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Editors:
Jerzy BAŃSKI and Maria BEDNAREK

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Volume reviewed by:
Francis HARVEY (University of Minnesota)
Roman KULIKOWSKI (Polish Academy of Sciences)

Editorial Office:
Institute of Geography and Spatial Organization, PAS
00-818 Warsaw, ul. Twarda 51/55
tel. (48-22) 697 89 21

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INTRODUCTION TO THE VOLUME

Over the past two decades, Central and East European countries have been subjected to radical socio-economic upheavals. Particularly extensive transformations took place in agriculture, which, in most of the countries of that region, was previously state-owned or was part of cooperatives controlled by the central authorities. Only in Poland and former Yugoslavia, private agriculture played more significant role.

In general, as a result of change in the socio-economic system, nationalized and cooperative agriculture have been supplanted by individual farming. This process has been accompanied by changes in the ownership, including changes in the ground ownership. Owing to restitution processes and commercial activity going on, land has been taken over by private owners.

Transformations in agricultural economy have been significantly influenced both by the processes going on during the period preceding the EU accession as well as by later developments after obtaining the EU membership. Requirements imposed on agriculture by Brussels brought about changes in the structure, intensiveness and technology of production.

Transformations occurring in agriculture economy create the need for assessing the situation in that sector. Therefore, that issue is addressed in the current monograph, which constitutes "a picture" depicting a contemporary state of agriculture in Central-East Europe. The monograph consists of ten articles. The first paper centers on the most important issues concerning Central-East Europe agriculture (J. Bański), whereas the other articles discuss a transformation of agriculture economy in the particular countries of that region: Bulgaria (K. Kaneva, M. Anastasova-Chopeva), Czech (S. Martinat, P. Klapka, E. Novakowa and T. Doucha, E. Divila), Latvia (V. Bratka, L. Melece, L. Dambina), Poland (W. Zgliński), Romania (D. M. Voicilas), Serbia (M. Todorovic, R. Miletic), Slovakia (P. Spišiak, J. Feranec, J. Otahel, J. Novaček) and Hungary (B. Csatari, J. Z. Farkas).

This publication has essentially a cognitive value. The articles present thoroughly and comprehensively phenomena and processes taking place in the recent years over the rural areas, especially in the agriculture of the eight aforementioned countries. Texts are richly illustrated with charts, maps and tables, as well as containing an extensive statistical data.

Jerzy Bański, Maria Bednarek

Jerzy BAŃSKI
Institute of Geography and Spatial Organization, Polish Academy of Sciences
Twarda 51/55, 00-818 Warsaw, Poland
jbanski@twarda.pan.pl

AGRICULTURE OF CENTRAL EUROPE IN THE PERIOD OF ECONOMIC TRANSFORMATION

Abstract: The 1990s brought very important transformations in the agricultural economy of East-Central Europe. The transformations of agriculture had very different character in individual countries, just like the levels of development and the degrees of "socialisation" were different. The main aim of the present paper is to indicate the place of agriculture of the countries of Central Europe in the agricultural economy of the European Union, and to define the directions and effects of the ownership changes, which took place in the farming sector in Poland, Czechia, Slovakia, Hungary, Romania and Bulgaria.

Keywords: agriculture, Central Europe, economic transformation

INTRODUCTION

The 1990s brought very important transformations in the agricultural economy of the post-communist countries of Central Europe. Privatisation, re-establishment of ownership, universal accessibility of production means, as well as a number of other socio-economic processes and phenomena changed the reality, in which agriculture functioned till then. This was the result of the passage of the countries of Central Europe from the centrally managed economy to the market economy, and the preparation, followed by the accession, to the European Union.

The transformations of agriculture had very different character in individual countries, just like the levels of development and the degrees of "socialisation" were different. Yet, the basic economic processes and phenomena of the period of transformation appear to be similar, which is the consequence of the prepara-

tion to the accession to the EU according to the same procedures and stipulations.

The fundamental purpose of the present paper is to indicate the place of agriculture of the countries of Central Europe in the agricultural economy of the European Union, and to define the directions and effects of the ownership changes, which took place in the farming sector of these countries in the period of economic transformation. The analysis extends over Poland, Czechia, Slovakia, Hungary, Romania and Bulgaria. All of the countries analysed belonged before 1990 to the Eastern Bloc, in which the same political and economic doctrine was in force. The effect of the post-war agricultural reforms and of the central steering of agricultural economy before 1990 was nationalisation or "socialisation" of agriculture and marginalisation of significance of private property. After the "iron curtain" fell and the socio-economic transformations were set in motion, the significance of private property increased again, which entailed a number of other phenomena in agricultural economy.

THE PLACE OF AGRICULTURE OF CENTRAL EUROPE AGAINST THE BACKGROUND OF AGRICULTURE OF THE EUROPEAN UNION

The countries of Central Europe are characterised by different agro-ecological conditions. Consequently, they differ as to the directions of agricultural production, especially in the domain of plant production. As far as livestock husbandry is concerned, the countries analysed feature as a rule similar possibilities, and so in terms of directions of animal production the differences between the countries considered are relatively smaller.

The differences between the countries of Central Europe are more pronounced in the domain of the level of development of agriculture. This is the effect of a number of processes and phenomena of historical, political, economic and social character. Considering the production effects obtained, the countries of Central Europe here considered can be classified into three groups. The first of them is constituted by Czechia, where agriculture attains the relatively highest production effects among all the countries analysed. The second group is composed of Hungary, Poland and Slovakia, while the third, most "backward" – of Romania and Bulgaria (Figure 1).

It can generally be admitted that agriculture of Central Europe drags behind the agriculture of the most economically advanced countries of Western Europe (Germany, The Netherlands, Denmark, Belgium, United Kingdom or France) in terms of the level of development, value of assets and productivity. Agriculture of Czechia is relatively the closest to the level of farming in these countries. Thus, for instance, the average yields of wheat in the Czech Republic in the

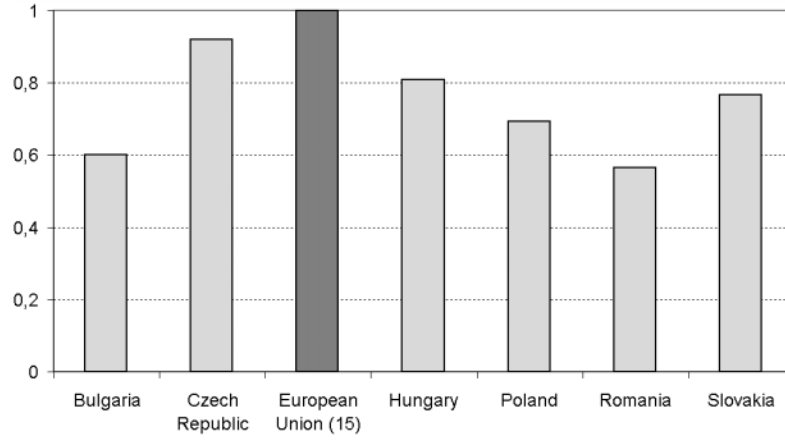

Figure 1. Productive effects indicator[1] in agriculture of the countries of Central Europe and the EU 15 in the years 2000–2005

years 2000–2005 were at 4.8 tons, of barley – at 4 tons, while the corresponding figures for the countries of EU-15 were 5.8 and 4.6 tons (see Table 1). For comparison, the yields of wheat in the same period in Poland were 3.7 tons, and in Romania – 2.6 tons. The situation is similar in the domain of livestock husbandry. The average milk yield from a cow in Czechia in the years 2000–2005 was 5790 litres, in Poland – 4170 litres, and in Romania – 2993 litres. In the same period, the average yield of milk per cow in the countries of the EU was 6180 litres.

The examples quoted show that agriculture of countries of Central Europe, despite having been subject over 50 years to similar social and economic processes, and despite the implementation of the socialist model of production, preserved spatial differences in the level of development and the distance separating it from agriculture of Western Europe.

The countries of Central Europe dispose of an enormous potential in the domain of agriculture. According to the data from FAO, in 2003 these countries disposed of around 48.8 million hectares of agricultural land, that is – of every fourth hectare under farming in the European Union (Table 2).

In the agriculture of highly developed countries the basic source of revenue is the livestock production, to which the crop production is largely subordinated. This is the effect of a simple economic calculus – products of animal origin, as subject to more advanced "processing' command relatively higher prices than products of plant origin. Yet, crop production plays a particularly important role

[1] The indicator was calculated on the basis of six diagnostic features – wheat yield, barley yield, potato yield, milk yield per cow, meat yield per pig, meat yield of cattle – averaged for the years 2000–2005.

Table 1. Average yields of selected crops, milk yield of cows and meat yield of pigs in the years 2000–2005

Country	Crop yields (in tons)			Milk yield per cow (in kg)	Meat yield per pig (in kg)
	wheat	barley	potatoes		
Bulgaria	3.02	2.83	13.59	3470.5	75.7
Czechia	4.76	3.98	22.80	5786.4	94.5
EU 15	5.36	4.28	36.88	5850.7	88.4
Hungary	3.95	3.26	21.16	6074.3	92.1
Poland	3.69	3.05	18.37	4170.7	85.8
Romania	2.57	2.48	14.15	2993.3	85.2
Slovakia	3.92	3.31	15.53	5021.7	74.3

Source: FAOSTAT.

Table 2. Structure of agricultural land in countries of Central Europe in 2003 (1000 hectares)

Country	Agricultural land	Arable land	Permanent crops	Permanent pastures
Bulgaria	5326	3323	211	1792
Czechia	4270	3062	237	971
Hungary	5866	4612	192	1062
Poland	16,169	12,587	314	3268
Romania	14,717	9414	458	4845
Slovakia	2438	1433	131	874
EU 15	140,381	73,452	11,098	55,831

Source: FAOSTAT.

in the agriculture of the countries of Central Europe. Thus, for instance, in Poland in 2002 crop production accounted for approximately 53% of the global production of agriculture (Bański, 2007), and in Romania in 1999 – for as much as 64% (Rusu, Florian, 2003).

The significance of crop production is confirmed by a relatively high share of arable land in the structure of agricultural land. This is largely due to the advantageous agro-ecological conditions, allowing for the cultivation of many species of crops. Besides, there are numerous regions in this part of Europe, where excess of main d'oeuvre in the countryside forces application of more labour intensive, crop-oriented directions of production.

The countries here considered dispose of altogether around 1/3 of all the arable land of the European Union. It can therefore be stated that the new member countries of the European Union constitute the food base of Europe in the domain of crop production.

Animal production has a relatively lower significance than in the countries of Western Europe. This is demonstrated by the low numbers of animals bred

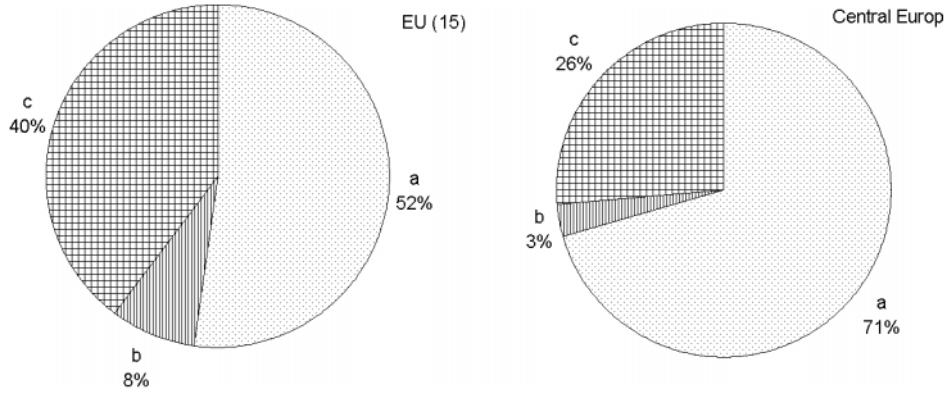

Figure 2. Structure of agricultural land in the countries of EU 15 and of Central Europe in 2003
a – arable land, b – permanent crops, c – permanent pastures

(except for horses, which, however, serve mainly as pulling power in the farms, or, more and more frequently, are used for recreation). Cattle accounts for just 13%, pigs for 22%, and sheep and goats – for 11% of the total number of animals bred in the countries of European Union (Table 3).

Table 3. Farm animals in Central Europe countries, 2005

County/animal	Cattle		Pigs		Sheep and Goat		Horses	
	head	%*	head	%*	head	%*	head	%*
Bulgaria	671,579	0.8	931,402	0.6	2,410,624	2.1	150,000	5.6
Czechia	1,397,308	1.6	2,876,834	1.9	152,820	0.1	21,000	0.8
Hungary	723,000	0.8	4,059,000	2.6	1,475,000	1.3	67,000	2.5
Poland	5,483,290	6.2	18,112,380	11.8	315,963	0.3	320,000	12.0
Romania	2,812,000	3.1	6,589,000	4.3	8,092,000	7.1	840,000	31.5
Slovakia	580,000	0.7	1,300,000	0.8	356,000	0.3	9000	0.3
EU	87,880,153	100	153,009,295	100	114,099,482	100	2,666,562	100

* share in total of EU
Source: FAOSTAT.

Another feature of agriculture of Central Europe is a relatively high share of population employed in this sector. This confirms the still high significance of agriculture in the national economies of these countries. The recent years, though, have been marked by a dynamic decrease of the share of agriculture in the gross domestic product (GDP). Thus, for instance, in Hungary it decreased from 13.7% in 1989 to 2.9% in 2003. This is accompanied by an increasing outflow of the population from farming to other sectors of economy, mainly to service and trade (Bański, 2004). Yet, in comparison with the countries of Western

Europe, the level of employment in agriculture of Central Europe is still high. According to data from FAO, in 2004 farming population constituted approximately 10% of the total population of these countries, while in EU 15 it accounted for less than 4%. This share was the highest in Poland (17%), and the lowest in Bulgaria (6%).

