EAA output estimations are based on product balances. The value of own consumption stated in the EAA is shown in Table 6. In the case of some key products it becomes clear from the Table that the share of own consumption is extremely high and therefore – in the spirit of the preceding Section – it must be accounted for in the EAA. For instance, based on the data of Table 3 the average poultry stock of farms producing for own consumption remains below the threshold value of the Agricultural Census (see Table 4.). Consistently, the ratio of own consumption of poultry and eggs is high in the EAA (16.2 and 24.3 percent, respectively). Consequently accounting in the EAA for the poultry and egg production exclusively of farms exceeding the threshold size would result in a figure substantially lower than the one shown so far.

There is another reason for the full accounting of the production for own consumption under the EAA. Such accounting method is fully compliant with the rules of the National

Accounts system constituting also the framework of EAA. (In other words, there is no contradiction between the two systems of accounts in this respect.)

Latest developments

The EAA specific part of this paper was presented by the Hungarian delegation at the OECD-meeting of agricultural accountants experts (3-4 February 2000), too. Since then EUROSTAT has sent a circular note to the member states about the treatment of kitchen gardens in the EAA. However it was planned to introduce these changes in the forthcoming Revision 1.1 version of the EAA Manual, but the new version has remained unchanged in this regard, because some Member States recommended to decide this important issue on the next Working Party meeting. The proposed new wording for paragraph 1.16 is the following:

1.16.1. The purpose of the EAA is to measure, describe and analyse the formation of income from agricultural activity. Therefore, only those units which are involved in agricultural economic activities are covered by EAA. The output to be recorded in the EAA comprises the market output and the output for own final use of these units. Units for which the agricultural activity is only a leisure activity, producing solely for own consumption are to be excluded.

1.16.2 Agricultural economic activity, in the Member States of the current EU-15, is almost exclusively a commercial activity. However, in many non-EU countries, a large number of units are engaged in subsistence farming. For these units, the carrying out of agricultural activities is an economic need (and not a leisure activity); they sell none, or only a very small fraction of their output. In the EAA, subsistence farming is considered as an economic activity, and consequently has to be recorded.

The former described way of recording kitchen gardens i.e. splitting up into hobby garden and subsistence farming both satisfies the Member States and the candidate countries. This distinction raises the question of how to define hobby gardens and subsistence farming. Since both types of farming have a low output and small land area and number of livestock, the borderline can not be drawn by using any kinds of value indicator (SGM, Gross Output etc.) or physical indicator (land size or herd size). The only 'tangible' difference maybe, that animals are usually not kept on hobby farms, but typical in subsistence farming. We think that this distinction should be made at country level considering the special characteristics of agriculture in the country. In Hungary practically all small farms can be regarded as subsistence farm, i.e. they should be recorded in EAA according to the proposed changes in the Manual.

Conclusion

Between April 1 and 21, 2000 the sixth comprehensive Agricultural Census of the Hungarian agricultural statistics was conducted. As it is expected, some ten thousand agricultural businesses and nearly one-and-a-half million households account for their agricultural activity. Indisputably, this is necessary even with a stable agricultural struc

ture based upon censuses conducted once every decade (also supported by the several decade-long practices of the FAO and the EU). These days it is especially valid for Hungary where a number of significant changes have taken place since the last comprehensive census.

In the case of the agricultural enterprises there is no ambiguity concerning the need for annual surveys, classification and / or inclusion of farms in the EAA or the EU analyses.

Based on the 2000 census data, however, we must re-consider some of the issues concerning households and small farms. One thing can be stated even without knowing the census results: for the most complete scope of observation of the agricultural activity agricultural household surveys should be conducted every 5 to 10 years. Consequently the same extremely low census threshold which has been in use for nearly 30 years had to be applied again. In the periods between such comprehensive censuses the annual samples should be selected to cover nearly the full scope of large farms (whose annual gross production value exceeds one million HUF). For the small (producer) farms below this value the activity shall be monitored using the data of a small sample of a few percent size. Data collections after year 2000 are planned to follow these principles.

We must, however, carry out calculations based on the 2000 Agricultural Census in order to define the size of Hungarian farms where production covers solely own consumption. The objective is to arrive at the size categories where either surplus is produced or where the prime objective of production is the sale of products, that is, to determine the market producer farms.

Excluding farms producing exclusively for own consumption from the EAA calculations would mean a substantial reduction of the currently reported Hungarian agricultural output.

In the current regulations adopted in the EU-member countries the specifics of agriculture in the Central European candidate countries have not been taken into account. This is why it is necessary to re-think and re-interpret the EU regulations concerning small farms in the light of conditions prevailing in the candidate countries before their accession to the EU. In our view small (producer) farms falling above the second 'farm threshold', along with the agricultural businesses should be included in the EU typology. For farms below this threshold level a special Hungarian farm typology to meet the needs of exploring, analysing and managing the described structure must be designed.

Consultations on the relevant subject with EUROSTAT may shape practices for encompassing and managing the peculiar features of the Eastern-Central European region and may even serve as an example.

THE ANTECEDENTS OF FINNISH ACCESSION TO THE EU AND THE AGRICULTURAL ISSUE

IVÁN BENET¹

SUMMARY

Finland had a two decade long history of integration with the European Union, the European Community and the European Economic Community.

The prices of major agricultural products declined by 40 to 50 and even 60 per cent from 1990 to 1995. There was a need to introduce a new and relevant subsidy system. The total volume of subsidies provided for Finnish agriculture is in excess of the volume of the income actually realised in Finnish agriculture.

For Finland, it is also a painful compromise that only 85 percent of the country's total agricultural area was acknowledged as a less favoured area eligible for LFA support. In the new system, another type of support became available with the intention to help farmers in extraordinary difficulties; this is stipulated in Article 141 of the Accession Treaty. A further characteristic feature of the Finnish agricultural system of subsidies is that it embraces significant regional differences.

Finnish accession brought the issue of agricultural efficiency into the limelight. Within the complex problem of efficiency, economies of scale play a central role. Finnish analyses openly admit that Finland is still behind the countries of the European Union in this respect.

KEYWORDS: Finland; Agriculture; Accession to EU.

Finland only gained its independence in December 1917, and the eight decades that have passed since that time brought a development that deserves respect, even by international standard. Today, Finland belongs to the group of most developed countries. Right before its accession to the European Union in 1994, Finland's overall level of economic development was very close to the average of the European Union.

THE ANTEDECENTS OF FINNISH ACCESSION

It is beyond doubt that a wide range of factors played an important role in these achievements. However, I shall only mention some of the most significant factors, and only very briefly. First of all, Finland established a market economy and operated its na

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tional economy under the conditions of market economy. On the other hand, Finnish economy is fundamentally based on private property. Yet another important factor is that Finnish politics played an active and positive role in the process, which is understandable because of the country's eight decades of independence. Finland has witnessed a vast number of turning points, where the involvement and active participation of outstanding Finnish politicians were in most cases fairly obvious for the observer. Without aiming at completion, I should mention Marshal C. G. Mannerheim and Presidents J. K. Paasikivi and U. K. Kekkonen, whose personalities and outstanding human qualities survived in Finnish history, and who undoubtedly left their lasting mark on today's Finland. Last but not least, I must mention the fact that the desire to become involved in international integration was historically one of the primary pillars of Finnish economic policy. This ambition became rather obvious soon after World War II, in which Finland found itself on the losing side. Finland joined the United Nations Organisation too, and, as early as 1955, it became a member of the so-called Northern Co-operation in order to accelerate the development of its economy, seeking support for this development process in international integration.

When the European Free Trade Association (EFTA) was established in 1960, Finland expressed its request desire to establish still closer co-operation with the association through full membership. Negotiations started in February 1961 and, within the year, resulted in the conclusion in Helsinki of an agreement between EFTA member states and the Republic of Finland, which entered into force as of June 26, 1961. In accordance with the agreement, Finland became and remained an associated member of EFTA until January 1, 1986, when the country acquired full membership in the organisation. EFTA member states decided to liberalise mutual trading, if only for a significant portion of commercial items. Finland's EFTA membership brought palpable results for the country in terms of foreign trade. While in 1950 and in 1960 the percentage of trading with EFTA member states represented only eight and 15 percents respectively, this figure increased to 25 percent by 1970. This is largely attributable to the conclusion of the agreement mentioned before. On the other hand, EFTA member states widened their co-operation with the European Economic Community (EEC) as well. In 1972, an agreement to this effect was concluded, liberalising trade and strengthening co-operation in various fields between EFTA and the European Economic Community. Soon after the conclusion of this agreement, that is in 1973, Finland as an associated member of the EFTA also signed its own bilateral treaty of co-operation with the European Economic Community, which significantly liberalised the trade of industrial goods, reducing or eliminating tariff barriers and administrative trading limitations between the European Economic Community and Finland.

The treaty defined the following objectives: promoting the harmonic development of economic relations between the European Economic Community and the Republic of Finland through the expansion of bilateral trading, thereby stimulating economic activities, improving living standards, employment conditions and efficiency, and strengthening financial stability in Finland as well as within the Community. Further objectives included establishing the conditions of fair trading in the context of competitive commerce between the two parties, and contributing to the expansion and harmonic development of world trade through eliminating trading barriers. The treaty specified import liberalisation in several sections. Article 3 of the treaty provides that the parties refrain from introduc

ing new protective import tariffs after the conclusion of the treaty. Further, the treaty also specifies that protective import tariffs must be eliminated progressively according to the following schedule: by April 1, 1973, tariffs must be reduced to 80 percent of the initial rates, where after additional 20 percent rate reductions must be introduced in four steps, effective as of January 1, 1974, 1975 and 1976, and July 1, 1977, respectively.

Article 6 of the treaty takes liberalisation one step further, stating that, as of the treaty's entering into force, neither Finland, nor the Community may adopt any measures for the protection of their markets that have an effect equivalent to protective import tariffs. Furthermore, paragraph 3 of this section stipulates that such restrictive measures currently in force must be eliminated progressively according to the following schedule: by January 1, 1974, all these trade barrier measures must be reduced to 60 percent of the status quo of January 1, 1972, then additional 20 percent rate reductions must be introduced in three steps, January 1, 1975, January 1, 1976, and July 1, 1977, respectively.

Although certain sections did make references promoting co-operation in agriculture and fishing, we can say that although the Treaty of 1973 was indeed a great step towards liberalisation and closer co-operation, it had only a limited effect on agriculture and fishing.

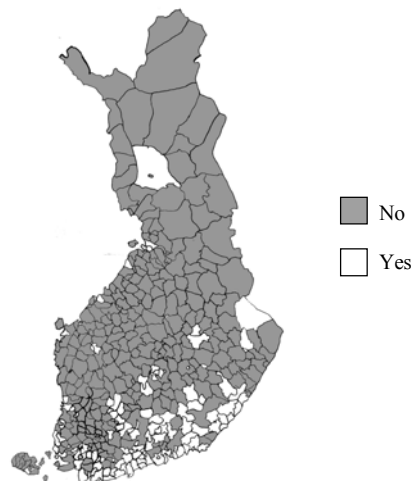
During the period after 1973, further actions were taken and further negotiations were carried out in order to identify how the relations between the European Community and the EFTA member states can be made even more harmonic, and how co-operation can be further developed and deepened. As a result of these efforts, the two international organisations adopted the Luxembourg Declaration in April 1984, which laid down the strategic principles of intensifying and expanding co-operation between the two organisations. These negotiations lead to the signing of the agreement on the establishment of the European Economic Area (EEA) in May 1992 in Porto, Portugal, by the EFTA member states and the European Community. Under the effect of this agreement, EFTA member states became very closely associated with the European Community and with the united European market through further trade liberalisation, and through the liberalisation of the free movement of labour force, services and capital in addition to the free movement of goods. On the one hand, the EEA Agreement took trade liberalisation a few steps further; on the other hand, it extended the scope of liberalisation to the major production factors, namely, to services, citizens and capital. We must note, however, that the EEA Agreement again failed to include agriculture in its own right; liberalisation did not cover the trade of agricultural products, although Finland itself signed a bilateral agreement with the European Community that made mutual trading in certain agricultural products easier for the contracting parties. The agreement between the European Community and the EFTA member states entered into force in 1994. This was Finland's last year before its accession to the European Union.