OWNERSHIP CHANGES

Collectivisation or nationalisation of agriculture, were carried out after the end of World War II with success in the majority of countries of the Eastern Bloc, but encountered a strong opposition from the farmers in Poland. Attachment to land, which the farmer families had obtained as their own not so long time before, as well as lack of experience of acting jointly, were the main obstacles to the process of collectivisation in Poland (Bański, 2007). Private farming played the fundamental role over the entire period of the socialist economy only in Poland and in former Yugoslavia (Table 4). That is why the ownership changes, having taken place after 1989 exerted a lesser impact on agriculture in Poland than in other countries of Central Europe.

Table 4. The place of the socialised sector (state farms and production cooperatives) in the ownership structure of agricultural land in the countries of the former Eastern Bloc

Country	Share of agricultural land belonging to the socialised sector (in %)	
	1960	1988
Bulgaria	91.0	89.9
Czechoslovakia	88.0	93.9
German Democratic Republic	92.4	90.2
Hungary	95.5	85.8
Poland	13.1	22.8
Romania	94.2	90.5
USSR	99.0	98.2
Yugoslavia	14.0	15.7

Source: *Historia Polski w liczbach*…, p. 182.

After the political and economic transformation, all the countries of Central Europe started to privatise the assets of the farms having belonged to the former socialist sector and to return a part of the nationalised property to the previous owners. This happened according to a variety of scenarios, whose shape depended upon the manners of realisation of reforms having taken place in the period of the socialist economy.

The ownership changes, which were taking place in the 1990s, exerted a highly significant influence upon the agricultural economy of the countries of Central Europe. And so, for instance, returning of private property in Hungary brought about an increase of significance of private farming at the cost of the cooperative farms (Figure 3). The share of private farming in the structure of ownership of agricultural land increased from 14% in 1990 to 54% in 2001. A similar process could be observed in Romania.

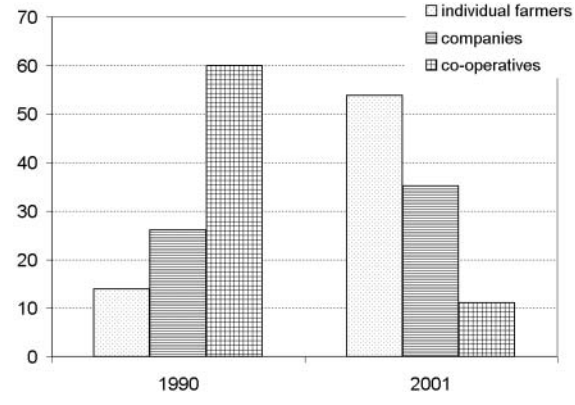

Figure 3. Changes in the ownership of agricultural land in Hungary in the years 1990–2001
Source: FAOSTAT

On the other hand, in Slovakia, the ownership changes had a completely different character. The socialist sector of agriculture (cooperatives and state farms) was privatised, and on its place a number of large private companies or new production cooperatives appeared (Figure 4). Returning of land to the former owners did not have such a big significance as in Hungary. That is why the

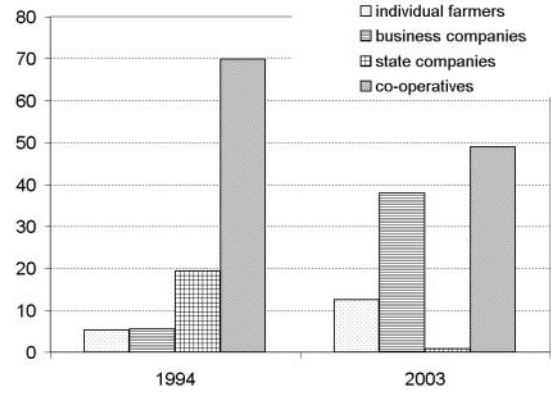

Figure 4. Changes in the ownership of agricultural land in Slovakia in the years 1994–2003
Source: FAOSTAT

overall area of land, used by family farms did not exceed in Slovakia 10% of the total area of agricultural land (*Agriculture*…, 2004). In 2003 there were in Slovakia 6550 family farms and some two thousand cooperatives and private farming companies, disposing of large areas of agricultural land (an average cooperative farms disposes of 1600 hectares of agricultural land). Owing to this, the agricultural land in Slovakia did not undergo such a strong fragmentation as in other post-socialist countries.

In Poland, the state farms, which disposed in 1988 of roughly 24% of agricultural land, were liquidated entirely until 1995. Taking over of this land was entrusted with a specially established agency (Agency of the Agricultural Property of the State Treasury). Until the year 2002 the Agency took over the land of 4,700,000 hectares of surface area, of which 1,378,000 hectares found new owners (Zgliński, 2003). Land was purchased by private farmers and owners of other types of businesses (companies, farm enterprises, etc.). A large part of the land, namely as much as 2.5 million hectares, is leased out. The ownership changes having taken place after 1989 concerned first of all the northern part of the country, where state farms concentrated before. Consequently, the average acreage of the private farms increased there. In other parts of the country the analogous changes were of marginal significance.

In the opinion of numerous authors, liquidation of the state farms was too hasty and its course was not properly controlled. A part of the state farms, namely, achieved good economic results and, rather than being liquidated, should have been subject to gradual privatisation. A part of them was taken over by the former employees (as companies), among whom most important were former managers of these farms (holding majority shares in the companies).

In Bulgaria, land used before the transformation mainly by the production cooperatives was returned to the previous owners, or their heirs, through the intermediary of the Municipal Land Committees. The process, which encompassed close to 6 million hectares, was formally terminated in 2000. In 2003 there were in Bulgaria around 666,000 farms, of which 99% was constituted by the private farms of the average acreage of 1.4 hectare of agricultural land (*Cenzus*…, 2003). The remaining group is constituted primarily by the new production cooperatives and commercial code companies, which dispose of 70% of the total area of agricultural land in the country.

Ownership changes resulted in the disadvantageous shifts in the agrarian structure (Ilieva, Iliev, 1995). Parcelling of land into small pieces led to a very high degree of fragmentation (an average magnitude of a land plot ranges between 0.25 and 0.30 hectare). The magnitudes of properties of land are also very small, ranging from 0.26 hectare in the district of Smolyan to 1.99 hectare in the district of Dobrich (*Situation of agrarian*…, 2005).

The ownership changes in Hungary had a similarly deep character. The so-called compensation acts, voted by the Parliament, made possible a partial

return of the land property to the former owners or a division among the members of the agricultural cooperatives. Implementation of these laws brought the appearance of 2.5 million of the owners of land and a significant increase of the area of land in the use by private farmers. Altogether 86–88% of agricultural land is in private hands (*Agriculture*…, 2003). A large proportion of the property owners are not linked professionally with farming and live in towns, while their land is usually rented out.

The effect of the reforms, as mentioned already, consisted first of all in the increase of significance of private farms in Hungarian agriculture. Among these farms, the most important production role is played by the large farms, with surfaces exceeding 50 hectares. At the same time, a lot of small private farms appeared, producing mainly for the local market or for own needs. Thereby, similarly as in the case of Bulgaria, privatisation in agriculture entailed an excessive fragmentation of agricultural land. The second half of the 1990s brought, though, positive changes in the acreage structure of private farms. The agricultural censuses of 1994 and 2000 showed that the number of private farms decreased from 1,201,015 to 958,534. This was accompanied by the increase of the number of large farms, with simultaneous decrease of the number of the small ones (Kovacs, 2003).

In Romania, agrarian reform has been realised since 1991, but the privatisation processes had a slow course and lasted until as late as 2005. The state farms and the cooperative farms were not capable of coping with the new economic reality, most of them went bankrupt, and had to go through gradual liquidation. Landed property moved either back to the former owners or to two new ownership forms, the "public state domain" or the "private state domain". The land of the former state farms is managed by the specially established for this purpose State Domain Agency (Csaki, Kray, 2005). A part of this land was given back to the previous owners, privatised or leased.

The ownership changes in Romania were very deep – the share of agricultural land in private hands increased from 15% in 1989 to 55% in 2002. On the place of the socialist cooperatives and a part of the state farms private farming companies appeared, disposing of 45% of agricultural land. Privatisation processes brought strong fragmentation and differentiation of the agrarian structure. According to the Agricultural Census of 2002 there were then in Romania around 4.5 million private farms, with average acreage of agricultural land equal 1.73 hectare. At the other extreme there are various types of agricultural enterprises (holdings, companies, producer groups, etc.), whose number was at just 22 thousand, but they disposed, on the average, of 274 hectares of agricultural land.

CHANGES IN LAND USE

The downfall of the socialist sector in agriculture and the deep ownership transformations caused deep changes in terms of agricultural land use. The general decrease of profitability of production in agriculture caused shrinking of the area sown and lowered intensity of crop production. This was accompanied by the devastation of some elements of infrastructure (irrigation systems, land improvement facilities, farm buildings, etc.).

Lowering of intensity of crop production consisted first of all in the decrease of surfaces occupied by permanent crops and in increase of the share of cereals in the crop structure. As far as areas under permanent crops are concerned, only in the case of Slovakia and Czechia they have not changed significantly. In the remaining countries they dropped to a varying extent (Figure 5).

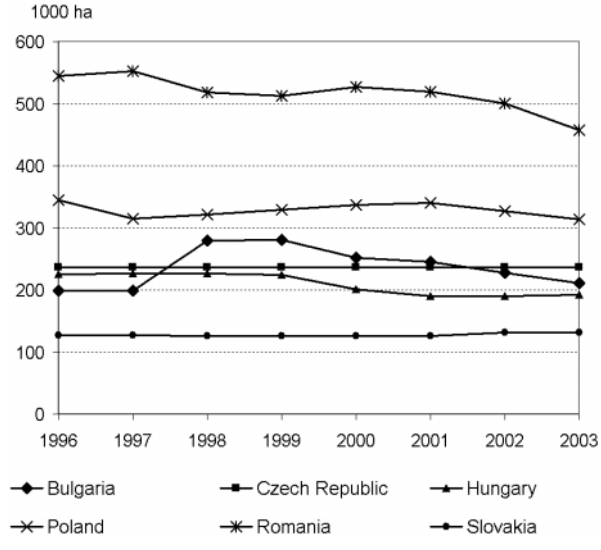

Figure 5. Changes of areas under permanent crops in countries of Central Europe
Source: FAOSTAT

The lowering of intensity of crop production in Bulgaria was expressed, in particular, through the reduction of the area of crop cultivation, accompanied by an increase in significance of the cereals (including maize) in the structure of production. Another characteristic phenomenon was increase of the share of industrial crops, but this was exclusively due to the increase of the areas under sunflower cultivation. At the same time, the areas under labour intensive crops (sugar beets, tobacco) decreased, which contributed to the growth of unemployment in countryside. There has also been a drop of the area under fodder crops, which resulted from the decrease of the number of livestock.

Similarly, in Poland, the last one-and-half decade brought a distinct increase of the share of cereals in the area sown. This was due to several reasons, of which the most important was the difficult economic situation of farms after 1989. Lack of stable situation on the agricultural market motivated farmers to lower the intensity of cultivation. This process was especially strong on the land formerly managed by the state farms, whose significant proportion has still been managed by the state. Given lack of actual owner-farmer, it was the safest to grow cereals. Besides, the significance of cereals used as fodder has been increasing. Consequently, the share of cereals in the area sown increased from approximately 60% in 1990 to 74.2% in 2004.

The functioning of the principles of market economy brought also abandonment of cultivation on land characterised by low agricultural value. The increase of the area of fallowed land resulted also from the appearance of an important group of land owners living in towns, not interested in cultivation of crops. Thus, for instance, in Bulgaria, in the period preceding the reforms in agriculture, the non-used agricultural land constituted an insignificant margin. On the other hand, in 2004 the area of non-used agricultural land was there at 900,000 hectares (17% of total area of agricultural land). Besides, around 30% of all the agricultural land are now used as little productive pastures.

Polish agriculture has also been characterised in the recent years by the dynamic increase of the surface of fallowed and waste land (Figure 6). In the period 1990–2002 this surface increased from 163,000 hectares to 2,200,000 hectares (17.6% of the total area of arable land). It is estimated that the actual area of the unused agricultural land is bigger, in view of the abandonment of some of grasslands (in connection with the decrease of the livestock number the demand for fodder decreased as well). After Poland joined the EU and the direct payments had been introduced, the area of fallow and waste land decreased.

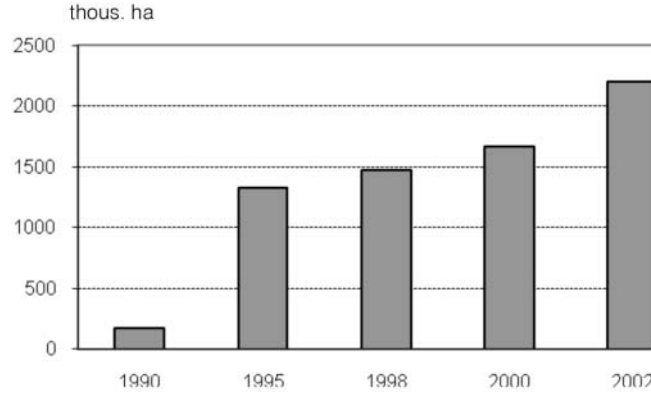

Figure 6. Area of agricultural fallow and waste land in Poland
Source: own elaboration on the basis of data from GUS.

According to scholars, studying these problems, the basic cause of the thus dynamic increase of the area of unused agricultural land was worsening of macroeconomic conditions for agricultural production (Orłowski, 2001; Zegar, 2003).[2] The period of transformation was characterised, in particular, by the worsening of proportions between the prices of goods for agricultural production and the prices of agricultural products. The consequence thereof was a drastic decrease of revenues of the farms, which ceased to use some pieces of arable land. There was an important group of the smallest farms that stopped any farming activity at all.

CONCLUSIONS

The fundamental purpose of the ownership changes in the countries of Central Europe was transformation of the socialist sector towards the requirements of the modern market economy. The biggest changes took place in Bulgaria, Romania and in Hungary, where land returned, first of all, to the former owners. This entailed enormous changes in the agrarian structure and high degree of fragmentation of land. The changes in Czechia and Slovakia were much less dramatic, with the leading process being constituted by privatisation of the assets. This consisted, first of all, in the change of the legal status of the existing farms, which, in practice, meant the establishment of the new agricultural enterprises on the place of the socialist sector enterprises. Hence, in all the countries of Central Europe, except for Poland, the ownership changes in agriculture had a "total" character, but their effects were differentiated. The model of changes, carried out in Slovakia and Czechia, appears to be more advantageous, since it did not result in the fragmentation of the agrarian structure.

The disadvantageous phenomenon, resulting from the ownership changes, was disintegration of the previous structures in agriculture, not accompanied by the emergence of the new forms. Thus, for instance, liquidation of the socialist cooperatives and state farms caused in many cases disrepair or complete destruction of farm buildings, infrastructure, equipment, livestock, irrigation systems, etc. Besides, in many cases the sales market collapsed, which forced many farmers to get directly involved in distribution and sale of agricultural products. This brought about a worsening of labour productivity.

Many newly established farms with smaller acreages produce first of all for their own needs and do not constitute competition for the limited group of the truly commercial farms. They are doomed to marginalisation and gradual decline. This concerns also some of the cooperative farms, established by the

[2] An important cause of the increase of the area of fallow and waste land was liquidation of the state farms. Stopping of their functioning entailed abandonment of a large part of agricultural land, characterised by the lowest quality.

owners of small properties, devoid of appropriate capital and experience. Members of such cooperatives frequently live in towns, far away from their property, and are thus only "loosely" tied to this property.

The period of transformation in the agricultural economy of the countries of Central Europe resulted in the development of three fundamental forms of the ownership structure:

- the small-scale one, based primarily on family farms,
- the mixed one, based in part on family farms and on larger agricultural enterprises,
- the large-scale one, based mainly on the large farming enterprises.

The first of these forms is representative first of all for the Polish agriculture, in which private property dominated during the entire post-war period. Owing to this, family farms are of the dominating importance in Polish agriculture, having, in addition, the opportunity of enlarging their areas in the regions, where previously state farms dominated. The effect of activity of a large group of small farms is low degree of commercialisation of production and domination of the small-scale production.

In the second group the agricultural economies of Hungary, Romania and Bulgaria could be placed, characterised by the existence of both family farming and large private and cooperative enterprises. It appears that an unavoidable phenomenon is constituted by the association of the family farms into bigger producer groups, which could stand the competition from the existing agricultural enterprises. A part of the family farms, which do not take up this challenge, will most probably undergo liquidation.

The third group is constituted by the agriculture of Slovakia and Czechia. There, majority of agricultural land is concentrated in large farming enterprises, oriented at commercial production. It appears that such a model is the optimal one in the context of competitiveness and globalisation of agricultural production, and the agricultural sectors of the remaining countries of Central Europe ought to take this direction of development.

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Valda BRATKA, Ligita MELECE, Liene DAMBIŅA
Latvian State Institute of Agrarian Economics
Str. Struktoru 14, Riga, LV-1039, Latvia
valda@lvaei.lv; ligita@lvaei.lv; liene@lvaei.lv

CHANGES IN LATVIA'S RURAL AREAS AND AGRICULTURAL SECTOR BETWEEN 1990 AND 2004

Abstract: This paper reviews changes, dynamics and developments in Latvia's rural areas – population, employment, land use and trends in the agricultural sector. There have been huge changes in government policy, economic reforms, international obligations (the EU, the WTO, etc.), and legislation influencing agricultural sector. The structure and size of farms are presented, and the conclusion is that the proportion of small farms continues to be significant in agricultural production. Particular attention has been devoted to income changes in agriculture as a result of national and EU support. It has been concluded that the negative influence of economic and political reforms and crises on the national economy, including the agriculture sector, has successfully been overcome. There has been stabilisation in output, along with certain developmental trends. It has also been found that accession to the EU has had a favourable effect on the agricultural sector and on the development and income of farms.

Keywords: rural areas, agriculture, production, organic farms, income, support, biodiversity, Latvia

INTRODUCTION

After regaining its independence in 1991, Latvia had to resolve a variety of problems related to stabilisation of the independent state, the promotion of democracy, and the transition to a market economy, all the while ensuring the creation of a national system of politics and economics.

Over the last 15 years, there have been vast changes in Latvia. A market economy and democratic political system have been established. Latvia joined the WTO in 1994 and, most importantly, the European Union in 2004.

Since the restoration of independence, extensive economic reforms have been implemented:

- Liberalisation of prices;
- Introduction of the national currency (the Latvian rouble in 1992 and the national currency, the lats (LVL), in March 1993);
- Radical fiscal and monetary policies, which made it possible to ensure a decline in consumer price indices – inflation dropped from 951% in 1992 to 36% in 1994 and to 2.4% in 1999, although since enlargement of the EU, inflation rose back to 6.2% in 2004;
- Structural reforms (privatisation, de-monopolisation, reform of the banking system and trade, etc.).

The reforms, however, were not implemented as quickly or successfully as it had been hoped. A bank crisis in 1995 and the so-called "Russian crisis" in 1998 had a seriously negative effect on the development of the national economy, including the agricultural sector. During the latter crisis, Latvia lost export markets related to agricultural and food products in Russia and the countries of the CIS. Despite this, however, Latvia has managed to stabilise its economy, and rapid growth – in the agricultural sector along with others – has been noted in the last several years.

THE CHARACTERISTICS OF RURAL AREAS

INHABITANTS

Latvia's population numbered 2.3 million people in 2004, with approximately 746 thousand (32.2%) living in rural areas. The average density of the national and rural population declined, with 36.6 inhabitants per km^2 overall in 2005, and 11.7 inhabitants per km^2 in rural areas.

Latvia's population declined by 9.9% between 1990 and 2005 (*Statistical Yearbook...,* 2005), but the percentage of rural residents during the same period increased by 2.4%. The number of people employed in agriculture declined during the same period, making up 10% of all employed persons in Latvia. It must be added that some economically active people in the countryside emigrate from the countryside to the cities, particularly to the central part of the country – Rīga and its district. Since Latvia's accession to the EU, people have also been migrating to the older EU member states (Ireland, United Kingdom and others).

At the end of 2004, the average unemployment level in Latvia was 8.5% – 0.6% lower than at the end of 1999 (9.1%), but still higher than at the end of 2001 (7.7%). The unemployment level is substantially higher in rural areas, and there are various kinds of hidden unemployment, as well. Many family members, for instance, have had unpaid jobs, and many people have only part-time

jobs. On December 1, 2004, the registered level of unemployment in some of Latvia's administrative districts was at a level between 19.4% and 27.6% (*Statistical Yearbook…,* 2005).

People in agriculture earn less money than the national average: in 2003, the average gross salary of agricultural workers amounted to LVL 120 per month, or just 62.4% of the average gross salary in the country.

The GDP has varied (Figure 1) between Latvia's regions and thereby hinders further development of underdeveloped regions.

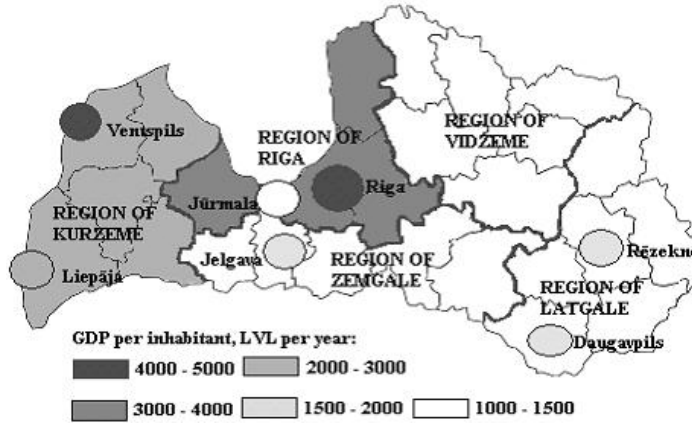

Figure 1. GDP per inhabitant in Latvia's regions, LVL per year, 2002
Source: author's calculations based on data of the Central Statistical Bureau of Latvia.

THE ROLE OF AGRICULTURE AND FORESTRY

Agriculture and forestry are the main economic sectors in rural areas. In 2004, 97,000 people, or 10% of all employees, had jobs in agriculture. Since 2001, the overall number of employed people in Latvia has been increasing, but in agriculture that number has decreased 2.2 times in comparison with 1990 (*Statistical Yearbook…,* 2005). The second most important area of employment in Latvia has to do with forestry and timber processing. The number of people employed in this field increased by 75% between 1996 and 2004.

In 1990, the GDP share of agriculture, hunting and forestry was 21.1%, but after reforms over the next three years, it declined to 10.4%. The GDP share of agriculture declined from 7.2% to 2.4% between 1995 and 2004 (*Macroeconomic indicators…,* 2005). Total GDP growth since 2000 has been at a rate of more than 6%, while GDP growth in the area of agriculture has been above 4%, except in 2003, when weather conditions were not good for agriculture.

LAND

Latvia has the area of 64,589 km^2, of which 38.2% is agricultural land, 45% is covered with forest, 3.8% is swampland, 3.6% consists of inland water bodies, 1.8% is covered with bushes, and 7.6% is made up of other kinds of land that cannot be used for many purposes (State Land Service, 2005).

After the restoration of independence, one of the most important issues for Latvia was the use and protection of land as a national treasure. The Supreme Council of what was then still the Latvian SSR approved a law "On agrarian reform in the Republic of Latvia" on June 13, 1990, the law provided for the granting the rural land to natural and legal persons for use. Private ownership rights to land were restored, and land was handed over for the private ownership of individuals. The aim of land reform was to establish a new structure of use for agricultural land – a structure based on private property. The basic principles for this were approved on November 21, 1990, when the Supreme Council approved the law "On land reform in the rural areas of the Republic of Latvia." The law had two goals – use of land and agricultural production (OECD 1996).

The total area of agricultural land has not changed very much at all. The result of the reforms was a rapid decline in the utilisation of agricultural land, but since 2000, there has been a gradual increase of cultivated land – by 3.5% in 2004. The most rapid increase in the utilized area of land occurred in 2004, when the amount increased by 6.5% over the figure in 2003. That was the result of accession to the EU and of increased areas of land used to grow rapeseed.

The highest proportion of agricultural lands exists in Zemgale region, particularly in Dobeles, Jelgava and Bauska district – on average 57.3% of the territory of the district (Figure 2).

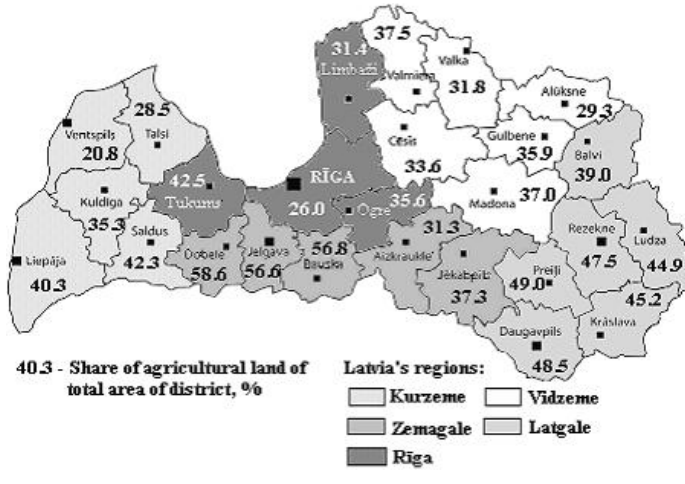

Figure 2. Agricultural land as a percentage of total districts area, 2006
Source: author's calculations based on data of the State Land Service, 2006.

The proportion of unutilised agricultural land remains high (33.4%), and that is particularly extensive in subsistence and semisubsistence farms: 37.5% of the land is not utilised, and that threatens the use of this land in the future. Unutilised land becomes swampy and is overrun with bushes. It is not used for production and is outside of economic circulation. It degrades the rural landscape and environment, damages surrounding fields with weeds, and damages land improvement systems, as well (Ministry of Agriculture, 2005).

BIODIVERSITY

More intense agricultural production and reduced product output have led to a situation in which there are large areas of agricultural land, for which ensuring biological diversity is very important. Meadows and pastures (grasslands) take up some 33% of all agricultural land, and some 18,600 hectares of these are seen as biologically valuable meadows. 40% of Latvia's uncommon or endangered species of plants grow in meadows, and meadows are also the place where several species of birds nest and feed. Latvia has also a wealth of various forest biotopes. Forests cover 44.8% of territory of Latvia, but differences of forest cover between districts are notable – 56.6% in Talsu district compared to 26.9% in Dobeles district (Figure 3). Let us add that 12% of Latvia's forests are under national protection.

Swamps cover 3.8% of the territory of Latvia. They possess a specific kingdom of plants and animals, and some of the species are relics from the period immediately after the last Ice Age.

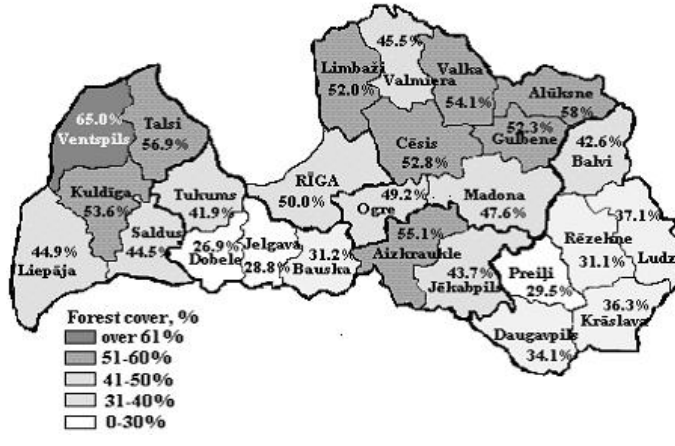

Figure 3. Forest area as a percentage of the total district area, 2004
Source: Ministry of Agriculture, 2005.