As a result of the momentous changes in world politics, accession to the European Union as a full member was not any more considered a drawback in terms of Finland's neutral status. Consequently, the Finns themselves had to weigh and compare the expected advantages and disadvantages of full membership and decide for themselves. For better choice, President of the Republic of Finland Mauno Koivisto and Finnish Prime Minister Esko Aho submitted Finland's application for full membership to the European Community. The application covered membership in the European Economic Community, the European Coal and Steel Community, and the European Atomic Energy Com-

munity. After the submission of the application, the sequence of events related to Finland's full membership gained quite some impetus; through the national referendum held in October 1994, the issue was decided and full EU-membership was made final.

As a result of the national referendum, Finns voted themselves democratically into the European Union by a 57 percent majority of votes against a 43 percent opposition. From the historical perspective, this was undoubtedly one of the most significant, if not the most significant decision brought by Finland in the twentieth century. The referendum shows clearly that Finnish society was not homogeneous concerning the issue of membership prior to its accession to the European Union. Moreover, it can be stated that the country and its population were rather divided in this important issue. The two sides – the 'two Finlands' – have been very far from one another in terms of how they think about this question of great significance, and it seems that this difference of opinions still prevails.

Figure 1. The result of the EU-referendum by municipalities



It is clear that rural areas in Finland voted almost unanimously against EU-membership during the referendum. By geographical area, this represents over 90 percent of the entire country. Those who voted 'Yes' are primarily concentrated in the southern and south-western parts of Finland, which are characterised by the high proportion of urban population, and where the most valuable research institutes, intellectual and innovative centres, firms and enterprises are based.

The Finnish greater public was very divided concerning the expected effects of EU-membership. At this point, we are going to take a look at five positive and five negative effects that are considered as the most important, also reflecting the relevant Finnish attitudes (*Finnish EU Opinion*; 1996).

Almost two thirds of the Finns interviewed during the public-opinion poll were of the opinion that accession would have a very favourable effect on the country's foreign trade through the growth of exports. The majority of the interviewees thought that full EU-membership would have a positive effect on the world of science and research and

on business life, it will improve and strengthen competition in the business sector, and it will contribute to the improvement of the country's image abroad. This represents a brief summary of the five most important positive effects of EU-membership. The leading negative effects are as follows: almost two thirds of the Finns expected crime to increase after accession, fearing therefore that EU-membership would have a significant negative effect on public safety. Another important issue that was widely discussed during the preparations for accession was national sovereignty. Almost two thirds of the interviewees expected EU-membership to have a negative effect on Finland in this respect. Over 60 percent of the poll participants indicated that bureaucracy could be expected to increase. Finally, as far as Finnish farmers are concerned, nearly 60 percent of the interviewees had no doubts that EU-membership would have a negative effect on their position, while only nine percent thought that this change would affect farmers favourably. Most Finns were also concerned about a potential weakening of social security as a result of EU-membership. Proceeding to the issue that seems most important, when asked about the effects of European Union-membership on living conditions, only 23 percent of the Finns said that it would have an overall positive effect on the living standard, while 25 percent thought that accession would have an overall negative effect. This serves well to illustrate what is behind the 57 percent of 'Yes' votes and the 43 percent of 'No' votes.

Another aspect of the referendum that is worth mentioning is something that will add further details and richness to our impression of how Finnish society thinks about accession: 47 percent of the Finnish population thought that, although EU-accession would probably bring difficult times for the country, life outside the EU would even be more difficult. 32 percent of the population refused this opinion or held the opposite. In this issue, it is worth mentioning the opinion of university graduates. 59 percent of them thought that life within the European Union would mean less difficult times. If we consider the group of senior managers, 61 percent answered that accession to the EU is a common-sense necessity. However, if we take a look at workers as a social stratum, they are much more divided in their opinions. 37 percent of the workers interviewed expressed their expectation that life would be better within the EU, while 38 percent said that it would be better outside. If we split the entire Finnish population into two groups by their 'Yes' and 'No' votes, we find that 90 percent of the 'Yes' voters considered accession as a common-sense necessity, while 70 percent of the 'No' voters thought that staying out of the EU would be more advisable. This, again, adds some details to our overall impression.

The country that became an EU-member was, in one word, a divided Finland. The issue of EU-membership divided Finland into two parties.

FINNISH AGRICULTURE AND EU-ACCESSION

The problems related to the integration of agriculture and the country's requests for derogation were summarised in the Position Paper (*Finnish Position Paper*; 1993). The agricultural chapter of the Position Paper consists of 119 pages; no details are given here, neither is it necessary. The most important strategic features of the agricultural chapter are its consistent assertion of the Finnish national interests and the coherent argumentation set forth in their support in the negotiations with Brussels. A few characteristic points

should be mentioned here, concentrating mainly on those points that may be most peculiar to, and enlightening in the context of, the Hungarian perspective.

1. Finland makes it unmistakably clear that it fully endorses the major objectives of the common agricultural policy as stated by the Treaty of Rome. The Position Paper actually quotes the objectives set out in the Treaty by stating that agricultural activities, even in the wording of the Treaty of Rome, are of special nature. This special nature is related to the fact that agriculture plays a very important role in the rural lifestyle and in the ability of rural areas to retain and to sustain the rural population. Accordingly, the European Community employs special devices to ensure that this special nature of agriculture is indeed taken into consideration within the framework of the EU agricultural policy, making sure that farmers can survive even in disadvantaged areas. Consequently, the Finnish position makes it absolutely clear that the prices defined by the common agricultural policy may only be introduced in Finland if this takes place simultaneously with the adoption of significant compensation schemes and various forms of support. Without this, farmers would suffer such a significant shortfall of income that could easily force them to give up their agricultural activities entirely, with the consequence that agriculture as a whole simply could not survive in disadvantaged areas and regions within Finland.

2. It follows from the previous considerations that several pages of the Position Paper mention the Finnish conception or proposal that while the common agricultural policy is fully introduced with the total consent of Finland, the country should be given a 12-year transitional or adaptation period. During these 12 years, Finland would gradually approximate its own internal prices towards the internal prices of the European Community; we have already seen the drastic price level differences that exist between the two locations and markets. The Finns request a 12-year grace period in order to eliminate these striking differences.

3. Cattle-breeding and dairy farming represent a significant part of Finnish agriculture, and are especially important in the regional perspective. Finland had already introduced a system of milk quotas; in the Position Paper, the country asks for a quota of 2 992 000 tonnes calculated on a 4.35 percent fat content. However, this milk quota is higher than Finland's actual annual milk production in 1992. Another example is the Finnish government's well-considered policy for changing the structure of food consumption favourably. To name just one example: as a part of this policy, Finland promotes the consumption of fermented dairy products. This means that Finland wishes to carry on with its policy of healthier nutrition, promoting the consumption of fermented and low-fat dairy products within the Finnish structure of nutrition. Regulation No 2167/83 of the European Economic Community provides detailed rules for the supply of milk and certain dairy products to schoolchildren. This regulation covers subsidies as well. Since the list of the products subject to the regulation does not include the fermented and low-fat dairy products that play an important role in the Finnish structure of nutrition, Finland requests Brussels to examine the possibility of putting these products on the list of supported dairy products as well.

4. Finland's Position Paper dedicates special attention to oat. Oat plays a significant role in Finnish grain crop cultivation; it is Finland's second most important grain crop after barley. In annual average, Finnish farmers produce oat on almost 350 thousand hectares, which is one third of the entire grain crop sowing area of the country. In 1991 and 1992, Finland's oat production represented 34 percent of the country's total grain crop

production, which is 23 percent of the total amount of oat produced within the European Community. Therefore, from the perspective of Finland, oat is a very important grain crop. At the same time, the European Union regulation currently in effect does not list oat as a product that is subject to intervention prices and market organisation measures. Quite naturally, Finland requests that the intervention should be extended to oat.

Staying with grain crops for the time being, it is worth mentioning that the Finnish Position Paper also speaks about issues related to the quantities of grain crops to be kept in stock. After Finland's accession to the European Community, the Finnish agricultural price level will decline. As a result of the drop in price levels, the existing grain crop stocks will be devaluated, causing the owners to suffer great economic losses. Consequently, Finland requests the European Community to provide a special form of subsidy to compensate for stock devaluation.

5. The Position Paper makes a reference to Regulation No 2328/91/EEC. This regulation specifies the criteria that farmers must meet in order to be eligible for capital investment and start-up subsidies. The regulation specifies that only those farmers are eligible whose income from agriculture, forestry, hunting or fishing represents at least 50 percent of their total income. However, the regulation stipulates further restrictions by stating that the farmers' agricultural income alone must amount to 25 percent of their total income for eligibility. In Finland, farms are peculiar in that sense that agriculture and forestry are closely related to one another. If we take a look at the national average, we find that an average Finnish farm has 13 hectares of arable land and 37 hectares of forest. However, if we visit the northern regions around Lapland and Oulu, the same figures are 10 hectares of arable land with 59 hectares of forest. This is a clear indication of how forestry starts playing a more and more significant role as we move towards the north, even compared to the southern parts of Finland. The result is that there are many farmers who have very limited possibilities under the severe climate to engage in agricultural activities as we usually understand the term. It is often seen that Finnish farmers in the north make less than 25 percent of their total income in agriculture. Therefore, these farmers would be excluded from start-up subsidies and from certain investment support schemes under the present regulation. For this reason, Finland requests that the quoted EEC-regulation be modified in such a way that the 25 percent lower limit of agricultural income is removed from the rules relevant to forestry, since many otherwise viable Finnish forestry farmers with acceptable economic perspectives would be disadvantaged if the regulation is applied mechanically.

6. The great significance of regionalism is clearly reflected in the attitude taken by the Position Paper concerning the imports of reindeer meat. The Paper makes a reference to Regulation No 2658/87, which specifies common customs tariffs. The regulation stipulates that various parts of reindeer meat can be imported into the European Community either freely, or subject to a 14 percent or 24 percent customs tariff. In Finland, reindeer meat production plays an especially important role in the northern regions. Import is subject to special import tariffs, which are designed to protect the domestic market. Finland takes the position that reindeer herding in the north of the country could experience a severe crisis if EU protective tariffs are applied exclusively. The problem is caused by the fact that Russia produces large amounts of reindeer meat, and while the producers' price of reindeer meat in Finland is approximately ECU 350 per ton, the same figure in Russia is only about ECU 15 per ton. This means that even a limited amount of reindeer meat

imports could easily disturb the market, causing farmers in Northern Finland to suffer significant losses. Accordingly, this issue must be examined separately after accession to the European Union. Finland's climate is disadvantageous, rendering grain crop production impossible in Northern Finland; consequently, reindeer herding and dairy cow keeping are the only agricultural activities that farmers in these areas can engage with. At the same time, employment and wage-earning opportunities in other sectors of the national economy are very limited. Maintaining reindeer herding in these areas is therefore a fundamental national interest and a key factor in avoiding the total depopulation of the area. The Finnish proposal, or rather request, submitted to Brussels states that special and stricter market protection measures must be put in place in order to limit reindeer meat imports from third countries.

7. As it is also seen in many other countries, a certain proportion of farms in Finland has accumulated significant debts. Regulation No 2328/91/EEC specifies certain interventions that may be applied in such cases. As far as Finland is concerned, right before the country's accession, about 8 000 farms were in a hopeless situation, struggling with severe financial difficulties. The results of the screening indicated that about half of these farms can be made profitable again by applying easier terms of payment and are viable enough to expect long-term survival after the intervention. In 1992 and 1993, the Finnish government adopted certain measures to apply easier payment terms, which, to a certain extent, made the financial situation of these farms more tolerable. The Finnish Position Paper underlines that the government must not let down heavily indebted farms struggling with financial difficulties even after the country's accession to the EU; instead, special aid schemes must be implemented for the transition period. Therefore Finland requests that, for the 12-year transition period they propose, they should be allowed to adopt national measures for the promotion of farms that struggle with severe financial difficulties but are judged viable enough for long-term survival after the intervention.