The Natura 2000 network in Latvia covers altogether 336 territories: 4 nature reserves, 3 national parks, 250 restricted areas, 38 nature parks, 9 areas of protected landscapes, 9 natural monuments, and 23 restricted micro areas, which all take up 11.9% of the total land area. Of the species and habitats defined in Appendices I and II of EU Directive 92/43/EEC and in Appendix I of Directive 70/409/EEC, 20 kinds of plants, 20 kinds of invertebrates, 5 kinds of mammals, 3 kinds of reptiles, 11 kinds of fish, 70 kinds of bird and 60 different kinds of habitat are under protection in Latvia.

The reduction in the intensity of agricultural operations has, generally speaking, had a positive effect on biological diversity, but there are also places in which extensive farming activities have led to the abandonment of agricultural lands. They have been overrun with weeds and bushes, and this has a deleterious effect on biocenoses and the rural landscape.

Over the last few years, the intensity of agricultural activity has increased in several parts of Latvia, and particularly in the region of Zemgale. This is a threat against important aspects of the local landscape, valuable habitats, and preservation of the edges of fields.

THE STRUCTURE OF FARMS

Restructuring of agriculture and the process of privatisation in Latvia led to fundamental changes in the structure of farms: in the early 1990s, some 600 statute companies were established on the foundations of former collective farms (in 1991, these farms managed 92% of agricultural land in Latvia). At the beginning of 1996, there were some 120 such farms, managing 17% of agricultural land (OECD 1996), and that number has been declining on a constant basis. Agricultural production is essentially carried out on individual farms with various structures and sizes, with a great many small farms.

During the agricultural census that was conducted in 2001 (*Results*…, 2003), it was found that 180,200 farms had 3.6 million hectares of land at their disposal, of which 2.2 million hectares was agricultural land. The total of 39,400 farms, or 21.9% of the total number of surveyed farms, were not engaged in any agricultural activities. These farms owned or had rights to nearly 800,000 hectares of land. Now, 140,800 of the economically active farms owned or used 2.8 million hectares of land – 1.8 million hectares (78.1%) of it being agricultural land.

According to the aggregate results of the 2003 Farm Structure Survey (FSS), 131,400 economically active farms were using 2.8 million hectares of land. Agricultural land made up 1.8 million hectares (64.5%) of all farmland area. According to FSS data, 99.9% of these farms are private, only 0.1% is owned by the state, a local government or a public or religious organisation. The average

size of farm was 21.7 hectares, of which 11.4 hectares were utilised and 2.6 hectares were not. Compared to the 2001 Agricultural Census, data showed that the average size of farms had increased by 1.8 hectares, and the area of utilised agricultural land was up by 1.2 hectares, on average. That was because some farms had merged, while others had rented larger areas of land from non-active farms. The aggregate data from the structural survey shows that 58.4% of farms produce only for self-consumption, not for sale, and only 0.8% of farms were selling everything that they produced (*Structure…,* 2004).

Most Latvian farms are small and manage only few hectares of utilised agricultural land (Figure 4). Then, 52.3% of economically active farms, which have up to 5 hectares of land, manage only 9.4% of utilised agricultural land. The 2.9% of farms with more than 50 hectares of land each manage 39.8% of utilised agricultural land.

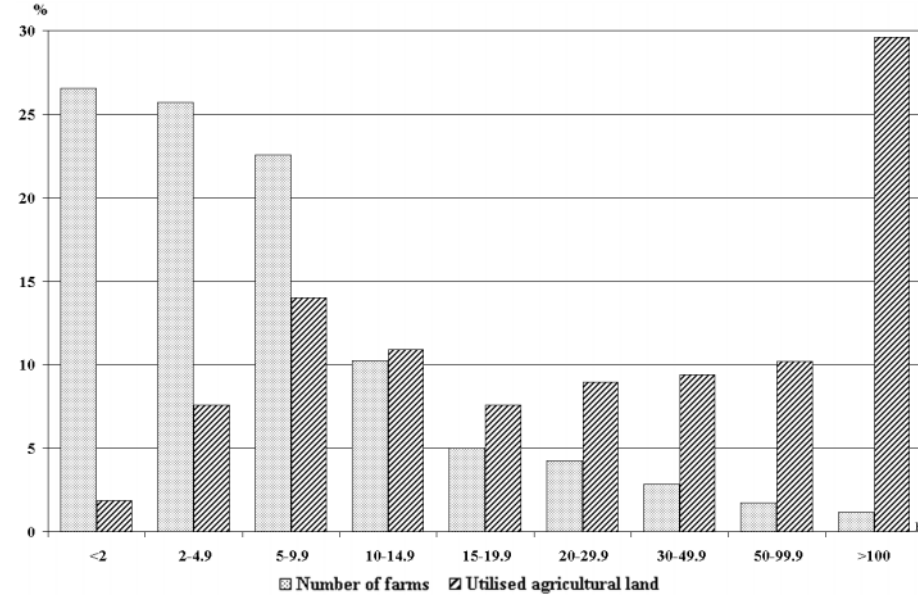

Figure 4. The number of farms and the utilised agricultural land for different size (hectares) farm categoriess (% of total number of farms; % of the total areas of UAL), 2003
Source: author's calculations based on data of the Central Statistical Bureau.

The EU farm typology is based on two criteria: type of farming – specialisation and economic size. The economic size of a farm is used to compare farms with different production structures, based on the concept of total standard gross margin (SGM) of the farm. This describes the economic size of a farm in monetary terms – European Size Units (ESU) and ESU 1 = EUR 1,200. SGM refers to the output that is obtained from one hectare of agricultural land or one head of

livestock, and to the differences in specific costs that are necessary for this production in terms of price estimates in the relevant region. Total farm SGM is estimated by summing up all of the SGMs for the activities on the farm (*Structure…,* 2004).

When farms are grouped by economic size, most (60%) have an economic size that is below ESU 1 (Table 1). Only 16% of farms have an economic size of ESU 2 or more. These farms use one-third of the total labour force in the sector, 61% of utilised agricultural land, and 88% of sown land used to produce cereals. They represent two-thirds of the total SGM in the sector.

Table 1. Grouping of major agricultural sector indicators by the economic size of farms in Latvia, 2003

Indicator	Total	Farms by economic size groups, %				
		<1	1–1.9	2–3.9	4–15.9	>16
Number of economically active farms, thousand	131.4	60	24	10	5	1
Utilised agricultural land, thousand hectares	1494.9	19	19	15	20	26
Arable land, thousand hectares	944.7	13	15	14	22	36
Cereal crops, thousand hectares	427.3	4	8	12	27	49
Unutilised agricultural land, thousand hectares	340.4	63	18	9	7	4
Total standard gross margin, thousand LVL	199,490	15	18	14	19	34
Number of annual work units in farms, thousand	140.4	35	30	16	10	9
Of which not salaried, thousand	123.7	39	33	17	10	1

Source: authors' calculations based on data of the Central Statistical Bureau.

AGRICULTURAL PRODUCTION

Until 1990, agricultural production received particular support and assistance, because the Latvian SSR delivered agricultural products to Russia and the other parts of the Soviet Union. This was particularly true for the livestock industry and the meat and dairy products, which were produced therein. The reforms launched in the early 1990s had a negative effect on agricultural production and development thereof. Dramatic declines were seen in virtually all sectors. As a result of the reforms, the structure of agricultural producers changed – the number of large collective farms declined very rapidly, but at the same time, the number of individual farms – particularly small ones – increased very rapidly. Between 1990 and 1994, as a result of all of this, there was a rapid decline in the output of agricultural products (OECD 1996).

LIVESTOCK PRODUCTION

The dairy industry is the cornerstone of agriculture in Latvia. Between 1990 and 2004, the number of dairy cows in Latvia declined 2.9 times, and the average milk production dropped to a new low in 1993 – just 2.7 tonnes per head (Table 2). Over subsequent years, the number of cows did not decline as dramatically, and there have been, in recent years, increases in output and improvements in quality (purity, content of fats and proteins). This was because new and more productive breeds of cows have been introduced, and there have been changes in feeding technologies and the livestock feed itself. By 2004, the average milk yield per cow was back at the level of 4.3 tonnes. This is the sector in which the largest increase in purchase prices was seen – up by 36% in 2004, to reach the level of LVL 146 per tonne at year's end (*Agricultural farms…,* 2005).

The dairy sector remains the one, in which there are many small operators, but there have been changes in the structure of herds. The proportion of smaller herds is on the decline, and the number of dairy cows on intensive farms is on the rise. Herds there are becoming larger. The number of herds with 50 to 99 animals increased by 45 herds, or 31%, between 2002 and 2004 (*Agricultural farms…,* 2003, 2005). As compared among regions, the best productivity indices in herds have been attained in Zemgale region (Figure 5); the average milk yield from a cow is 4.982 tons of milk.

Overall production of meat has dropped by the factor of four between 1990 and 2004 (Tables 2 and 3). Beef output dropped by the factor of six, and that had much to do with the decline in the number of dairy cows in Latvia (beef in the country was traditionally a secondary product in the dairy industry). Only in recent years has there has been a trend of increase in the number of herds meant specifically for beef production.

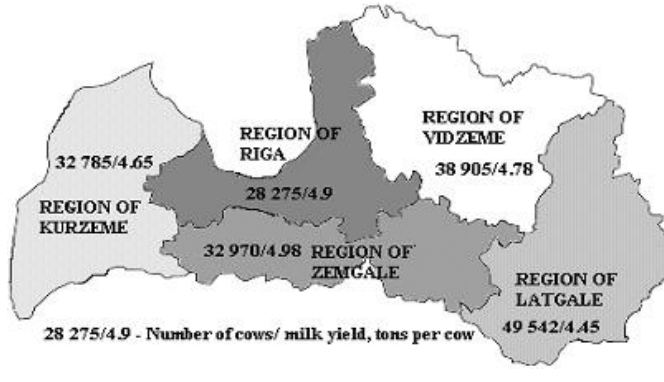

Figure 5. Average productivity indices – number of cows and milk yield, tons per cow – by Latvia's regions, 2003
Source: author's calculations based on data of the Central Statistical Bureau.

Table 2. The number of livestock and production in Latvia, 1999–2004

		Units	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Meat total	weight	‘000 tons	309	296	247	193	136	123	76	71	71	64	62	60	63	71	73
Cattle	number	‘000	1439	1383	1144	678	551	537	509	477	434	378	367	385	388	379	371
– dairy cows	number	‘000	535	531	482	351	312	292	275	263	242	206	205	209	205	186	186
	milk (incl.goat milk)	‘000 tons	1893	1741	1479	1157	1001	948	923	988	950	799	825	848	814	786	786
	yield per cow	tons	3.4	3.2	2.8	2.7	2.9	3.0	3.2	3.6	3.7	3.8	3.9	4.0	3.9	4.3	4.3
Cattle	slaughter weight	‘000 tons	125	132	120	107	68	48	27	26	26	23	22	19	16	21	22
Pigs	number	‘000	1401	1247	867	482	501	553	460	430	421	405	394	429	453	444	436
	slaughter weight	‘000 tons	138	126	101	68	54	63	40	37	37	35	32	32	36	37	37
Poultry	number	‘000	10,321	10,395	5438	4124	3700	4198	3791	3551	3209	3237	3105	3621	3882	4003	4050
	slaughter weight	‘000 tons	40	33	21	13	11	11	9	8	8	6	7	9	11	12	14
	eggs	10^6 pieces	819	761	596	389	360	421	471	465	456	416	437	453	509	509	527

Source: authors’ calculations based on data of the Central Statistical Bureau.

Table 3. Area, production and yields of major crops in Latvia, 1990–2004

Crop	Area/yield	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Cereals total	area*	675	648	697	694	486	408	446	483	466	416	420	444	415	429	437
	yield**	24	20	16	18	18	17	22	21	21	19	22	21	25	22	24
of which:																
– wheat	area	142	72	129	169	95	110	149	152	151	146	158	167	154	168	170
	yield	26	27	26	20	21	22	24	26	26	24	27	27	34	28	29
– rye	area	131	69	131	188	63	40	56	63	58	47	55	56	42	44	45
	yield	25	21	23	18	18	18	20	21	18	19	20	19	24	20	21
– barley	area	308	399	350	275	267	203	178	195	173	147	135	130	137	133	127
	yield	23	19	12	17	18	14	21	19	19	16	19	18	19	19	22
Rapeseed	area	1.9	0.7	1.3	1.7	2.2	1.1	0.8	0.4	1.2	6.5	6.9	8.4	18.4	25.9	54.3
	yield	19.5	12.9	10.8	14.7	8.2	8.2	16.3	14.3	12.9	18.2	14.6	15.4	17.8	14.4	19.0
Sugar beets	area	15	15	25	12	12	10	10	11	16	16	13	14	16	14	14
	yield	299	259	187	246	190	263	258	357	365	292	321	349	391	370	367
Potatoes	area	80	82	97	88	80	75	79	70	59	50	51	55	54	55	49
	yield	127	115	121	145	130	115	138	136	118	159	146	112	143	135	128

* thousand hectares
** 100 kg/hectare
Source: authors calculations based on data of the Central Statistical Bureau

Pork production dropped by the factor of 3.7 between 1990 and 2004 (CSB 2003d). In 2004, 50% of all produced meat was pork. According to a CSB study, each person in Latvia consumes on average four times more pork than beef or veal each year (*Household Budget…,* 2005).

Output of poultry meat declined 6.4 times between 1990 and 1999, and production of eggs declined by half. Since 2000, this process has been reversed. Demand for poultry in Latvia exceeds supply, and production of eggs is nearly sufficient to cover the demand of domestic market.

CROP PRODUCTION

Historically, cereal farming has been the most significant cropping sector in Latvia. In 2003 cereals covered 428,500 hectares or 50.9% of the total area of planted fields, which was by 3.3% or 13,500 hectares more than in 2002. The largest amount of cereals was sown in Zemgale region (Figure 6) where more fertile soils are located, particularly in Jelgava district (42,800 hectares), Dobele district (38,800 hectares) and in Bauska district (36,600 hectares).

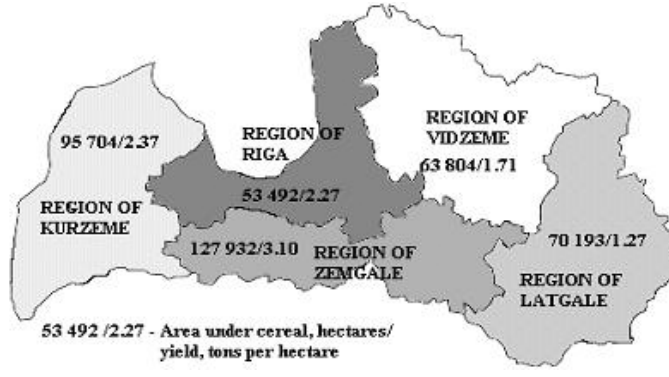

Figure 6. Areas under cereals (hectares) and yield (t) per hectare, in Latvia's regions, 2003
Source: author's calculations based on data of the Central Statistical Bureau.

In 1994 areas under cereals declined very quickly – by 1.8 times for wheat and by 3 times for rye in comparison with 1993. The barley acreage declined more gradually, but stably and on an annual basis. It is thought that this was due to the fact that the input prices in grain production skyrocketed. It was also true that as the size of livestock herds diminished, there was also a lesser need for livestock feed, changes in human consumption patterns having added to the problems.

The structure of planted cereals has changed in Latvia: the share of wheat declined from 61% to 1992 to 29% in 2004, while the one of the rye dropped

from 19% to 10% during the same period. Areas under barley have gradually increased – by 20% in comparison with 1990 and the share of barley in 2004 was 39%.

Studies have shown that sown areas increase and output is higher on those farms which have larger sown areas of cereals (Figure 7).

Since 1990, the area of cultivated land, on which other crops are grown, has also changed. Between 1992 and 2004, the area of land under potatoes declined by half, even though potatoes are a traditional crop in Latvia – they have been known as "second bread" for centuries, while nowadays they are mainly cultivated for family needs, and production of potatoes is very fragmented (*Statistical Yearbook…,* 2005).

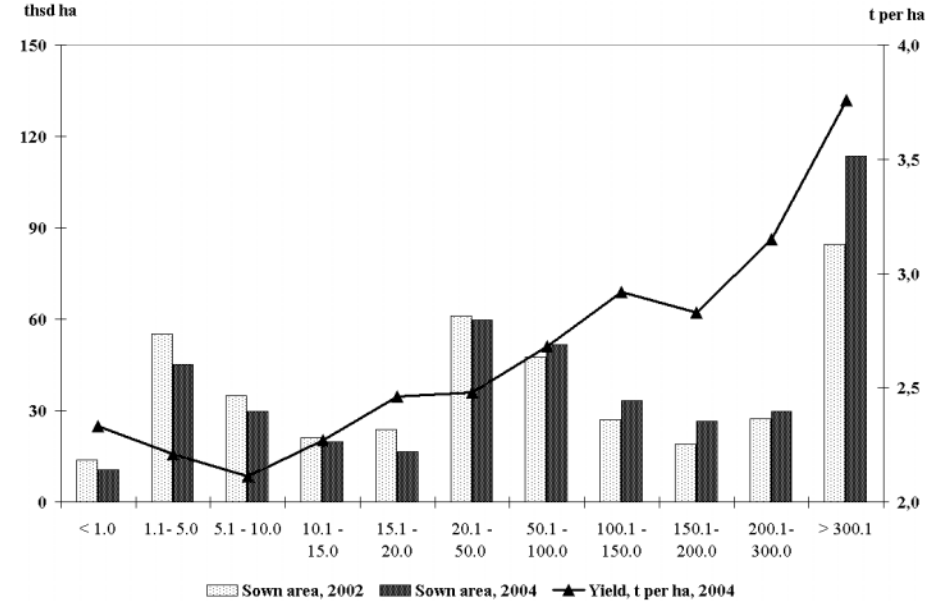

Figure 7. Grouping of farms by sown area of cereals (hectares) and yield (t/ha) in Latvia, 2002 and 2004
Source: author's calculations based on data of the Central Statistical Bureau.

The biggest changes have occurred in the growing of rapeseed – the area of sown land where rapeseed is grown has increased from 1900 hectares in 1990 to 54,300 hectares in 2004. Over the past five years, in particular, rapeseed growing has been developing very purposefully, because rapeseeds can be exported at world prices. In 2004, the amount of land devoted to rapeseed increased 2.1 times in comparison with 2003, and new harvesting records were set – 1.9 tonnes per hectare (*Agricultural farms…,* 2005).

ORGANIC FARMING

Organic farming improves the long-term health and fertility of soil, also providing benefits for biodiversity by improving the quality of the natural habitat and the landscape. Organic farming, particularly in the domain of food production, stimulates local economies and is related to diversification of rural activities (e.g., tourism in the countryside), as well as rural development. Even more, Bengtsson et al. (2005) pointed out that in environmentally friendly farming systems, the number of species is increased, *inter alia*, by organic farming. On average, the number of species was 30% higher on organic farms than on conventional ones.

The popularity and rapid growth of organic farming in Latvia has to do with support from the national government and the EU (Figure 8). Even though organic farms require certification, meaning financial investment at a certain level of risk, support through agro-environmental measures has encouraged Latvian farmers to turn to organic farming. As can be seen in Figure 9, the number of farms, where organic farming began and was certified, more than tripled between 2004 and 2005, while the overall number of organic farms increased 2.8 times. In 2005, according to the Ministry of Agriculture, the area of sown land used for organic farming amounted to 104,000 hectares, that is – 2.4 times more than in 2004 and 24 times more than in 2000.

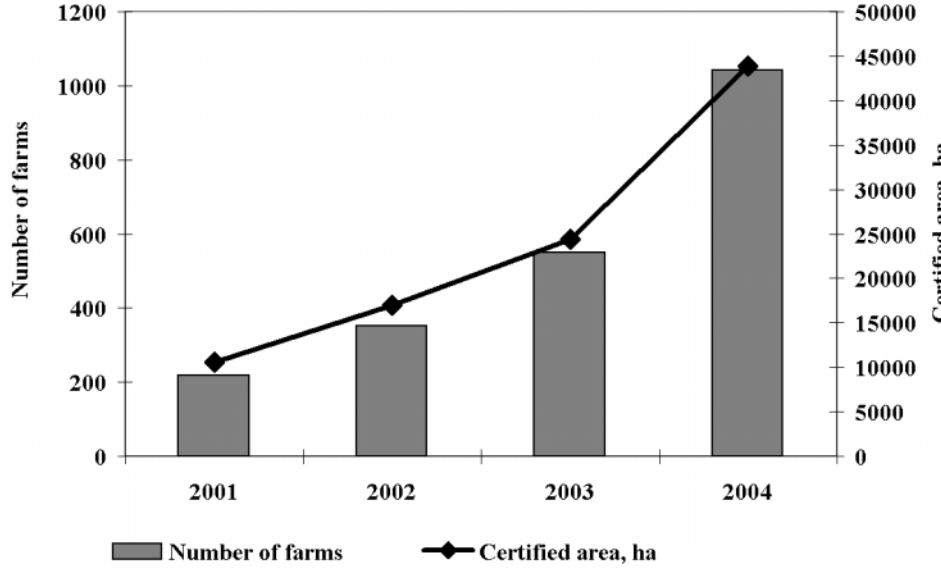

Figure 8. Acreage of certified organic farms and the number of organic farms in Latvia, 2001–2004
Source: author's calculations based on data of the Ministry of Agriculture, 2005.

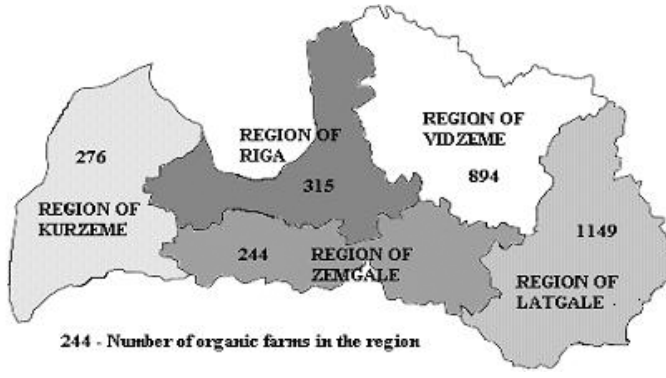

Figure 9. Number of organic farms in Latvia's regions, 2005
Source: authors' calculations based on data of the Food and Veterinary Service, 2005.

Although there is an increased demand in Latvia for biological produce, sufficient varieties and volumes of products are not being produced, because most organic farms are in a transition period and do not produce for the market. Some farms use support extended as a factor in the agro-environmental terms, using environmentally friendly agricultural methods, but not the opportunity to become involved in the market. Development of the production and processing of biological farm products is limited by the fact that co-operation among producers of agricultural products has not been developed, and there is a shortage of specialised processing companies. For instance, only one processing enterprise in Valmiera will start production of organic dairy products this year. As can be seen in Figure 10 in the regions (Latgale, Vidzeme) where large numbers of organic milk production farms are located, the number of milk collecting and

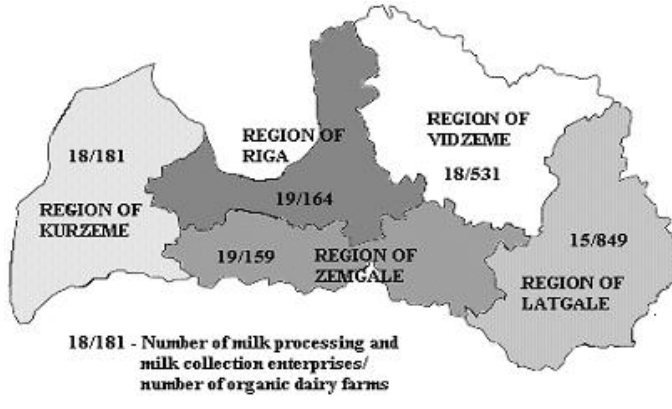

Figure 10. Numbers of milk collection and processing enterprises and number of organic dairy farms in Latvia's regions, 2005
Source: authors' calculations based on data of Food and Veterinary Service, 2005.

processing enterprises are the same as in other regions and limited. Due to the fact that processing of biological products remains undeveloped, most products are sold without being processed; some products are sold only after preliminary processing.

NATIONAL AND EU SUPPORT FOR AGRICULTURE

National subsidies for agriculture were introduced in 1994, and since 1996, national legislation has stated that agricultural subsidies must not be lower than 3% of total expenditures from the basic national budget.

Prior to the accession to the EU, most state aid came in two forms – direct aid in the form of state subsidies and investments, as well as indirect aid in the form of tax relief.

The amount of national subsidies paid out between 1994 and 2003 increased (Figure 11), but in 2004, due to the EU accession the overall support increased substantially – 2.5 times over 2003. Between 2000 and 2003, Latvia received money from the EU SAPARD – Special Accession Programme for Agriculture and Rural Development.

Direct payments are implemented through the Single Area Payment (SAP) scheme in Latvia. Support is paid for agricultural land maintained in good agri-

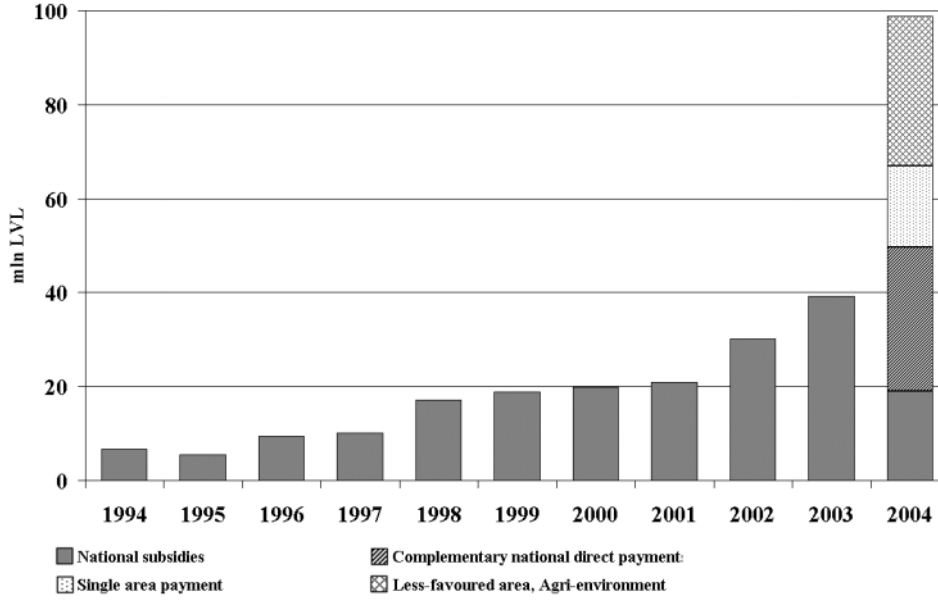

Figure 11. National subsidies and EU support (LVL), Latvia, 1994–2004
Source: authors' calculations based on data of the Ministry of Agriculture, 2005.

cultural and environmental condition. According to this scheme, there can be separate payments to promote particular sectors of agricultural production (complementary national direct payments).

A total of 1.475 million hectares of agricultural land were deisgnated as appropriate for these payments in Latvia. On the basis of this area and the total amount of EU funding, the SAP rate was set at a level of LVL 1.36 per hectare in Latvia in 2004, with a total amount of SAP payments of LVL 17.4 million (Ministry of Agriculture, 2005).

There are eight different and complementary national direct payments that were introduced in Latvia in 2004 – area payments (for arable crops and for fodder areas), payments per slaughtered animals (older than eight months), for cows, for ewes, for milk, for potato starch, and for the grass seeds and flax.