8. The Position Paper also touches upon the problems related to the so-called reference period. The Paper mentions Regulation No 1765/92/EEC on the support schemes applicable to certain specified field crops. In the context of Finnish accession, the reference period on the basis of which the annual average yield is calculated is the period between 1986/87 and 1990/91 for oil crops and grain crops, with the exclusion of the annual yields of the best and of the weakest years. As far as Finland is concerned, average yields during this reference period for barley, oat, rye and wheat were 2.8 tonnes, 2.9 tonnes, 2.7 tonnes, and 3.1 tonnes per hectares, respectively. The overall average was 2.9 tonnes per hectares. On the other hand, applying the before-mentioned EEC-regulation, the average yield of oil crops was 1.58 tonnes per hectares. Finland states in its Position Paper that the low yields are due to the severe climate. Barley and oat dominate Finland's grain crop production; however, the average yield of these crops is smaller than the average yield of wheat. Because of the short vegetation period and the severe winters, grain crops with a high average yield cannot be produced in Finland. As far as the reference period – that is, the years between 1986/87 and 1990/91 – is concerned, it included two years with extremely poor grain crop yields that were significantly lower than normally. As the average yields are low to begin with, applying the reference period specified by the EEC word for word would imply that Finnish grain crop producers suffer significant losses. It must also be mentioned that after Finland's accession to the EU, grain crop producers' prices will

decline by about half, which will decrease further the income level of Finnish farmers. Therefore, as far as Finland is concerned, the reference period should be modified as follows: instead of the period specified by Regulation No 1765/92/EEC, the years whose average yield is used as the basis for calculating the average yield should be the period between the years 1989/90 and 1991/92.

9. The Position Paper pays special attention to the problems related to fruit and vegetable production of the Finnish agriculture. Because of its northern exposure, year after year, Finland has generally obtained over 60 percent of its fresh fruit and vegetable consumption from imports. However, the country does have its own fruit and vegetable production as well. It is generally characterised by its difference from the vegetable and fruit production of the European Union; firstly, the size of fruit and vegetable farms and enterprises is smaller in Finland than in the EU; secondly, fruit and vegetable producing farmers are scattered across the country. If we mention the severe climate as well, it is easy to see that production costs are higher and that Finnish vegetable and fruit prices are significantly higher than in the countries of the European Community. Finland can only maintain its internal production by very strict market protection; the imports of most vegetable and fruit products are regulated by administrative means, and imports are only authorised if the domestic production is unable to satisfy the demand. Because of the poor competitiveness of the sector, Finland requests Brussels to permit the use of special instruments, emphasising that the vegetation period is short, the list of vegetables and fruits suitable for production under the Finnish climate is rather limited, the average yields are lower, and the producers' fixed costs are substantially higher than within the European Union. Furthermore, the harvesting period is relatively short in Finland, and early harvesting and low winter temperatures increase storage costs. About two thirds of these costs are directly linked to the severe climate. In Finland, the vegetation period in greenhouse farming starts later and terminates sooner than in Central Europe. All these conditions and circumstances call for special support schemes for the production of berries across the country. Therefore, the Finns request that the European Community permit the country to grant national subsidies to Finnish horticultural production because of the unfavourable climatic conditions. In case of greenhouse production, this national subsidy should be based on the footage area of the greenhouses, while subsidies should be granted for the promotion of capital investment projects and for the compensation of high energy costs because of the severe climatic conditions. Additionally, field horticulture must also be granted national support in order to make higher storage costs more tolerable.

10. From the Hungarian perspective, the Finnish position on Emmenthal cheese is also very interesting. Regulation 508/71/EEC provides the detailed rules and subsidies of the long-term private storage of cheeses. In this respect, national quotas have been specified for France, Germany and Ireland. As far as Finland is concerned, the country produces an annual amount of 26 to 28 thousand tonnes of Emmenthal cheese. The annual domestic consumption amounts to 7 300 tonnes. Thinking in terms of agricultural years, the volume of Emmenthal cheese production is over 2 000 tonnes less in the period between September and April than in the period between March and October. As Finland produces the overwhelming majority of its Emmenthal cheese during the summer months, which happens to be the period when consumption is relatively low, the issues of storage are especially important. Finland requests that Brussels could support the private storage

of Emmenthal cheese and establish a 2000 tonnes national Emmenthal cheese quota for Finland. They also imply that the extent of this warehousing support should be higher in the transition period than in the period thereafter.

So far, I have gathered and analysed Finland's most characteristic experiences on joining to the European Union, also addressing the primary difficulties Finnish agriculture had to face as the country entered the EU. Finland has been a full member of the European Union since January 1, 1995; Finnish society has already left behind the period of heated debates that followed the country's accession. In the years following 1995, Finland collected a lot of valuable experiences. It seems logical that we familiarise ourselves with some of Finland's experiences that are in some way related to its EU-membership. We attempt to do exactly this in the following chapter, taking a look at these experiences on the level of the national economy.

DEVELOPMENT OF THE NATIONAL ECONOMY

By now, Finland has been a full member of the EU for five years. It must be immediately noted that the timing of Finland's accession was very fortunate. During the first years of the 1990's, Finnish economy experienced a severe recession. The volume of GDP declined radically, with a narrowing of resources available for domestic allocation. This caused a great deal of social tension.

Table 1

The structural characteristics of GDP growth in Finland between 1994 and 1997

Denomination	1994	1997	Growth	
			billion FIM	percent
GDP at market prices	536	618	82	71
Imports	156	190	34	29
<i>Total</i>	<i>692</i>	<i>808</i>	<i>116</i>	<i>100</i>
Exports	193	246	53	46
Consumption	418	458	40	34
private	295	329	34	29
public	123	129	6	5
Capital investment	81	104	23	20
private	65	87	22	20
public	16	17	1	0
Change in stock	0	0	0	0
<i>Total</i>	<i>692</i>	<i>808</i>	<i>116</i>	<i>100</i>

Source: The author's calculations on the basis of the Finnish Ministry of Finance data.

In 1994, the Finnish economy started to grow, and this tendency of growth has been continuous since Finland's accession to the European Union on January 1, 1995. According to the data of the Finnish Ministry of Finance the GDP has grown by 5.1 percent in 1995, by 3.6 percent in 1996, by 5.9 percent in 1997 and by 4.9 percent in 1998.

These data show that the national economy of Finland – as a member of the European Union – was able to increase the volume of its GDP by almost 20 percent during the pe

riod between 1994 and 1998, with a rate of growth of over 15 percent during the period between the years 1994 and 1997.

One of the most obvious characteristics of this growth is that it was based largely on the expansion of exports: during the three years between 1994 and 1997, and the volume of exports increased by nearly 28 percent.

Another characteristic feature of economic growth was the expansion of domestic consumption, with the private sector taking the lead in this respect. This is true not only to the market of consumer goods but also to that of capital goods, as the growth of capital investments was most prominent in the private sector (see Table 1.).

FINNISH AGRICULTURE WITHIN THE EUROPEAN UNION

While it is true that the agricultural aspect of Finnish accession to the EU caused no serious problems at all from the point of view of the European Union, the case is exactly the opposite if one considers the issue from the Finnish perspective. This follows logically from the significant difference between the agricultural prices of Finland and the internal agricultural prices of the EU. These significant differences explain the Finnish concerns about the introduction of the prices of the Common Agricultural Policy (CAP).

Table 2

Impact of CAP prices on the income level of Finnish agriculture, 1993

Returns	At current Finnish prices	At estimated CAP prices
	in million FIM	
Crop production	6 166.9	2 928.8
Livestock production	13 819.1	8 490.9
Horticultural production	2 025.0	1 070.3
<i>Total</i>	<i>22 011.0</i>	<i>12 490.0</i>
Subsidies	4 265.0	0.0
<i>Total return</i>	<i>26 276.0</i>	<i>12 490.0</i>
Costs of production	20 342.3	15 281.6
<i>Income</i>	<i>5 933.7</i>	<i>-2 791.6</i>

Source: (Kettunen; 1996).

Taking a look at the 1993 data, one observation becomes obvious immediately: had Finnish agriculture been subjected to the price system of the common agricultural policy without a period of transition, the income of nearly FIM 6 billion that was realised under the actual economic circumstances would have changed into a loss of FIM 2.8 billion. If we adjusted this pricing system to the Finnish subsidies of 1993, the income realised in agriculture would still be as low as about FIM 1.5 billion. It is obvious from the calculations that because of the high level of Finnish domestic prices, introducing the agricultural producers' prices of the European Community would create a disastrous income situation in Finnish agriculture.

Although it is true that lower producers' prices would imply a more than FIM 5 billion reduction in production costs, the resultant of the three effects – the declining of the prices, the unavailability of non-price subsidies, and production costs – would still cause Finnish agriculture to suffer a loss of income amounting to nearly FIM 8.7 billion. This is a loss that Finnish agriculture would be definitely unable to survive. It would imply that agriculture would essentially disappear in Finland within a short period of time, and the country would have no agriculture at all of its own. This is a complete nonsense; neither is it in line with the agricultural policy of the European Union, nor is it acceptable in the least for Finnish society. (It must be noted, however, that this calculation enlarges the problem to a certain extent; it does not match the introduction of the CAP prices with any type of support.)

It is not by pure accident that agricultural issues were attracted so much attention during Finland's negotiations with Brussels, and it is also not by chance that the Finns invested so much energy into asserting and protecting their national interests. This is obviously an oversimplification of the problem.

As of January 1, 1995, Finland had to introduce the prices of the common agricultural policy from one day to the other. The country became the part of the single market of the European Union. The loss of Finland's means of market protection against other EU-member states cleared the way for the imports of foodstuffs. This brought along that Finland became even more of a net importer in terms of its trade balance.

Table 3

Finland's agricultural foreign trade balance between 1991 and 1998

Period	Average annual exports	Average annual imports	Average annual trade balance
	in million FIM		
1991–1994	3709	7224	-3515
1995–1998	5055	9905	-4850

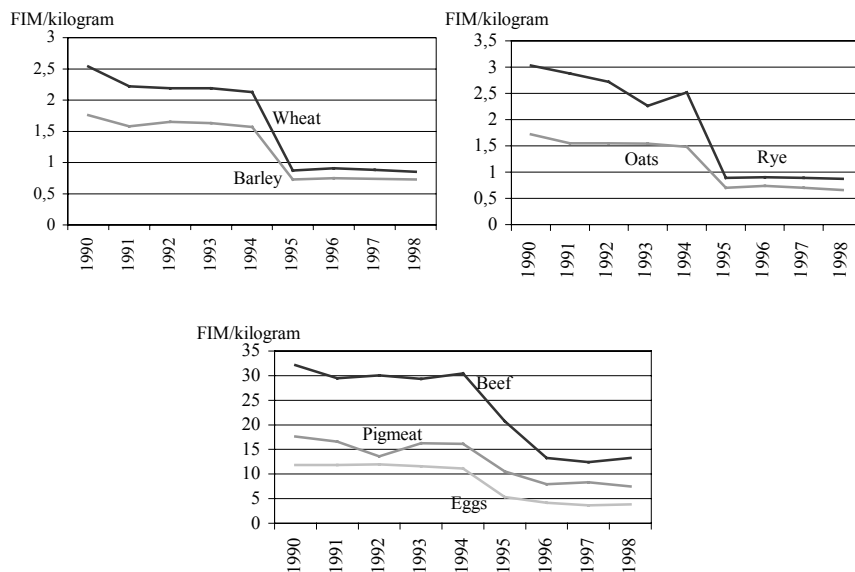
Source: The author's calculations on the basis of (*Finnish agriculture*; 1999).

Taking a look at the four years right before Finland's accession to the EU, the country's average annual foreign trade deficit in agricultural products was FIM 3.5 billion, which increased to nearly FIM 5 billion during the four years following the accession. The volume of the country's foodstuff exports is also at a level of about FIM 5 billion, although the volume varies significantly from one year to the other. This volume comes close to the 1994 level. The primary export products of the country are butter, cheese, powdered milk, pork and beef, and grain crops with volumes varying around 0.5 million tonnes per year.