Money from the European Agricultural Guidance and Guaranty Fund (EAGGF) began to flow into Latvia's countryside and farms in 2004. The largest number of applications was submitted for the "Investments in Agricultural Enterprises" and "Promotion of Reorganisation and Development of Rural Areas" programmes.

The Latvian Rural Development Plan pertains to the following processes:

1. In terms of the agro-environment – development of biological farming, maintenance of biological diversity in grassland areas, establishment of buffer zones, and preservation of the genetic resources of farm animals;
2. Support for regions with limitations related to environmental protection;
3. Support for less favourable areas.

A total of LVL 31.8 million were paid out to beneficiaries, who were taking steps in accordance with the Rural Development Plan in terms of the three aforementioned processes. The greatest demand exists for support for agro-environment processes – the number of grant applications submitted in 2005 was by 288% higher than in 2004. EU financing, related to the Rural Development Plan, has gained great response among farmers, and applications in all areas of this programme are no longer being accepted.

Various kinds of aid will be available in the countryside over the next few years, but never again should there be as rapid an increase in support as was the case in 2004. That is particularly true for agricultural producers.

AGRICULTURAL INCOME

SECTOR INCOME

Economic Accounts for Agriculture (EAA) were used to evaluate income in the agricultural sector as a whole (including non-agricultural side activities).

When evaluating the final product structure of agricultural products, Vēveris and Krieviņa (2005) looked at the basic price of products (including subsidies,

which apply to various products), covering the period between 1996 and 2004. The authors concluded that milk and cereals have always had the highest proportion in the structure: a significant increase in milk output in 2004 was the result of higher purchase prices in the wake of Latvia's accession to the EU. Traditionally, the main sectors of Latvian agriculture have been pork production and potato growing, even though their proportion in end products declined a bit in 2004. The growing of sugar beets has always been an important source of income for Latvian farmers, but the future of that sector depends very much on EU sugar reforms and their effect in Latvia. Over the last few years, the proportion of rapeseed in the end products has increased rapidly – this can be seen as a long-term change in the structure of farm production.

Income in the sector declined between 1996 and 1999 because of declines in output and purchase prices, and of an increase in the input prices, particularly fuel. As was mentioned before, crises in the latter half of the 1990s had an effect on agriculture in terms of a drop in the income of the agricultural sector. Income began to increase again in 2000 because of stabilization of input prices and increase of output and purchase prices. Particularly rapid increases in income were registered in 2004, largely because of Latvia's accession to the EU (Figure 12). Increased subsidies were the most important factor in this. The production and area related joint EU and national support (except for investment support) amounted to LVL 105.3 million in 2004 – approximately three times more than in 2003. When Latvia joined the EU's Common Agricultural Policy, this

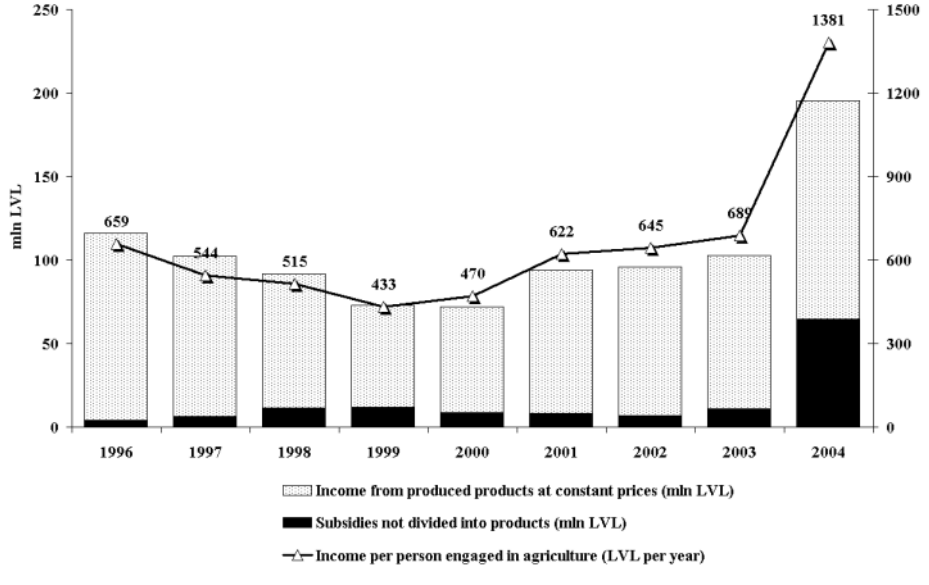

Figure 12. Changes in agricultural income in Latvia (LVL), 1996–2004
Source: authors' calculations based on data of the Central Statistical Bureau.

fact changed the structure of subsidies: product-related subsidies declined, while the proportion of aforementioned subsidies increased. Single area payments were added to the mix, steps were taken under the "Agro-environment" Development Plan, and support was given to less favourable regions (Vēveris and Krieviņa, 2005).

INCOME OF EMPLOYEES

Net wages have been calculated in accordance with EUROSTAT methodology (Vēveris and Krieviņa, 2005). The average net wage of employed persons in Latvia increased stably between 1996 and 2004. Wages in agriculture were at the level of only 69% of the average net wage in Latvia in 1996, but by 1999 at only 35%. In 2001, salaries in the agricultural sector increased substantially and stabilized until 2004. In 2004, however, there was a significant jump – wages nearly doubled over 2003. It has to be noted that in 2004, the average net wage in Latvia increased by 8.7%, but income of farmers is at the level of 77% of the average net wage in Latvia (Vēveris and Krieviņa, 2005).

FARM INCOME

In order to compare the level of income on farms of various sizes and production structures net value added (NVA) per annual work units (AWU) is used as the most objective indicator, which provide resources for wages, leasing and interest payments and possible profits (Bratka, et al., 2006). Figure 13 shows that since 2003, NVA per AWU has increased in all groups of farms, particularly in 2004. For instance, NVA per AWU on farms between ESU 8 and 40 tripled, while on farms that were larger than ESU 100, it increased between 1.2 and 1.5 times. Until 2004, state production support per AWU remained stable in all farm groups (Figure 13), and fluctuations in NVA were in accordance with production NVA. Since the accession to the EU, support has increased significantly – on the average 3.2 times in all farm groups in 2004, compared to 2003. Production NVA has also increased (1.8 times, on average) in all farm groups, but particularly in the medium-sized farm group – 2.3 to 2.7 times. This shows that farms are shaping up, and their competitiveness is increasing.

Although NVA per AWU more than tripled in the group of farms of the size of up to ESU 4 in 2004, compared to 2003, it remains very low, attaining only 38% of the average value. Direct payments in this group of farms quadrupled, but remained at only one-half of the average on all farms. We can conclude that the greatest support, in general, was received by medium-sized farms (ESU 16–100), and they are the ones with the greatest increase in NVA per AWU.

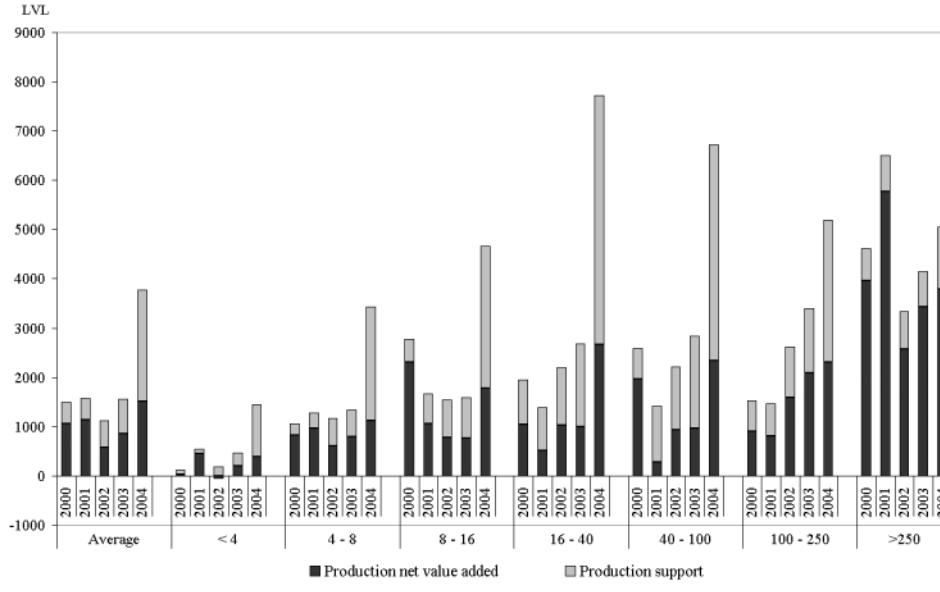

Figure 13. Changes in total net value added of farms (LVL) per AWU, by the economic size of farm, Latvia, 2000–2004
Source: Bratka et al. 2006.

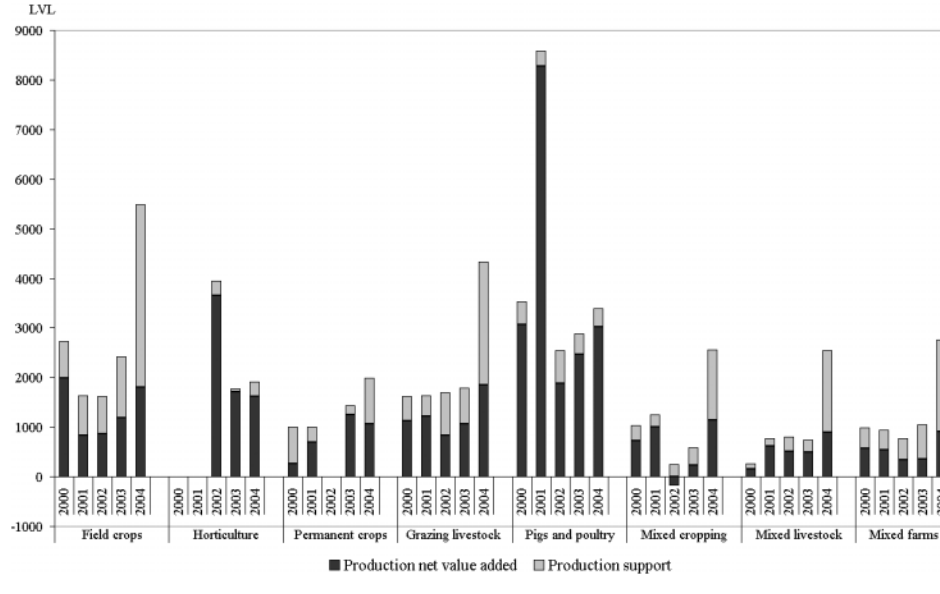

Figure 14. Changes in total net value added on farms (LVL) per AWU, by type of farming, Latvia, 2000–2004
Source: Bratka et al., 2006.

Over the course of five years, changes on the farms of various kinds of specialisation have been radical and different in each group (Figure 14). Significant growth in NVA per AWU has been observed in the following types of farms – field cropping, grazing livestock, dairy farming, and mixed farming. In these cases, support made up more than one-half of total NVA.

Given that poultry, pig and horticulture production occurs mainly on an industrial basis in Latvia, these activities have been receiving the lowest volume of support – 11% and 16% of total NVA, respectively.

There are no groups of farms, however, where NVA is sufficiently high to pay salaries to qualified labour and to ensure development.

CONCLUSIONS

- Agriculture plays an important role in the national economy despite the fact that it contributes only a small share towards the GDP in terms of added value (2.4%). The fact is that almost 1/3rd of Latvia's population live in the countryside, and agricultural production is the main activity and means of subsistence and source of income.
- On average, the level of welfare in rural areas is lower than in urban areas – only 64% of that for the urban households; there is also higher unemployment in the countryside, with hidden unemployment being a big problem; the gross salaries of people employed in agriculture amount to only 62% of the average gross salary in the country.
- The proportion of unutilised agricultural land in Latvia remains high – 33%; the figure is particularly high in subsistence and semisubsistence farms, where 37% of agricultural land is not utilised; this threatens the use of this land in the future.
- Biological farming is developing rapidly in Latvia, but the same cannot be said of the production of organic foods for the market; that is because the processing of organic foods remains weak.
- There are still lots of farms in Latvia, which are small and not economically active – they produce only for self-consumption; 84% of farms are smaller than ESU 2.
- The initial systemic transformations led to a rapid decline in output on Latvia's farms, but over the last few years, and particularly since the accession to the EU, the sector has stabilised, and there have been developments in several sectors – dairy farming, pig raising, poultry farming, and growing of rapeseed and wheat.
- Latvia's accession to the European Union, and the successful use of national and EU assistance within the framework of the CAP, have created a powerful impulse for the development of the agricultural sector, both during the avail-

ability of the pre-accession and structural funds and during the receipt of direct payments. This is illustrated by the fact that the proportion of utilised agricultural land has been increasing along with net and added value in production.

- Significant growth in NVA per AWU has been observed in the following types of farming: field cropping, grazing livestock, dairy farming and mixed farming; support obtained in these domains made up more than one-half of total NVA.

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Włodzimierz ZGLIŃSKI
Institute of Geography and Spatial Organization, Polish Academy of Sciences
Twarda 51/55, 00-818 Warsaw, Poland
w.zglin@twarda.pan.pl

THE ESSENTIAL PROBLEMS AND THE STRUCTURE OF POLISH AGRICULTURE IN THE PERIOD OF TRANSFORMATION

Abstract: The paper presents the main problems and structural changes of Polish agriculture in the years 1989–2008. The special attention of analysis was turned to: (1) problems associated with the restructuring and privatisation of the state farming and their influence on the changes of the ownership and acreage structure of Polish agriculture, (2) problems connected with improvement of the agrarian structure, (3) the excess employment in Polish agriculture, (4) changes in the agricultural land use and animal breeding, (5) farming activity and changes of income sources of farmers.
The sectorial pattern of Polish agriculture and its transformations as well as the changes of agriculture after Polish accession to the European Union are discussed in the paper.