The increase in the foreign trade deficit was caused by the growing volume of imports. As the per capita food consumption was on the increase nation-wide during the period under review, competition, although increased by the growing role of imports, was still easier to tolerate for Finnish farmers than for the masses of individual farmers in Hungary who just started to work on their own in the 1990's. (To avoid possible misunderstandings, we must emphasize that the overwhelming majority of Finnish farmers – or, we could say, the overwhelming majority of the rural population of Finland – objected to EU accession from the very beginning, and has hardly changed its opinion until now.)

For long, Finnish farmers had been fearing the drastic decline in prices that ensued with the 1995 introduction of the common agricultural policy. This was the very factor that turned the rural Finnish population against EU-membership. The price changes are astonishing. The next graphic presentation indicates the changes in price levels for some of the most important agricultural products.

Figure 2. Changes in producers' (market) prices in Finland



The chart indicates clearly that the producers' prices of several of Finland's main agricultural products dropped by 30 to 60 percent from 1994 to 1995. Just to mention a few examples, the producers' price of cereals dropped by 53 to 65 percent; the market price of meats dropped by 30 to 35 percent; and the price of eggs dropped by more than 50 percent. This in itself could have potentially generated an intolerable situation. (It should be noted that the price of milk only dropped by 13 percent.)

Such a drastic decline in producers' prices indicates that Finland's accession to the European Union was successful if success is measured by the government's realisation of one of its greatest promises, namely that the urban population will have access to more affordable foodstuffs. And this is true indeed. Table 4 will serve well to demonstrate the drop in consumer prices.

In just one year, this drastic decline in producers' prices resulted in a 20 percent decrease in the consumer price of meats and meat products. To make the picture more complete: the consumer price of vegetable oils decreased by over 23 percent; sugar prices dropped by 10 percent; vegetable and fruit prices declined by over 5 percent; while cereals became over 13 percent cheaper for the consumer. All in all, we can say that in 1995, the consumer price of foodstuff decreased by 11 to 12 percent as compared to the consumer price level of 1994, the last year before Finland's accession, which is slightly more than the 9 to 10 percent promised by the government. (It may be interesting to mention

that the price decline is somewhat lower at just under 10 percent if coffee, alcohol and the others are omitted from the average.) This change has proven to be a long-term change; during the period after 1995, the consumer price of foodstuffs has been fluctuating around the 1995 consumer price level. Therefore, we can say that one of the greatest advantages of EU-membership for Finland is today that the Finnish population has access to the necessary foodstuffs at a significantly lower price.

Table 4

The projected and the actual decrease in consumer prices in 1995

Product	Projected	Actual
	decrease (percent)	
Cereals	-15	-13.3
Meats and meat products	-16	-19.8
Dairy	-4	-7.5
Fish	-4	-4.6
Vegetable oil	-24	-23.5
Eggs	-4	-42.3
Sugar	-14	-10.4
Fruits and vegetables	-4	-5.4
Coffee, tea, cocoa	-4	3.3
Other foodstuffs	-10	-6.7
<i>Total</i>	-9.5	-11.5

Source: (*Integration of Agriculture...*; 1996).

Table 5

The output of the Finnish agriculture

Denomination	In 1994	In 1995	1995/1994 (percent)	1998 (million FIM)	1998/1994 (percent)
	million FIM				
Gross output (at market prices)					
Plant	5 192	1 812	34.9	1 960	37.8
Horticulture	2 198	1 693	77.0	1 695	77.1
Animal husbandry	13 476	7 893	58.6	8 040	60.0
<i>Agriculture</i>	<i>20 866</i>	<i>11 398</i>	<i>54.6</i>	<i>11 695</i>	<i>56.0</i>
Various other revenues					
Compensation for stock devaluation	0	2 182	–	0	–
Compensation for damages	8	12	150.0	20	250.0
Rent	419	365	87.0	354	84.5
Subsidies	4 096	8 293	202.5	8 500	207.5
<i>Total</i>	<i>4 523</i>	<i>10 852</i>	<i>240.0</i>	<i>8 874</i>	<i>196.2</i>
Gross return total	25 389	22 350	88.0	20 569	81.0
<i>Total costs</i>	<i>17 089</i>	<i>15 016</i>	<i>87.9</i>	<i>15 284</i>	<i>89.4</i>
<i>Farm income</i>	<i>8 300</i>	<i>7 334</i>	<i>88.4</i>	<i>5 285</i>	<i>63.7</i>

Source: (*Finnish agriculture*; 1999).

Quite naturally, the radical change in Finland's agricultural price structure also involved rather significant changes in the output and income indicators of Finnish agriculture (see Table 5.).

From 1994 to 1995, calculating at market prices and excluding subsidies from the calculations, the country's gross agricultural output dropped by approximately 45 percent. The decline in the gross output is especially significant in plant cultivation at about 65 percent. Such a decline in price levels would have resulted in a total collapse of Finnish agriculture if a well-considered system of subsidies had not been applied. Just consider the fact that from one year to the other, the price level of Finnish agriculture dropped from 3.7 times the world market price level to 1.9 times the world market price level!

Fortunately, this collapse actually did not happen. Thanks to the rather significant subsidies provided for agriculture, the 1995 gross turnover of the sector was only 12 percent lower than the same figure in the year before. The producers' prices of the sector were also 12 percent lower than in 1994. As a result, the income level generated by agriculture only declined by 12 percent as compared to the 1994 income level. However, this – one could say – satisfying result had a price: the volume of agricultural subsidies increased in 1995, and they were supplemented by an additional FIM 2.2 billion that Finnish farmers received as a special subsidy in compensation for the devaluation of their existing stocks. All in all, the 12 percent decline in the agricultural income level was backed by the introduction of a highly complicated and highly sophisticated system of subsidies. This system of subsidies placed special emphasis on the concept of regionalism, which, indeed, has long historical traditions in Finland. At the time of its accession to the European Union, Finland revised its system of agricultural subsidies, so to say, making it EU-conform. However, regional differences remained the inevitable reality. The issues of regionalism have been studied in detail by *Erzsébet Tóth* in the Hungarian literature (*Tóth*; 1997).

Extending our inquiries also to the period after 1995, we can say that the 1998 gross output calculated at market prices was effectively the same as in 1995. This is therefore another indicator of stabilisation. All these circumstances imply that, in all probability, the volume of agricultural production also stayed more or less the same since consumer prices also show a high degree of stability around the 1995 level. In 1998, the volume of agricultural subsidies was again somewhat higher than the 1995 level. These comparisons indicate that in the five-year transitional period between 1995 and 1999, Finnish agriculture was rather heavily subsidised. The 1998 figures also draw our attention to the fact that agricultural income dropped to less than two-thirds of the 1994 level. This clearly indicates a profitability problem becoming more and more critical within Finnish agriculture. The model computations carried out at the Faculty of Agriculture of the University of Helsinki also yielded results in support of this observation (*Sipilainen – Ryhanen-Ylatalo – Haggrén – Sepala*; 1998). The authors of the study pointed out, among others, that during the transitional period between 1995 and 1999, about 90 percent of Finland's strategically important cattle farms would suffer a decline in their income levels and that by 1999, only about 3 percent of the cattle farms would be able to meet the favoured 'target profitability'.

As far as the target profitability indicator is concerned, I will not discuss the term in details, but encourage all interested readers to study the literature (*Koester – Thiele –*

Conrad – Nuppenau – Poggensee; 1996). In economic terms, the target profitability indicator represents the profitability level at which any given farm can be competitive.

As far as the group of hog farms is concerned, the prognosis was that during the transitional period, 50 percent of the farms would suffer a decline in their income, and that by 1999, only about 18 percent of the farms would be able to reach the target profitability level. During the transitional period, 80 percent of all cereal growing farms should expect a decline in their income generated by grain crop farming. According to the calculations of the authors, only 24 percent of the farms in this group will be able to reach the target profitability level.

Simultaneously with the significant price changes and with the revision of the system of agricultural subsidies discussed before, a number of other changes also took place within Finnish agriculture that were linked to Finland's EU membership. As a result of the heavy competition, Finland was forced to move towards a wider and deeper application of economies of scale. The data presented in the following table demonstrate the importance of this concept.

Table 6

Scale and efficiency of Finnish agriculture

Arable lands (hectares per farm)	Production cost of cereal production		Number of cows per farm	Production costs of milk production	
	FIM/kilogram	percent		FIM/litre	percent
– 10	2.04	122	– 10	4.54	135
10 – 50	1.72	103	10 – 20	3.41	101
50 – 100	1.48	89	20 – 30	3.07	91
100 –	1.40	84	30 –	2.78	82
<i>Total</i>	<i>1.67</i>	<i>100</i>	<i>Total</i>	<i>3.37</i>	<i>100</i>

Source: (Finnish agriculture, 1999).

It is obvious from the table that as far as the production of cereals is concerned, economies of scale play a positive role also in Finland. Farms of a size larger than 100 hectares can produce at a cost that is about 16 percent lower than the average cost of cereal production. Farms with an arable land area between 50 and 100 hectares can still produce at a cost 11 percent lower than the average of Finnish agriculture. The correlation is reverse in the case of the other two groups of farms, that is, farms less than 10 hectares and farms with an arable land area between 10 and 50 hectares.

A similar correlation can be found in milk production. As compared to the average cost level of milk production, farms with more than 30 cows produce milk at an 18 percent lower cost. Farms where the average number of dairy cows is between 20 and 30, the production cost is still 9 percent lower than the average. However, farms keeping less than 10 dairy cows must face a production cost that is 35 percent higher than the national average. This explains why the issue of the economies of scale was so heavily emphasized at the time of Finland's EU-membership and why it was underlined so often that new capital investments and subsidies are only available in cases when the economies of size are taken into consideration. To bring only one example: while the

average Finnish dairy farm only kept an average of 12 dairy cows at the time of the Finnish accession, after it subsidies available for Finland only in case of investment projects where the number of dairy cows is in excess of 20. Farmers keeping less than 20 dairy cows are not eligible, etc.

CONCLUSIONS

When Finland entered the European Union, the country's general level of development was close to the average level of the Union. This is a fact that Hungarian observers cannot overemphasize. We have to state nevertheless that one clue to the success of the country is the fact that Finnish politics and economic policy recognised in time the importance of international integration. Thus, as early as 1955, Finland joined the so-called Northern Co-operation; then, in 1961, it forged a partnership with the EFTA member states that was converted into full membership in 1986. As far as integration into the European Community is concerned, Finland's first step goes back to 1973, when EFTA-countries made an agreement with the European Economic Community. This agreement brought Finnish firms and the Finnish national economy closer to the firms and economies of the European Community since it resulted in the elimination of trade barriers and in the gradual liberalisation of foreign trade between the parties. The idea of closer co-operation was very much in the air after 1973 and received a further impetus in 1984 with the adoption of the Luxembourg Declaration. As a result, an agreement was concluded in 1992 after lengthy negotiations on the establishment of the European Economic Area (EEA). The Agreement entered into force in 1994, whereby Finland came very close to becoming a member of the European Community and part of the single European market. In my opinion, Finland's actual accession to the European Union was to a large extent dependent on political factors. The collapse of the Soviet Union and the great changes in world politics made it possible for Finland to become a full member of the European Union without denouncing its attitude of active neutrality.

Finland's accession to the European Union took place at a favourable time. Finland just emerged from the recession of the early years of the 1990's; in 1994, the country was already on the road of economic growth. Between 1994 and 1998, the volume of the GDP increased by nearly 20 percent. Accordingly, we can conclude that the experiences of the first four years of full membership in the European Union were all in all favourable.

Export markets contributed about 46 percent of the country's GDP and import increment. Domestic consumption accounted for 34 percent of the increment, while capital investments utilised 20 percent of the excess GDP. Therefore it is obvious that growth implied, and, indeed, was based on the simultaneous expansion of both the domestic and the export markets. We must also note that the expansion of the internal consumer goods and capital goods markets took place primarily in the private sector. The various measures adopted for the promotion of savings only resulted in a limited growth (or only stagnation) of the volume of public consumption and capital investments.

It can be established that the most sensitive aspect of the Finnish accession process was the issue of agriculture. The bilateral discussions related to the issues of agriculture carried a special importance in the negotiation process between Brussels and Finland. The scale of the problem is very easy to judge if we consider the fact that Finland's domestic

producers' prices were significantly higher than European CAP prices right before the country's accession. The study supported this observation with actual figures. This implied that introducing the CAP prices from one year to the other would have caused Finnish farmers to suffer an extreme decline in producers' prices and income levels. The calculations have shown that if the introduction of the CAP prices had not coupled with a highly sophisticated system of subsidies, Finnish agriculture would have generated an almost FIM 3 billion loss instead of the FIM 6 billion income. These calculations may shed a light on why the Finnish public opinion, and, above all, the Finnish agricultural population, was so concerned about accession to the European Community.

The Finnish Position Paper includes almost 120 pages of item-to-item argumentation in support of the Finnish position represented at the talks. One of the main characteristics of this argumentation is that Finland requests a twelve-year transitional period from Brussels for the full introduction of the CAP. Another characteristic feature of the argumentation is that Finland fully endorses the CAP objectives and is dedicated to their implementation. At the same time, the Finnish Position Paper never fails to underline the special position of Finnish agriculture, laying utmost emphasis on the country's Nordic nature. The Paper often derives Finland's less prominent specific indicators, higher producers' costs, higher storage related costs and lower average yields from this fact, indicating that long-distance transportation is frequently inevitable, which, again, increases costs. Accordingly, Finland put forward certain requests to Brussels that could have enriched the wealth of CAP instruments. (One of these is the country's appeal for the acknowledgement of the need for a so-called Nordic Support, the promotion of the consumption of low-fat products, etc.)

If we take a look at the claims of the Finnish Position Paper and the Accession Treaty as concluded at the end of the accession talks, we can see that the Treaty is a final product that came into being at the price of great compromises. In talking about the more painful side of these compromises, Finnish experts mention that Finland was not granted the twelve-year transitional period, and that it had to introduce CAP prices beginning January 1, 1995. Another sore point is that although Brussels did indeed acknowledge the need for subsidies on account of Finland's Nordic position, this support was not granted the status of a standard CAP instrument in its own right, which implies that the Nordic Support must be entirely funded from the Finnish national budget. Still viewed from the Finnish perspective, it is also a painful compromise that only 85 percent of the country's total agricultural area was acknowledged as a less favoured area eligible for LFA support. Looking at this decision from the Finnish perspective, the best 15 percent of the country's agricultural areas is excluded from this support scheme. Finally, the milk quota received by Finland was 22 percent less than what the Position Paper called for, and the list is far from being complete.

It is quite an achievement that Finland managed to link a support system to the introduction of the CAP prices, achieving that Finnish agriculture 'only' suffered a tolerable shortfall of income in agriculture. This means that the total sum of subsidies is in excess of the income actually realised in Finnish agriculture, or, in other words, the whole Finnish agricultural income comes from subsidies.

When talking about the support system, it must also be mentioned that during the transition period between 1995 and 1999, Finnish agriculture was under pressure to increase its efficiency. Survival should not only be a function of the existence or non-existence of

subsidies; the road of reducing production costs must also be taken. This is truly one of the many real challenges of the European Union membership.

A further characteristic feature of the Finnish agricultural system of subsidies is that it embraces significant regional differences. From this aspect, one of the most important questions is whether the best 15 percent of Finland's total agricultural area – defined on the basis of grain crop average yields – is excluded from the subsidies granted to disadvantaged areas. This has been and still is a painstaking dilemma for Finnish agricultural economists. It must be mentioned at this point that after 1997, another type of support became available with the intention to help farmers in extraordinary difficulties; this is stipulated in Article 141 of the Accession Treaty.

From Hungary's perspective, it must be left mentioned that Hungary, similarly to Finland, should not expect to enjoy any type of simplified agricultural support system upon its accession; however, the fact that a new type of support, namely the support to compensate Finland for the difficulties caused by its Nordic position, was in essence introduced in an EU-member state. This draws our attention to the great role of international co-operation can or could play in the case of former socialist countries waiting for their admittance. It is possible that we should think together about what types of special support could be justified in this region, leading, hopefully, to co-financing by Brussels.

When discussing the agricultural aspects of Finnish accession, we must mention that the volume of production is limited by a certain quota. This limitation involves more than just the milk quota, which is significantly lower than what the Finns asked for, as the entire agricultural system has been made profitability-oriented in accordance with the MacSharry CAP reform. This is a warning sign for Hungary: until we start the accession talks, we will either increase the currently very low output, thereby improving our initial bargaining position – and as of today, this is still possible – or we start the accession talks with the current low agricultural output, in which case we will probably not be able to achieve higher quotas, or only at the cost of painful compromises. This is indeed one of the most important messages of Finnish accession for Hungarian agricultural policy, economic policy, and politics.

Finnish accession brought the issue of agricultural efficiency into the limelight. Within the complex problem of efficiency, economies of scale play a central role. Finnish analyses openly admit that Finland is still behind the countries of the European Union in this respect: not only the average farm size is smaller than in many member states of the European Union, there is also still quite some room for development in Finnish agriculture in terms of economies of scale.

One of the most painful messages for Hungary is the issue of economies of scale. From the end of the 1980's, the country adopted and enforced a rather haphazard privatisation concept that only served to dismember Hungary's large-scale farms, to shatter the unity of plant cultivation and animal husbandry, and to create a multitude of small and in all probability far less than viable farms owned by a large number of small producers and small owners, putting a heavy yoke on Hungarian agriculture. Consequently, the issue of economies of scale has by now emerged as a highly significant key issue and downright challenge for Hungarian agriculture.

As Hungarians try to draw our lesson from the agricultural aspect of Finnish accession, we must identify a very important message in the fundamental Finnish approach of

handling the issues of agriculture by means of an evolutionary and not revolutionary attitude. Economic analyses of the farm structure and of the problems of agriculture elaborated by Finnish experts consistently emphasize that Finnish agriculture is struggling with a lack of capital, that Finnish farmers suffer from limited agricultural income levels, that many of them are heavily indebted, and that there is no realistic possibility for any radical or revolutionary changes. Therefore, as they very clearly stated, efforts must be made to fully exploit the existing capacities. While this message is still very important to Hungary, it would have been absolutely vital when Hungary decided to change its system of agriculture after 1989.

Finland's accession also raises the poignant question: what does the term 'market economy' indeed signify in the context of the agricultural sector? We should have dedicated significantly more attention to this issue when elaborating the strategy of changing Hungary's system of agriculture after 1989. We have seen that Finland's agriculture is, for example, one of the highly subsidised national agricultural sectors in Europe as well as in global comparison. This is also true to the Norwegian agriculture and, to take an example from Asia, to Japanese agriculture. In these states, the Produce Subsidy Equivalent (PSE), which represents the overall level of agricultural subsidies, was about 70 percent in 1994, which was the last year before Finnish accession. The same indicator was 49 percent within the European Union and 42 percent in the average of the OECD countries.

In 1998, the Hungarian PSE was 12 percent, contrary to 45 percent within the European Union and 22 percent in the USA. Therefore the question is, what does the term 'market economy' signify in the context of the agricultural sector? This is a very important theoretical as well as practical issue that must be further clarified.

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COST AND REVENUE OF FARM PRODUCTS: POLISH AND HUNGARIAN COMPARISON*

TIBOR FERENCZI¹ – JERZY WILKIN²

Agricultural producer prices in Hungary and Poland are generally lower than in the EU-member countries. Poland generally produces on lower cost, and achieves higher margins than Hungary, though it should be stressed that member countries themselves also significantly diverge in producer prices even in case of products like cereals, milk, cattle etc. After the accession of Poland and Hungary to the EU, producer price level will not necessarily achieve the EU-average. The larger gap in producer prices can be beneficial, considered especially the declining trend of producer prices in the EU. It is possible that low production cost of both Poland and Hungary will attract European multinationals to invest in downstream sectors, if other necessary conditions will be met.

KEYWORDS: Agriculture; Production cost; Input prices; Poland; Hungary.

Agriculture is a critical issue for the possible eastward enlargement of the European Union (EU). Even in the Central European Free Trade Association (CEFTA), farm products constitute a critical field in the co-operation of member countries. Both Poland and Hungary are active founding members of the CEFTA, and aspirants to the EU, which facts might underline the significance of the comparative analysis of their agricultural sectors.

Both countries, Poland of 38 million population and Hungary of 10 million inhabitants, pay a special attention to the agriculture from different reasons. The greatest significance of the sector lies in employment in Poland and in exports in Hungary. In the GDP, it has not a high share, as it stays around 6 percent in both countries, but while in Hungary there was a sharp decline at the start of the 1990's, Poland shows a relatively stable contribution in the 1990's. Employment issues are obviously different. In Hungary, agriculture lost the majority of its active population within a few years, and decreased to a level below 7 percent. In Poland, a quarter of the active population is still working in

* The paper is based on a Polish–Hungarian intergovernmental research Competitivity of the Polish and Hungarian agriculture in a European context on the basis of production cost and income surveyed for principal products (under number PL 14/96 TĚT), co-ordinated by the authors, with the participation of *Csaba Forgács, Szczepan Figiel, István Kapronczai and Aldona Skarzynska*.

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this sector. Due to the greater importance in employment, Poland subsidises the agriculture double more than Hungary: the Polish Producer Support Estimate (PSE) varied from 17 to 25 percent in the second part of 1990's, while the Hungarian level oscillated from 8 to 14 (Agricultural Policies; 1999).

The contribution to foreign trade is similar in the two countries, however opposite trends are emerging. In Hungary, the agri-food export is rather stable, about USD 2.7-2.8 billion. Nevertheless, it composes a descending share in total exports in the 1990's (from 25 to 15 percent), while in Poland there is a stable share (11-14 percent) with an increasing value: from USD 2 to over 3 billion. As to the imports, similarly in both countries, upward trends are appearing. In both countries, the agri-food imports have doubled in the 1990's: in Hungary, from USD 0.6 to 1.2 billion, and in Poland from USD 2 to nearly 4 billion. Nevertheless, the share of the agri-food imports both in Hungary and Poland slowly fell, in the former from 6 to 5, in the latter from 12 to 9 percent. It follows that Hungary is a net exporter and Poland is a net importer country. Furthermore, Poland has lost its net exporter position already in the 1980's, and Hungary is the only one among Central and Eastern European countries (CEECs), which has not only maintained (as the other Bulgaria), but also expanded its net agri-food exports.

The doubling agri-food imports in both countries predict a challenge, especially if admission to the EU would soon be taken place, and the domestic suppliers would not be ready to match for the strong European agri-food chains at the free competition. Nevertheless, the current EU policy, with floating the date of accession, makes quite impossible to elaborate and execute an adjustment strategy for the Polish and Hungarian agriculture. The lack of strategy would be especially harmful, if 'the permanent five-year distance from the membership' continued for long. Obviously, there is quite a limited space for such an adjustment strategy, even if all information were given about the length of the pre-accession period, due to the GATT/WTO agreement on agriculture in force (The Uruguay round, 1995; Agricultural policies, 2000). However, commitments of WTO-member CEECs show quite different level of protection, and in this regard Poland has more possibilities than Hungary, which is expressed in a higher stability of agricultural prices.

Surveys for farm products by production cost and revenue

Both Hungary and Poland have detailed surveys on the main agricultural products, compiled every year by the Research and Information Institute for Agricultural Economics (RIIAE – Budapest) and the Institute of Agricultural Economics (Warsaw). In Poland, individual (family-) holdings are surveyed, in Hungary both agricultural enterprises (farming co-operatives and companies) and individual holdings are surveyed since several decades (*Kertész; 1994–1999*), (*Rátkai; 1994–1999*). (In Hungary 1400 enterprises and 11 000 individual holdings are surveyed which means 1.5-2 percent sampling proportion in the case of enterprises and 0.8-1.2 percent sampling proportion in the case of individual holdings.) The structure of the Polish and the Hungarian surveys are similar. In both cases, direct costs are surveyed in a detailed breakdown. The breakdown provides similar or the same items, like the cost of seeds, fertilisers, chemicals, farm services, hired labour, insurance, etc. However, the Polish breakdown is more detailed, where string at crops and the specific home feeds (potatoes and other root plants, hay, green forage, and silage) and purchased feeds

(grain and bruised grain, bran, complete mixtures and concentrates, protein and mineral feeds, fodder and other feeds) are identified. In Hungary, only purchased and home feeds are broken down. In the Hungarian agricultural enterprise survey, there are own services (made by the specialised branch of the farm) and bought services, as well as some specific services are distinct. In Poland, due to the family-holding character of the survey, only purchased services are reviewed. In the Polish survey 'veterinary services, medicines and insemination' are included in a specific item (with a considerable part of the costs), while in Hungary only medicines are listed among the cost of 'materials'. Evidently, the excess data have to be omitted in the comparison. At the end, 7 items of the direct costs are used, among them 'other direct cost' for those, which could not be harmonised.