Keywords: agriculture, transformation of agriculture, perspectives of development of agriculture, Poland

INTRODUCTION

In the period of systemic transformation of the Polish economy after 1989, and the first years of membership in the European Union, essential changes took place in Polish agriculture, both radical ones, and also much slower, tending towards the restructuring, change of structures, modernisation and increase of competitiveness. Numerous problems got uncovered in this process, in their majority negative, linked with the external and internal conditions of development of agriculture, and their spatial differentiation. The present paper identifies these problems.

The biggest change that took place in Polish agriculture was the doctrinally performed, immediate liquidation of the state farming, whose land and assets

were to be transferred to private farming so as to strengthen it – to enlarge the existing and to create new family farms. This process only slightly changed the acreage structure of farms (mainly in the western and northern regions of the country), but in its effect more than five thousand new large-scale farms appeared. The economic consequences, and especially the social ones (devastation of the assets, limitation of production, increase of unemployment, poverty and social marginalisation of the employees and their families, liquidation of social infrastructure) resulted in socio-economic depression of the areas of former state farms.

The hopes, as well, were not fulfilled that in conditions of the market economy, Polish agriculture, dominated before 1989 by private family farms (an exception among the post-communist countries), should most easily adapt to the new economic principles among all the sectors of economy. In the decade of the 1990s, and especially in the first years of transformation, a number of negative phenomena appeared, with agriculture bearing the heaviest costs of systemic and economic transformations.

In the years 1990–1991 real incomes in peasant agriculture decreased by more than 40% in comparison with their level of 1988. In 1992, for the first time in fifty years, negative accumulation occurred in Polish agriculture, which meant "eating away" of the assets of the peasant farms. In 1998 net farmer income per one fully employed equivalent person was at 40% of the respective average in Poland, while in 1989 this indicator was at 151%. According to IAFE (Institute of Agriculture and Food Economics) in 1998 the indicator of accumulation dropped from 24% to 0, which not only meant that the assets could be "eaten away", but also that the investment processes were given up. It is estimated that 60–70% of peasant farms found themselves in a very difficult economic situation, and lost all capacity of modernisation and restructuring.

Farming became also a "buffer" for the changes, taking place, both as the place of work of people laid off the non-agricultural jobs (it is estimated that around 100,000 people returned from towns to the countryside) and the place, where hundreds of thousands of able-bodied people, constituting hidden unemployment, not needed for farm work, could be maintained and "preserved" without any state subsidies (see Chołaj, 1999 and Woś, 2003).

Intensity of agricultural use of land dropped, livestock number decreased (especially of cattle), the area of fallowed and waste land increased seven times over, polarisation of the farm structure increased, a significant diversification of the development and profit-earning capacity of the farms took place, and disadvantageous tendencies appeared in the export of agricultural products.

In the years immediately before the accession and after Poland joined the EU, the economic situation of agriculture, owing to structural funds and other means, directed to the countryside, started to slowly improve.

PROBLEMS ASSOCIATED WITH THE RESTRUCTURING AND PRIVATISATION OF THE STATE FARMING AND THEIR INFLUENCE ON THE CHANGE OF THE OWNERSHIP AND ACREAGE STRUCTURE OF POLISH AGRICULTURE

The state farms, in their organizational and economic form to date, were not capable of adapting to new rules, reigning in the market economy. The change of the economic system brought also a complete change in the tasks that the state farming sector had been entrusted with till then. In the command-and-order and centrally planned economy the state farms had two essential objectives: the increase of agricultural production volume notwithstanding the level of costs borne and the transformation of the social relations in the countryside. For the purpose of reaching these objectives the state farms were subsidized and supported in the direct and indirect manner, and also enjoyed many kinds of privileges.

Until December 31st, 1993, according to the law, passed by the Parliament, the State Farms were liquidated. Their assets were taken over and have been partly distributed, and are being developed, by the Agricultural Property Agency of the State Treasury (currently the Agricultural Property Agency – APA).

Restructuring and privatisation of the state agricultural sector was applied to almost 4.7 million hectares of land (18.7% of total agricultural land in Poland), of which – 3.8 million hectares belonging to 3433 (in 1988) state farms and 0.9 million hectares of the State Land Fund. This was more than the entire agricultural space of Belgium and Luxembourg (1.5 million hectares), The Netherlands (2 million hectares), Slovakia (4 million hectares), Denmark (2.7 million hectares), Czechia (4.3 million hectares), and l' of the agricultural land of either Bulgaria or Hungary.

The biggest amount of land (3.4 million hectares) and other assets of 935 former state farms were taken over in the northern and western provinces (Western Pomeranian – 708,100 hectares, Varmian-Masurian – 698,300 hectares, Wielkopolskie – 437,900 hectares, Lower Silesian – 404,000 hectares, Pomeranian – 394,300 hectares, and Lubuskie – 280,300 hectares).

On the basis of not always rational premises, spontaneous bankruptcy processes were unleashed, followed by devastation of the assets, enormous debts, increase of fallowed and waste surfaces, limited production volumes. The restructuring and ownership transformations of the state sector of agriculture are associated with the social consequences, which give rise to the sharpest controversies: drastic reduction of employment and the resulting structural unemployment, impoverishment and social marginalisation, which affected 475,000 employees of the former state farms (in 1989), and, together with their families, around two million people, inhabiting 6000 settlements. Separation of the social

functions from the productive ones, lack of means for their reactivation, brought disadvantageous changes in the infrastructural equipment of many rural areas.

Restructuring of the assets consisted in the establishment, out of the large state farms, taken over, of smaller units, economically efficient, capable of independent functioning in conditions of market economy. Such farming units could then be privatised in various ways. In the programs of restructuring the existing family farms have also been considered, for which land was set apart, meant to improve their acreage structure. In the case of the state farms dealing with creative plant and animal breeding, the restructuring programs accounted for the need of temporary maintenance of their activity as single-person companies subordinated to the Agency (their number dropped from 150 to 59 in 2006), assuming their adaptation to conditions of market economy and the tasks they were entrusted with.

Transformation of the state agriculture has not contributed to a radical change in the ownership structure of Polish agriculture (Głębocki, 2002; Zgliński, 2003). In the effect of this transformation the share of the state in the ownership of agricultural land decreased only slightly, while in terms of use it dropped (mainly owing to lease) from 19.8% in 1989 to 5.2% in 2002.

Between the very beginning of the activity of the Agency and the end of 2006, altogether 2,078,500 hectares, that is, more than 44.1% of the land taken over, has been transferred permanently to other owners, through sale, but also as a contribution to the companies, or by free-of-cost transfer (in particular, to the State Forest Service, to the municipalities, Churches, etc.). In the Reserve of the Agency there are still 2,639,437 hectares, that is – 56% of the land taken over, of which, though, the major part, 1,905,607 hectares, are leased out (Figures 1 and 2).

Sale, and especially leasing of land exerted, though, a significant impact on the ownership and acreage structure of farms in the northern and western parts of the country, and this, in particular, in the group of larger farms (of more than 50 hectares). It was mainly owing to these changes that the share of private sector in agriculture and the average area of a private farm increased (up to 17 hectares in the Varmian-Masurian province, to 16 hectares in the Western Pomeranian, and to 13 hectares in Pomeranian).

The proposition, forwarded at the beginning of restructuring and privatisation, claiming that due to liquidation of the state farms the land and the assets shall get primarily transferred to the existing and newly established family farms, and land sale will be the main form of development, did not prove to be correct. Low demand for land of the former state farms, much lower than supply, is linked with the barrier of capital availability, low profitability of agricultural production and its current long-term perspectives, as well as high concentration of land in provinces, where private farms are already quite large.

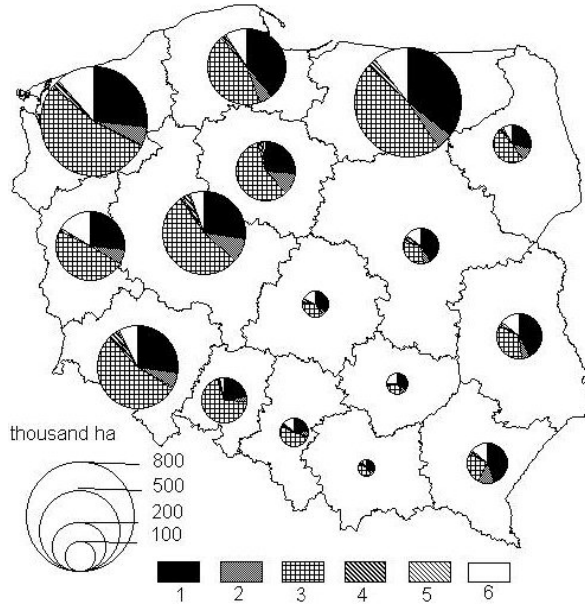

Figure 1. Use of land being at the disposal of the Agricultural Property Agency of the State Treasury (December 2006)
1 – land sold, 2 – land contributed to the companies and institutions by free-of-cost transfer, 3 – land rented out, 4 – land administered and land under temporary management, 5 – land for perpetual usufruct, 6 – land left fallow to be put in use later on.
Source: own calculations.

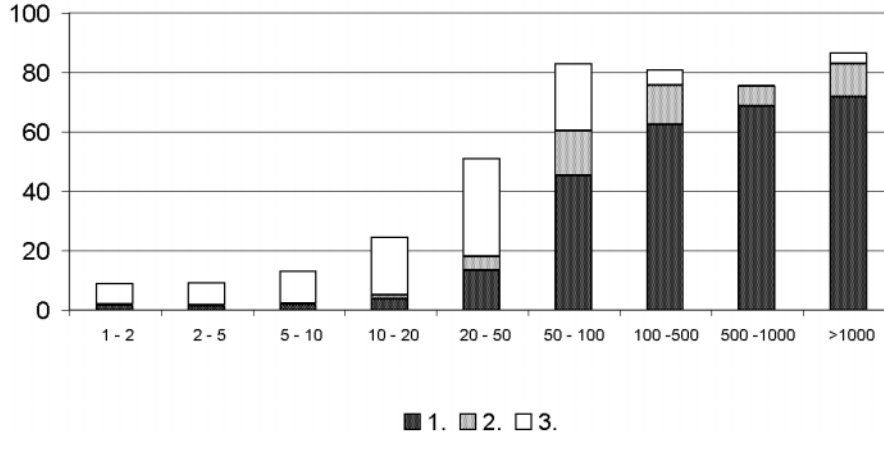

Figure 2. Shares of farms increasing their areas, according to acreage groups in 2003
1 – lease from the land reserve in the disposal of the Agricultural Property Agency, 2 – sale from the land reserve in the disposal of the Agency, 3 – other forms of acreage extension.
Source: own calculations.

According to the data from APA as of 31 December 2006, owing to sale, and especially lease, of 1,600,000 hectares of state land, in plots of up to 100 hectares, around 318,000 farmers had the opportunity of enlarging their farms by, on the average, 5 hectares. Then, the remaining sale and lease of the properties exceeding 100 hectares[1], exceeding in their total 1,900,000 hectares, initiated the activity of 5200 large-scale farms of natural and legal persons, having on the average the area of 365 hectares, while the average area of the liquidated state farms exceeded 2200 hectares. There were, among them, 697 farms of the area between 500 and 1000 hectares, and 217 farms (524 in 1997) exceeding 1000 hectares. Most of these farms (3126 in 2006, and 5480 in 1997) were leased out, but 2119 (in 1997 – 720) had already full-fledged owners, of whom 305 managed farms exceeding 500 hectares, and 37 – farms exceeding 1000 hectares.

So, the private large-scale farms, having emerged from the restructured and privatised state farms, became a new, significant element in the structure of Polish agriculture (Zgliński, 2004).

The process of restructuring and privatising of the state farming, including the appearance of the private large-scale farms, contributed, though, to bringing closer the structure of the farms functioning in Polish agriculture to that of the EU, in which a significant concentration and an important role of the large-scale commercial farms is observed. On the average, in the EU member countries, large farms (exceeding 100 hectares) dispose of more than twice the area of land of their counterparts in Poland, and, on the average, their share in the number of farms is more than seven times higher.

PROBLEMS ASSOCIATED WITH IMPROVEMENT OF THE AGRARIAN STRUCTURE

In the period of transformation essential changes took place in the agrarian structure, both in terms of ownership of land and acreage of land. After 1989 the place of the three formerly most important ownership forms – private (76.2% of total area of agricultural land), state (18.8%), production cooperatives (3.3%) and farmer associations (0.3%), was taken by two forms – private and public (state-owned). Owing to the liquidation and privatisation of the state farms, the share of agricultural land of the private sector (encompassing private farms, production cooperatives and commercial code companies) increased in 2002 to 94.5%, while the share of the public sector, including the non-privatised land of the Reserve of the Agricultural Property Agency and the municipal property

[1] It can be assumed with high probability that the plots of up to 100 hectares, most often devoid of farming infrastructure, serve primarily to enlarge the already existing farms, while those exceeding 100 hectares, usually with production infrastructure, are the basis for establishment of new large scale commercial farms.

(reactivated in 1990), dropped to 5.5%. Commercial code companies (domestic, foreign and mixed), which disposed in 2002 of 287,400 hectares of agricultural land (1.7%), are, as well, a new form of ownership in Polish agriculture.

Numerous analysts see the weakness of Polish agriculture in the fragmented acreage structure of farms, which entails low revenues of farmers and their families, limits investment making and technological innovations, and is decisive for the quality and sales of products.

In 2002 the structure of the family farms was dominated by the small farms with the area of agricultural land up to 5 hectares, accounting for more than half (58.5%) of the total number of farms, and for 19.1% of the total agricultural land. The respective shares of the medium-sized farms (between 5 and 20 hectares) were 35.6% and 46.1%. The biggest farms, with surface areas exceeding 20 hectares, accounted for just 5.8% of the total number of farms, but they concentrated an increasing surface of agricultural land – 34.7% in 2002.