In the harmonisation of the data sets, however, some more adjustments had to be done. For instance, in the Hungarian system, the value of by-products (e.g. straw, calf, manure, etc.) is traditionally subtracted from total direct cost, while in Poland (like in the EU) they compose a part of the production value. Compensation of farms by insurance companies is similarly treated. Depreciation in Hungary is an element of the direct cost, but in Poland (in line with the EU accountancy), it should be financed by the margin (production value minus direct cost). To establish a comparable data set, adjustments were made where mainly Hungarian data were modified.

The outlook to the EU was based on selected data of the Sectoral Production and Income Model for Agriculture (in German acronym: SPEL), created and regularly improved by the University of Bonn see *Wolf* (1995). As mentioned before, in Poland and in Hungary the main traditional breakdown of costs contain direct and indirect (general) items. In the EU, the main items are variable and constant inputs. The SPEL data set comprises historical time series from 1961 for all the 15 member countries of the EU, and there are efforts to develop a similar system for CEECs too.

In this study a 6-year historical data series were used, from 1993 to 1998, in order to avoid the risk of using a single year.

Product coverage

In both countries, the most important products are surveyed in sample farms. Evidently, a significant product of a country might be negligible or missing in the other and vice versa. For instance, poultry, maize or grapes/wine are very important products in Hungary, while they are missing from the Polish surveys. At the end, nine agricultural products remained for comparison: wheat, (winter) barley, rye, rape-seeds, sugar beet, potatoes, milk, cattle and pigs.

In Poland there are survey results for each year for all the 9 products. In Hungary, some products are produced in a small quantity in the sampled farms, which results in a lack of relevant data for several years (rye and rape-seeds in the enterprise survey). The Hungarian survey of individual holdings contains only potatoes among the compared crops.

Competitiveness of agriculture and comparison of costs of farm products

Competitiveness of agriculture, in a global approach, is determined mainly by the food processing and retailing sectors. However, considering the poor international data avail-

ability of the downstream (processing and retail/distribution) sectors, which requires indirect analytical approaches in the competitiveness, the authors decided to stay on the farm level at the comparison. International companies, multinationals in processing and retailing sectors, have a great impact in the competitiveness of agricultural products, while their activity is not transparent. However, the authors assume that downstream sector prefers farms with low level of production cost. If it is true, investments to the downstream sectors are attracted by an environment where farm costs are low. It follows that production cost might be a significant element of competitiveness even at the farm level, provided if general macroeconomic conditions and (agri-food) sectoral incentives are present. Downstream sectors obviously prefer if farm products are available at a low level of prices; and that low level of prices are more secure if production costs are also low.

In this research, quality and other determinants of prices and production costs were not investigated, thus, standard qualities and conditions were assumed. Comparisons were based on the surveyed data and not on national statistics (even if available). In this course, not only production cost, but producer price, as the other main element of the margin, was also taken from the survey. (The authors compared survey data to those of national statistics, which do not appear in this article, however differences were not significant.) Where no survey data were available, they utilised the harmonised data sets of the Central European Institutes of Agricultural Economics³. In the following part, results are shown by commodities.

Cereals

Poland has three times larger area of cereals than Hungary, but due to lower average yields, the production is only twice, two and a half times more. It is common that *wheat* constitutes about a third of the production of cereals in both countries. Barley and rye are much more important in Poland than in Hungary, while maize is a great product in Hungary and negligible (not surveyed) in Poland. In the following, average yields are compared by the survey data, as any other parameter involved to the comparison.

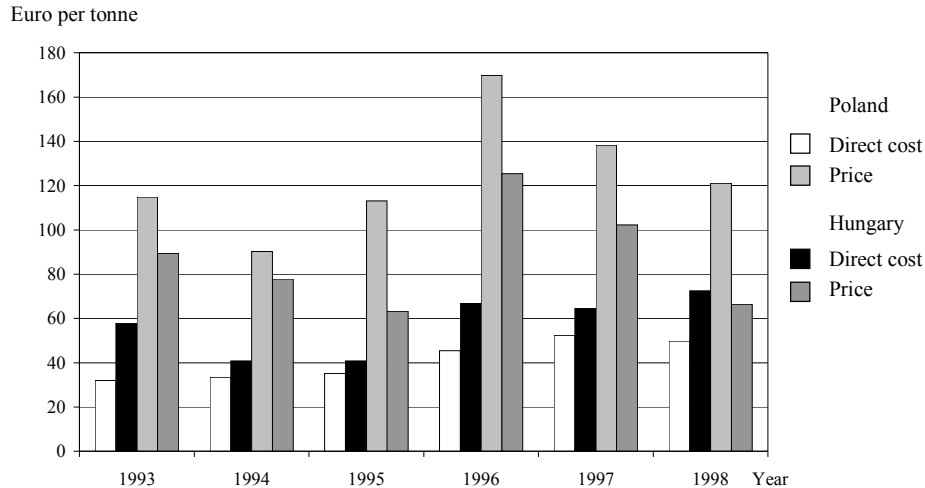
Wheat average yields were in two years lower and in four years higher in Hungary than in Poland. In the latter the typical average yields were 3.8 to 4.0 tonnes, the top has not reached 4.1 (1995), and the lowest slightly fell under 3.4 tonnes per hectare. In Hungary, much larger fluctuation has taken place: from 3.1 (1993) to 4.9 (1994), and in three years the average yield exceeded 4.0 tonnes per hectare (1995, 1997 and 1998). Wheat prices are much higher in Poland than in Hungary and the fluctuation is also much less. It was only in 1994 when Polish wheat prices were lower than 100 Euro; they oscillated between 110 and 130, and in one year (1996) even rose over 160 Euro per tonne. In Hungary, there were only two years when prices exceeded 100 Euro per tonne. In the rest, they fluctuated between 60 and 90.

Despite the higher Polish prices, it is remarkable that direct cost per tonne in Poland is considerably lower than in Hungary. Nevertheless, there is an upward trend over the period, but Hungary paid every year higher direct cost on wheat. Moreover, the level of the Hungarian direct cost had a great fluctuation. It follows that Polish wheat producers

³ Last yearbook published by RIIAE, 1998.

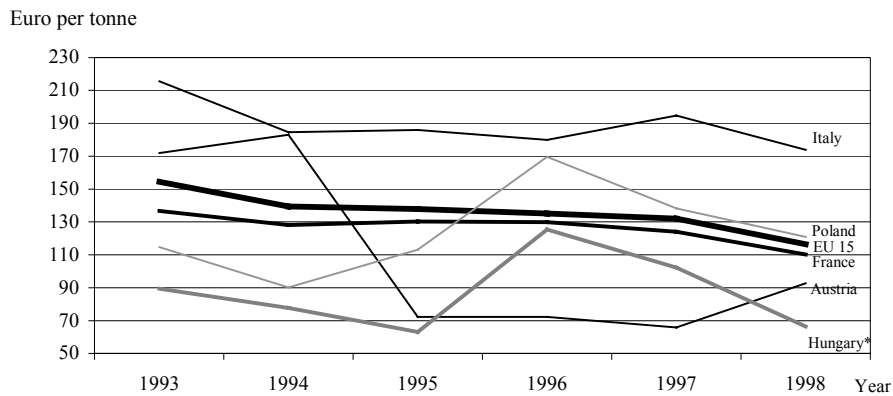
benefit a higher income (margin between the price and direct cost) than the Hungarian ones. Polish wheat costs less but is sold on higher price than in Hungary. Moreover, Polish government creates a higher stability for wheat prices (see Figure 1).

Figure 1. Direct cost and producer price of wheat



It merits attention to compare these prices to the level of EU-prices. As for the EU-survey, soft wheat and durum wheat are separately administered; we created weighted (by the harvested quantities) averages.

Figure 2. Producer prices of wheat



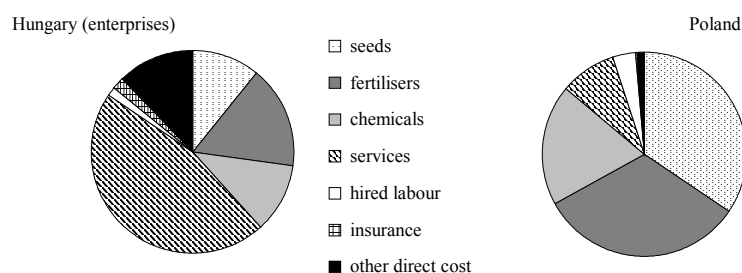
* Here and in the following: enterprises.

Producer price of wheat of the surveyed farms in Hungary is below the EU level by Euro 30 to 50 per tonne. The exceptional year is 1996, when the EU average was approached closely by Hungary. In this year Poland, even exceeded that level, and since

that it stays slightly over that. The price level, although, is far not single in the EU-markets, there are significant differences among the member countries. The wheat is the most expensive in Italy (due to the high share of durum wheat), almost achieving Euro 200 in the period under review. It is more striking that the cheapest wheat is produced by Austria where in the year of its accession it fell to the level of Hungary and since that it stays below Euro 90 per tonne. The French wheat prices are slightly below the EU mean, never exceeding that, slowly declining to Euro 120 in 1998 (see Figure 2).

The structure of direct costs (see Figure 3) expresses the different kinds of farms. The share of unpaid work is missing from the costs of individual holdings like in the Polish survey. At the same time Hungary surveys the wheat cost and income only in agricultural enterprises. In these circumstances, the Polish structure shows necessarily higher contribution of some cost items like seeds, which has triple, the fertilisers and chemicals, which have double share than in Hungary. The case of services is different: enterprises generally have own branch(es) for services, and its (their) higher contribution substitutes labour. As a result Hungary has more than double share of services, which covers nearly the half of the total direct costs. Labour input is very high in Poland, however a downward trend prevails itself: from nearly 90 hours per hectare it fell to 40 hours by 1998. On the contrary, the amount of hired labour is increasing from 2 to 6 hours by the end of the period. In Hungary, the labour input varies between 2 to 3 hours per hectare.

Figure 3. Direct cost of wheat, 1998



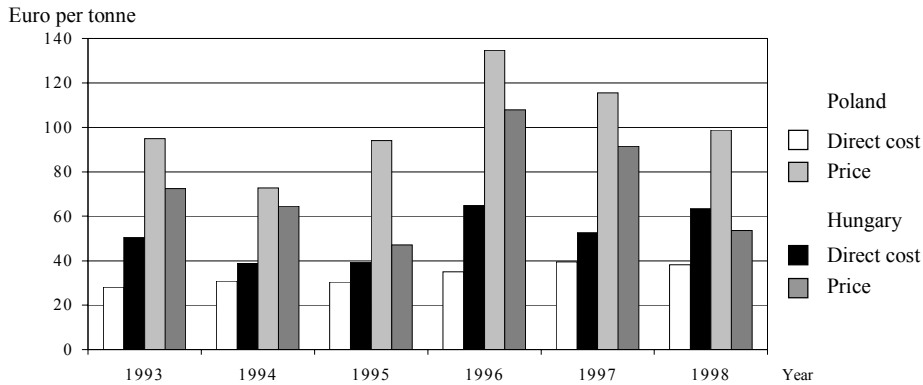
Rye can be compared only in the last two years of the period (1997 and 1998). The average yields of rye in Poland are higher, there were around 2.5, while in Hungary only 2.2-2.3 tonnes per hectare. Nevertheless, the same trend of wheat can be found here: prices are higher in Poland but direct costs are much lower.

Average yields of *barley* are generally lower in Poland than in Hungary. Polish average yields vary between 3.4 and 3.6 tonnes, only in one year (1994) fell to 3.1 tonnes. In Hungary, 4.2-4.4 tonnes were typical, but in two years (1993 and 1996) the average yields fell to 3.2-3.3, and only in a single year (1998) rose to 5.0 tonnes. Again, the same trend of prices and costs can be detected. Price and price stability is much higher in Poland, where direct costs are lower (see Figure 4).

It should be noted, that direct cost in Poland does not imply the non-paid labour, which is remunerated, by the margin. In Hungary, as only agricultural enterprises are surveyed for cereals, all paid and non paid labour is included in the costs. This phe

nomenon gives higher costs for Hungary. If Polish non-paid work valued and incorporated to the cost items, which is a dubious change in the calculation, Polish cereals would not be far so cheap.

Figure 4. Direct cost and producer price of winter barley

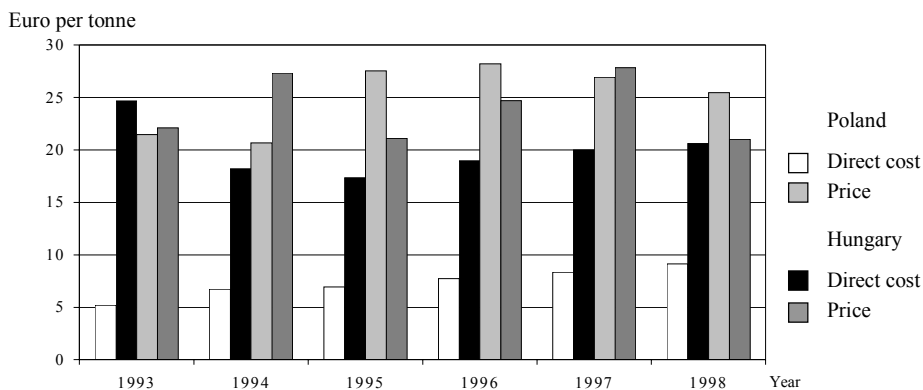


Other crops

The comparison of the following three crops shows somewhat different pattern from the case of cereals.

In case of the *rapeseed*, the less contrast can be found. Hungarian data, again, represent only the agricultural enterprises, and relevant surveys are available only for the last three years of the period. Average yields used to be considerably higher in Poland in a longer period, but from these years in 1996 and 1997 Hungarian average yields were higher, which were on a level of 1.7-1.8 tonnes per hectare. In Poland in 1998 average yield increased over 2.1. Hungarian direct cost was again much higher, and in the first two years prices are significantly lower, but in the last year, Hungarian prices slightly overtook the Polish level.

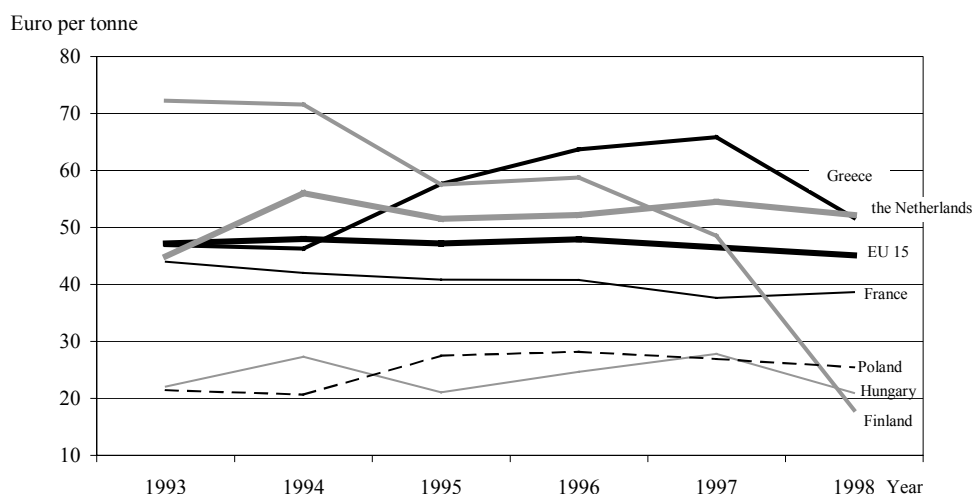
Figure 5. Direct cost and producer price of sugar beet



The *sugar beet* is a highly labour intensive product, which explains the great difference between the high Hungarian and low Polish direct cost. The interval of price fluctuation does not significantly differ between Hungary and Poland. In contrast with the previous crops, in three years the Hungarian and in three years the Polish prices are higher (see Figure 5).

In comparison with EU-prices, both Polish and Hungarian sugar beet can also be considered very cheap. However, Finnish prices are remarkably high, as after the accession they fell quickly, and by 1998 Finland was the cheapest producer, on a level slightly even below the Hungarian and Polish prices. French sugar beet is also cheaper than the EU mean in every year and the gap is growing, however, it is significantly more expensive than Polish and Hungarian products (see Figure 6).

Figure 6. Producer prices of sugar beet



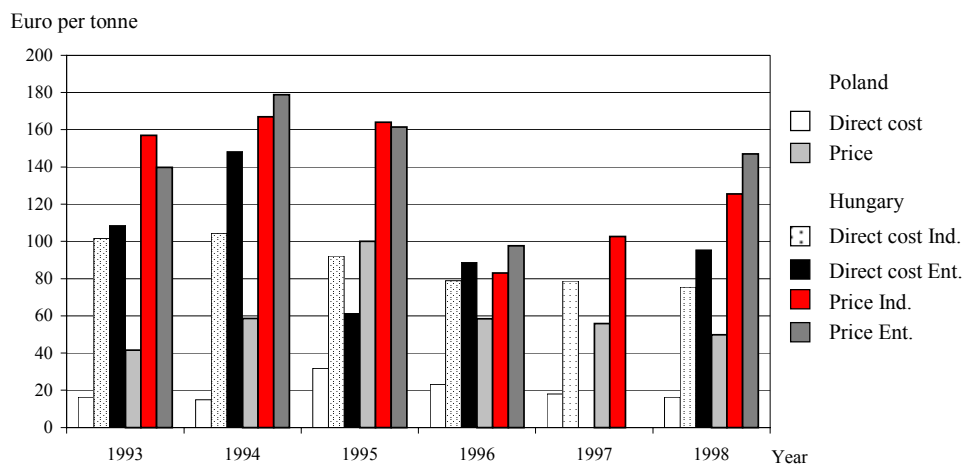
Polish average yields are generally higher, with the exception of two years when they fell far below 40 tonnes per hectare, they vary from 41 to 43. In Hungary, there is an upward trend, from 26.2 to 42.7 tonnes per hectare, but only in 1998 exceeded the level of 40.

In Hungary, labour use varies from 15 to 35 hours per hectare. In Poland, the paid labour is about 40, and the non-paid labour is diminishing from 400 to 176 (in 1998). It should be noted again, that in Hungary, only enterprises are sampled, which use, in a great extent, labour saving technology, especially in the harvest while in Poland mainly individual holdings are sampled. The difference of the results can be accounted for this fact.

For *potatoes*, Hungary has surveyed not only enterprises but individual holdings too (see Figure 7). Hungarian average yields at enterprises are generally higher than in Poland, where they vary from 13 to 22 tonnes per hectare. In Hungarian individual holdings, there is a steady increasing trend from 15 to 22 tonnes per hectare. Labour use at individual holdings falls mainly in an interval of 280 to 300 per hectare hours in Poland, 260-280 hours per hectare in Hungary. Despite these moderate differences, it is surprising that direct costs of Hungarian individual holdings are multiple of Polish holdings.

Enterprises have even lower direct cost than this high level. In contrast to other crops, potato prices are much higher in Hungary than in Poland.

Figure 7. Direct cost and producer price of potatoes



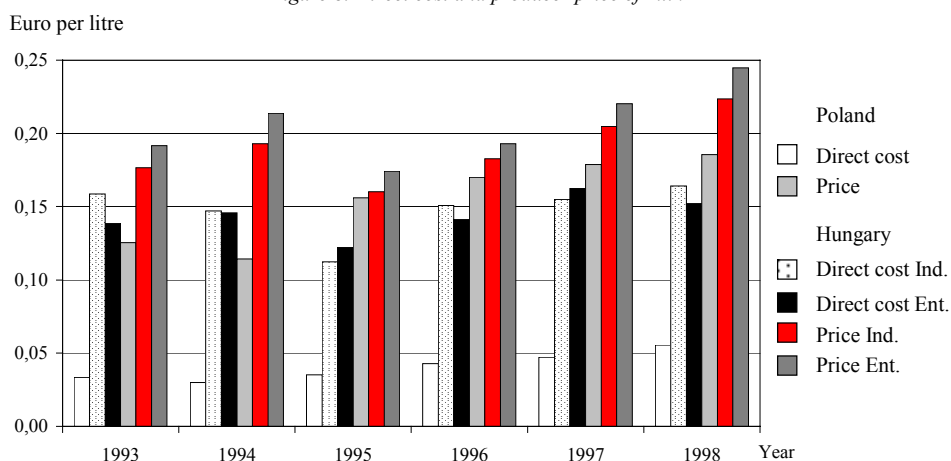
Remark. Here and in the following: Ind. – Individual holdings; Ent. – Enterprises.

Livestock products

Similar trends can be discovered in livestock products as well. Fortunately, for all the three products Hungarian data exist both for enterprises and individual holdings.

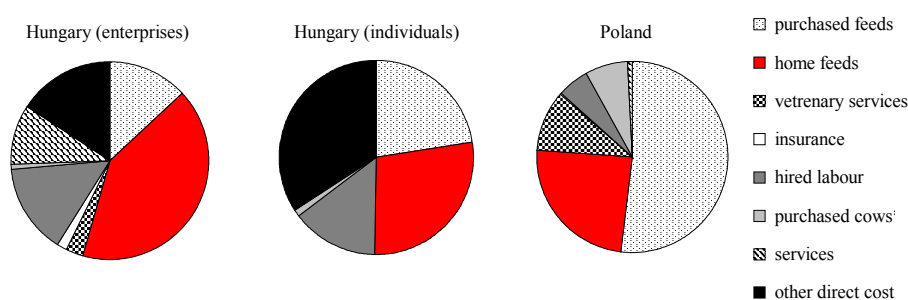
Direct cost of *milk* in Hungary is again multiple of the Polish level, and Hungarian enterprises sometimes have a little lower direct cost than individual holdings. Prices are considerably higher than in Poland (see Figure 8).

Figure 8. Direct cost and producer price of milk



The highest share of direct costs is spent for feeds. In Poland more than three quarters of the direct costs compose feeds, in Hungary there is a lower part: enterprises use 55 and individual holdings 60 percent. There is a larger difference in the proportion of home and purchased feeds. Obviously, Hungarian enterprises use more home feeds (with a slightly increasing trend from 38 in 1993 to 42 percent in 1998) than Polish individual holdings (about a quarter of total direct cost). However, it is more surprising that Hungarian individual holdings, similarly to enterprises, also use home feeds in a great extent, in about 30 percent of the direct cost (see Figure 9).

Figure 9. Direct cost of milk, 1998



Another notable feature is that both Hungarian enterprises and individual holdings, as well as Polish holdings use the same share of direct cost on services: about 10 percent during the entire period.

Both Poland and Hungary have significantly lower milk prices than the EU. Nevertheless, there are also great differences in milk prices among the member countries of the Union. The highest producer prices are in Greece and Italy, and the lowest ones in the United Kingdom, which, after a slightly increasing trend, fell to the level of Hungary. Austrian milk price also merits greater attention, since it sharply fell after the accession and in 1989 it is below the British level (see Figure 10).

Figure 10. Producer prices of milk

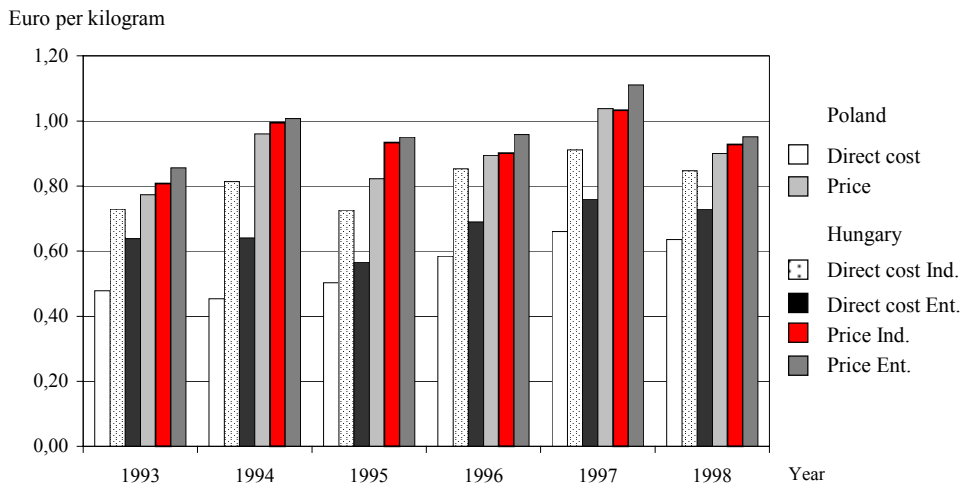


Milk average yields are higher in Hungary than in Poland. Polish dairy farms, however, increased their average yields from 3300 to 3900 litres per cow. Hungarian individual holdings also expanded the average yield from 3400 to 4300, while enterprises from 5400 to 6100. The labour use of the enterprises is not too high and diminishing: from 110 to 90 hours per cow. In Poland, the non-paid labour fell from 350 to 270. Hungarian individual dairy producers have also rationalised the labour use but from an extremely high level: from 750 to 670 hours. This low productivity comes together with a high level of direct cost.

Beef production has diminished in both countries. Hungarian production now does not take more than one eighth of the Polish production. Direct cost in Hungary is much higher than in Poland, even if there is no multiple difference. The enterprise level of the direct cost exceeds the level of Hungarian individual holdings in every year. Hungarian prices generally do not exceed the Polish prices. Hungarian individual producers use again too much labour. Without a downward trend, they exercise 600 to 1000 hours per tonne of beef output. Polish producers reduced the non-paid labour use from 700 to below 500 hours, and the amount of hired labour is insignificant. Hungarian enterprises also use extremely high labour, even if this diminished from 1600 to 1000 hours.

Pork production has diminished in Hungary by 40 percent in the decade of the 1990's. In the same period, Poland has expanded the production by 10 percent and produced three times more than Hungary. Hungarian individual pork producers have much higher direct cost. Furthermore, enterprises have every year considerably lower level of direct cost, in spite of the fact, as mentioned before, that their cost fully implies labour input, in contrast with individual holdings (see Figure 11). Nevertheless, the surveyed individual labour input in Hungary, was fluctuating between 310 and 360 hours per tonne of pig output, while in Poland, it significantly diminished from 500 to below 200 hours. Hungarian enterprises varied labour input around 220 and 240 hours. Like in the case of beef, prices in Hungary are again slightly higher than in Poland.

Figure 11. Direct cost and producer price of pork



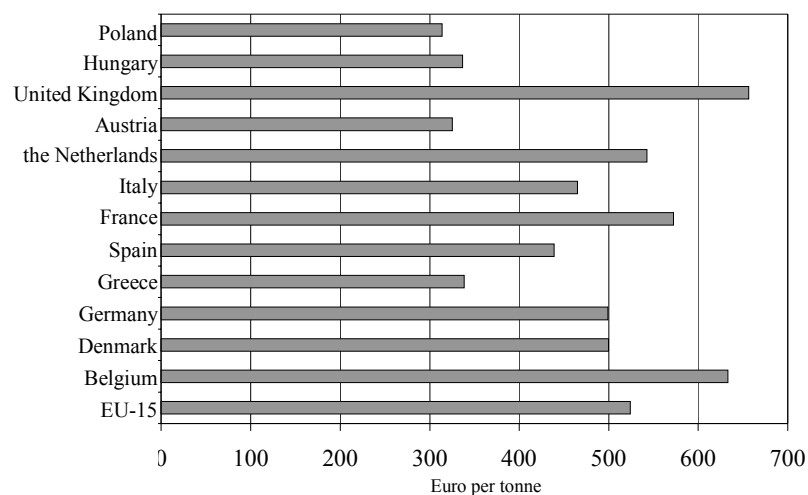
Trends, simulations

It should be noted that Polish and Hungarian trends in farm prices are generally lower than in the EU but there are some surprising exceptions, especially in some cases of individual member-countries. The established Polish–Hungarian data set provides the possibility of different simulations. Such results might call attention to various weaknesses, instabilities, which might be more important when accession to the EU would take place. However, both policy makers and farm organisations would benefit from such simulations even without accession.

The accession to the EU would certainly change significantly the agricultural input prices. Such changes would deeply modify the costs and incomes of agricultural producers in both countries. For instance, fertiliser or feed prices could be changed in a shorter term after the accession, while the cost of the hired labour would be changed in a longer term. The analysis of these possible structural changes is extremely important to provide a fair orientation for the adjustment. This shows the necessity of the continuation of our research.

However, some predicted changes can easily be slower and less extensive than it is generally expected. For instance, a huge increase in the prices of chemicals and fertilisers is often anticipated for the years after the possible accession. Nevertheless, the analysis of our data set would not support such unambiguous statements. Fertiliser prices in the EU are quite different; they depend on the local demand, required composition by soils, transport costs, etc. The mean of the EU exceeds Euro 500 per tonne (in active ingredients), which is indeed much higher than the Hungarian and Polish level of Euro 300–320 (see Figure 12). Surprisingly, the fertiliser is the cheapest in Austria, and its price is close to the Hungarian and Polish level. In this light, the expansion of fertiliser prices has no chance. Moreover, agri-environmental policies try to cut the intensive technologies, which might temper the demand in the entire Community.

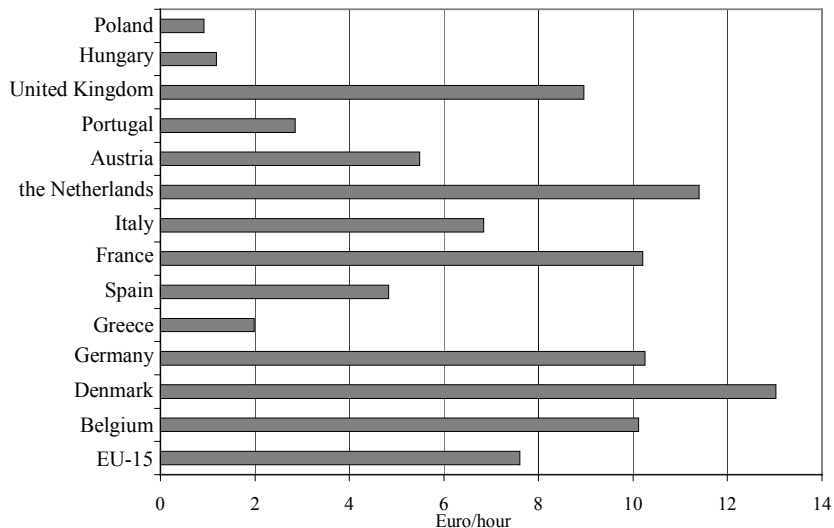
Figure 12. Fertiliser prices, 1997



Another critical input factor is the labour, which makes the prospective of the possible Eastward enlargement of the EU disturbing for some agricultural communities in the current member-countries. Our data set alone was not sufficient to analyse the dimension of this problem. Both the Polish and Hungarian surveys provide data for the paid and nonpaid labour use, as well as its cost. However, the SPEL data set, from which the correspondent data for the member countries were taken, does not include such information. We took the necessary data from the Farm Accountancy Data Network (FADN) which represent the commercial holdings (Agricultural Situation, 2000). The updating of this data set usually takes a longer time. At closing this paper, 1997 data are not available yet for every member countries. From the Southern countries only Greece is missing, but such countries like Germany or Sweden are not updated yet. Under this condition, the latest year to analyse the agricultural wages is 1996.

Agricultural wages are as high as nearly 8 Euro per hour in the EU. There is a great variety among the member countries. Far the lowest wages are paid in the Greek agriculture (2 Euro), the Portugal level is also low with 3 Euro, and a still moderate level prevails itself in Spain, Austria and Italy (5-7 Euro). 10 Euro is paid in Belgium, Germany and France, and nearly 12 in the Netherlands, and far the highest (13 Euro) in Denmark for an hour. In this environment, wages in Hungary with more than one Euro and Poland with less than one Euro per hour seem to be in a great distance from the member countries. Even in Greece double and in Portugal triple wages are paid.

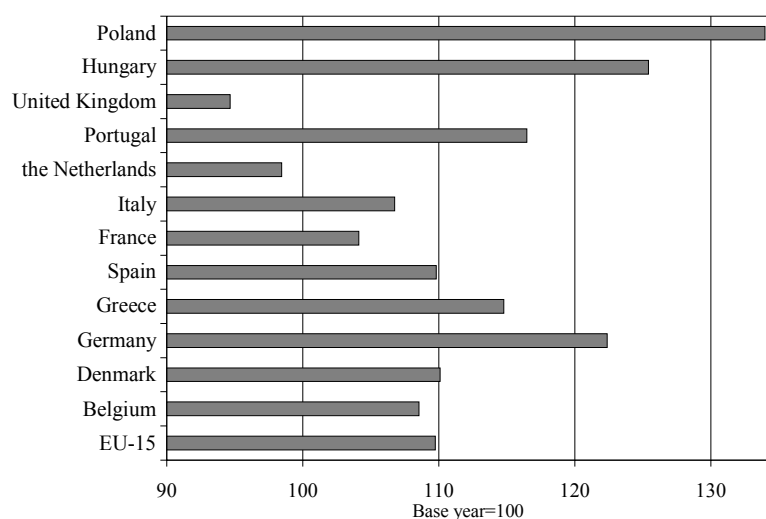
Figure 13. Agricultural wages, 1996



Although, it cannot be given a clear message for the future from this situation. First of all, in the single market, different levels of wages are operating: from 2 to 13 Euro per hour, due to the conditions of the local markets. Even in the founding member-countries, wages vary from 7 to 12 Euro. It shows that even multiple differences can prevail for long in the single market.

Moreover, there is a strong increase of agricultural wages both in Poland and Hungary, especially in the second part of 1990's. The available data sets provide a chance to compare two-year increment of wages, even if the period is not the same: in member-countries 1994–1996 and for Poland and Hungary 1996–1998. This comparison shows that both countries expanded the wages: Poland by 35 and Hungary by 25 percent. In the EU only 10 percent increase was realised within two years, and only three member-countries exceeded this average. It is notable that not only Greece and Portugal (15 percent) but also Germany belongs to this group, the latter with a more than 20 percent increase. There was a slow increase in France (4 percent) and Italy (6 percent), and a fall in the Netherlands (-2 percent) and in the United Kingdom (-5 percent).

Figure 14. Two-year increment of agricultural wages*



* In EU 1994-1996; in Hungary and Poland 1996-1998.

Conclusions

Both countries produce principal agricultural products on lower production cost than the EU average (EU-15), and than the level of most member countries. Producer prices are generally lower than in the member countries. Poland has got nearer to EU-prices than Hungary in cereals and some other crops. In livestock products Hungary has slightly higher prices than Poland. Poland generally produces on lower cost, and achieves higher margins than Hungary.

Before concluding on possible post-accession margins of agricultural products, it should be underlined that member countries themselves also significantly diverge in producer prices even in case of products (e.g. cereals, milk, cattle etc.) where the Common Market Organisation provides broad intervention prices. It follows that Poland and Hungary having accessed to the EU will not necessarily achieve the EU-average. The larger gap in producer prices can be beneficial, especially considering the declining trend of

producer prices in the EU. Nevertheless, the low production cost of both Poland and Hungary certainly will attract European multinationals to invest in downstream sectors, if other necessary conditions will be met.

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