The private farming sector is undergoing an intensive bipolar diversification (structural polarisation of Polish agriculture). The number of the smallest farms (1–2 hectares) increases, the share of the medium-sized farms (especially in the bracket of 2–10 hectares) decreases, while the share of the biggest farms (in excess of 10 hectares, but especially above 50 hectares) dynamically grows (see Table 1).

Table 1. Structural changes in private farming in the years 1996–2002

Area groups of farms, in hectares	Changes in the area of agricultural land of farms		Changes in the farm numbers		Acreage structure of farms (numbers)	
	(+) increase, (–) decrease, 1996 = 100%				1996	2002
	'000 hectares	%	'000	%	Total = 100	
1–2	+74.9	+11.4	+54.6	+11.8	22.6	26.5
2–5	–161.0	–7.3	+38.1	–5.7	32.7	32.3
5–10	–684.2	–18.4	–4.3	–0.8	25.5	21.9
10–15	–417.8	–15.9	–34.7	–16.0	10.6	9.4
15–20	–92.2	–6.0	–5.6	–6.3	4.4	4.3
20–30	+214.0	+16.2	+8.4	+15.1	2.7	3.3
30–50	+452.4	+62.9	+11.9	+60.8	1.0	1.6
>50	+816.9	+54.7	+8.2	+92.1	0.4	0.9
50–100	+431.9	+117.4	+6.4	+116.2	0.3	0.6
100–200	+178.0	+82.4	+1.3	+83.5	0.3	0.6
200–500	+115.4	+31.6	+0.38	+133.4	0.05	0.08
500–1000	+12.4	+3.7	+0.012	+2.4	0.02	0.03
>1000	+79.1	+38.6	+0.043	+32.0	0.006	0.009

Source: own calculations on the basis of the Agricultural Census of 2002.

A spectacular phenomenon is constituted by the functioning in Poland in 2002 of 7400 large-scale farms, i.e. the ones exceeding 100 hectares of agricultural land. They occupied altogether close to 3.5 million hectares of agricultural land (21.2%) and supplied to the market almost one quarter of the commercial production (more than 2/3 of it originating from the privatised former state farms). In the recent years the number of these farms increased, and their average area decreased. Thus, in 2006 there were some 7800 such farms of the average acreage of around 400 hectares.

The law of April 11th, 2003, on the development of the agricultural system in Poland, emphasising the importance of family farms, managed by a farmer and his family, and defining for each province the basic and the maximum areas of the farms, the latter at 300–500 hectares, puts to doubt, in fact, the very existence of the largest private farms in Poland.

The process of structural polarisation of Polish agriculture and of concentration of land takes place continuously, but its rate depends upon the macroeconomic conditions of functioning of the entire economy, and especially upon the capacity of absorbing the surpluses of agricultural labour force and upon the profitability of farming activity. A particularly high rate of this process was observed in the years 1980–2000, when the share of land owned by the farms of more than 10 hectares increased from 35.7% to 56.9%.

The changes in the agrarian structure are also linked with the rate of decrease of the total number of farms, which underwent a clear slowdown in the period of transformation. During last half century the total number of private farms decreased by 827,000, of which 797,000 in the decades of 1970s and 1980s (38,900 farms less each year, on the average). During the 1990s this decrease was less pronounced, amounting to 25,300 per annum. In the period between two agricultural censuses, i.e. in the years 1996–2002, roughly 132,000 farms disappeared (18,800 per annum).

In the following years, immediately before and after the accession to the EU, no essential change has been observed in the trend to date of changes in the agrarian structure, but the rate of changes clearly changed. There has been a quicker increase of the number of the largest farms, and the decrease of the number of farms of 2–15 hectares was slowed down (as influenced by a significant increase of revenues), but the increase of the number of the smallest farms continued.

The changes of the agrarian structure, including the changes in the farm acreages, do not constitute in themselves the basic determinant of the restructuring of agriculture, which depends nowadays not only upon the land potential but also upon other production potentials (employment and professional skills, technical equipment, specialisation, etc.) and adaptation to the realities of the market. It is namely lack of non-agricultural employment for the agricultural popu-

lation that constitutes the main cause of persistence of the disadvantageous structure (fragmentation of the farms).

The interdependence between the area structure and the possibilities of employment of the surpluses of labour force in the non-agricultural occupations defines the rate and the scope of changes in the agrarian structure. Currently, and for the nearest future, this issue decidedly constitutes a 'blocking" factor for all kinds of structural changes in agriculture. Some hopes for the resolution of this problem are associated with the integration with the EU, which might stimulate the processes of concentration of land (in connection with direct payments, linked to the area of the farms), but which primarily may contribute to the accelerated development of the entire economy, and hence to the increase of the number of jobs, increase of the budgetary subsidies to farming, and through structural funds may also accelerate the multi-functional development of the rural areas.

PROBLEMS OF EXCESS EMPLOYMENT IN POLISH AGRICULTURE

During the process of transformation an inversion took place of the trend, having lasted for 45 years, characteristic for the period of industrialisation, of systematic decrease of the number and the share of employment in agriculture, with simultaneous increase of employment in the non-agricultural sectors of national economy. This process significantly slowed down, and there has even been an increase of the number of persons employed in agriculture, mainly in the south-eastern and central regions of the country. The reason for this phenomenon resided in the liberalisation of the labour market, the recession-related drop in the demand for labour[2], and the general increase in joblessness, and, consequently, limited possibilities of finding a job outside of agriculture, as well as the return to the countryside, back to the roots, or to the family farms, of a significant number of people who had lost jobs in the bankrupting state enterprises in towns, especially of the bi-occupational population. This confirms the frequently forwarded hypothesis that farming has become to a greater extent than before an element limiting ("buffering") the increase of unemployment, and that it constitutes a "storeroom" for people slack in other sectors of economy.

Despite the slower decrease of the share of people employed in farming, from 24.7% in 1998 to 16–18% in 2005 (Bański, 2007), Poland, with 2.1 million persons employed in farming places itself in a disadvantageous position against the background of the EU member countries, especially so as the contribution of agriculture to formation of the GDP has been decreasing much more quickly (it decreased by more than half since 1996 and is currently at around 3%).

[2] According to M. Kabaj (2003), during the period of transformation some 2.6 million jobs disappeared, while the labour force increased by 1.6 million persons.

The highest shares of persons employed in agriculture are observed in the eastern regions of the country, where this kind of activity is still the main source of upkeep. The lowest employment share is observed in the western part of the country, and does not exceed there 10%.

The essential barrier to the structural transformations in Polish agriculture is, therefore, constituted by the still existing excess reserve of main d'oeuvre. Transferring of a part of this reserve from agriculture to other spheres of professional activity, and to taking up of an earlier retirement, are commonly held to be the basic factors in modernisation of Polish agriculture. High level of employment in agriculture entails low labour productivity (incomparable with other countries of the EU), low effectiveness of farms and their competitiveness on the market of the European Union. In the opinion of W. Orłowski (1998), the optimum employment in Polish agriculture, ensuring the desired increase of the labour productivity, determined both by the long term projections and scenarios of development and structural changes of the Polish economy, as well as the prerequisites for the current changes in the Common Agricultural Policy of the EU, should be the result of the decrease from 2.5 million in 2000[3] down to 2–1.5 million in 2010, then 1.5–1.15 million in 2020, and 0.9–0.55 million in the year 2040. If, however, we wished to bring the level of employment in Polish farms to the one of the German agriculture of 1988, then during the next 15 years some 3.2 million new jobs outside of agriculture should be created, assuming, simultaneously, the accepted unemployment level of around 0.6 million people.

The socio-economic conditions, current trends and the slow rate of changes in agriculture do not provide the chances for the so significant transformation of the magnitude and structure of agricultural employment. The demand for the surpluses of the labour force from Polish agriculture, in conditions of the little changing unemployment and lack of adaptation of the skills of farming population to the requirements of the contemporary labour market, is highly limited.

CHANGES IN THE AGRICULTURAL USE OF LAND

During the period of transformation the intensity of agricultural use of land decreased importantly, as expressed mainly through:

- the decrease of the area of agricultural land from 18.7 million hectares in 1989 (59.9% of the area of the country) to 16.9 million hectares in 2002 (54%), and to 16 million hectares in 2006 (51%), and of arable land – from

[3] This number is the true employment in Polish agriculture, as corrected by W. Orłowski, not accounting for the fictitious employment in small farms, not producing to the market, and earning a significant proportion of the revenue from other sources.

14.4 million hectares in 1989 to 10.8 million hectares in 2002, and to 12.4 million hectares in 2006;
- decrease of the area sown from 14.3 million hectares in 1990 to 10.8 million hectares in 2002 and 11.4 million hectares in 2006;
- a significant increase of the share of cereals from 58.4% of the sown area in 1989 to 77.1% in 2002 and 73% in 2006, this increase applying first of all to wheat (increase by 125,000 hectares since 1990) and the Triticale, while the area under rye decreased (by 774,000 hectares), similarly as under oats;
- decrease of the area under the intensifying crops, including potatoes – from 12.9% of the area sown in 1989 to 7.5% in 2002 and 5.2% in 2006 (drop by as much as 1,260,000 hectares); potato growing decreased in the traditional areas of production in central-eastern Poland and in eastern Wielkopolska, while there has been an increase in the small, self-supply (subsistence) farms of the south-eastern part of the country;
- decrease of the area under industrial crops, from 1,028,000 hectares in 1990 to 758,000 hectares in 2002 and 699,000 hectares in 2006, mainly affecting sugar beets (decrease by 161,000 hectares since 1989) and rapeseed, caused by the liquidation of the state farms, in which rapeseed growing accounted for 71% of the total area under this crop in the country;
- a very significant decrease of the area under fodder crops, from 2,342,000 hectares in 1990 to 562,000 hectares in 2002 and 996,000 hectares in 2006, caused by a drastic decrease in the livestock bred, especially cattle.

CHANGES IN ANIMAL HUSBANDRY

The disadvantageous macroeconomic conditions for Polish agriculture resulted in the significant limitation of the livestock numbers bred. According to the data from the Agricultural Census, less than half of farms conducted activities associated with animal production, and in the years 1990–2005 the intensity of livestock breeding in equivalent units per 100 hectares of agricultural land dropped from 65 to 47 units, and the global animal production decreased by 8%.

There has been a drastic reduction of the number of cattle, from 10.7 million in 1989 to 5.5 million in 2002 and 5.6 million in 2006, with the number of milk cows having dropped, respectively, from 4.9 million to 2.9 million and 2.8 million. At the same time, there has been a significant shift in the spatial distribution of cattle raising. The development of the modern dairy industry caused that Podlasie became the leading region of cattle raising, taking this leading position away from the traditionally dominating area of southern Wielkopolska. A positive phenomenon is constituted by the process of concentration of the number of cows and milk production. During the period of 15 years, between 1991 and 2005 the number of farms with milk cows decreased by 64%, the number of

cows decreased by 43%, while the statistical cow herd increased from 2.5 to 3.9 animals. In 2005 around 2/3 of milk purchased for processing originated from the farms raising at least ten cows.

The numbers of pigs underwent significant fluctuations, largely according to the pig cycle, but there has also been drop in pig husbandry, as well, the number having gone down from 18.8 million pigs in 1989 and 22.1 million in 1992 (the highest ever number since the World War II) to 15.8 million in 2000, followed by an increase to 18.6 million in 2002 and 18.9 million in 2006. Like in the preceding case, there has been a significant concentration in pig raising, as well. During 15 years the number of farms keeping pigs decreased by half, with the statistical herd having increased from 14 to more than 25 pigs (which was still ten times less than in the EU 15).

The biggest decrease occurred in sheep husbandry. The number of sheep drastically dropped, from 4,409,000 in 1989 to 301,000 in 2006.

UNUSED POTENTIAL OF THE PRODUCTIVE SPACE OF POLISH AGRICULTURE

Economic depreciation of agriculture, expressed mainly through low profitability and revenue generation capacity, brought about the increasing phenomenon of the unused production resources, consisting in the withdrawal of farms from agricultural production, both through complete abandonment of crop production and animal husbandry, and through partial fallowing and non-cultivation of land.

According to the results of the Agricultural Census of 2002, there were altogether in Polish agriculture 755,600 farms not conducting agricultural production (25.8% of the total number), of which among private farms – 333,900 (17.1%), while in 1989 there were almost no such farms. The percentage share of such farms is inversely proportional to their acreage and is the highest among the smallest farms, which is associated with the need of searching for the other, non-agricultural, more profitable sources of revenue.

The total area of the unused agricultural land in private farms not conducting agricultural activity was significant and amounted in 2002 to 1,150,300 hectares (8.1% of the total area of agricultural land). Characterisation of farms without agricultural production is presented in Chapter *Farms not conducting, agricultural production*...

A telling phenomenon, which appeared during transformation, and which does not appear on such a scale in the member countries of the EU, was drastic increase of the area of fallow and waste land, from 163,000 hectares (1.1% of agricultural land) in 1989 up to as much as 2.3 million hectares in 2002 (13.6% of agricultural land and 17.6% of the arable land). Of this, 1.8 million hectares

of unused agricultural land belonged to private farming. In 2002 there were 1,157,000 farms with fallow and waste land (in 1996 – 592,000 farms). The fallowed and waste land existed in all the acreage groups of farms, with, an interesting observation, the largest total area of close to 522,000 hectares, i.e. 22.7% of the total of all the fallowed and waste agricultural land in Poland, belonging to 177,000 farms of the surface area of 2–5 hectares, followed by 402,200 hectares of fallowed and waste land belonging to 225 large farms of more than 1000 hectares each (29.1% of the total area of fallow and waste land). Significant areas and percentage shares of fallowed and waste agricultural land existed also in the farms with areas up to 2 hectares, while the smallest ones – in the farms with areas between 50 and 300 hectares.

In geographical terms, the biggest share of the fallowed and waste land in the area of arable land is not observed, as it could be expected, in the regions where formerly the state farms dominated, i.e. in the West and North of Poland (although it definitely is high there – 24.1% in the Western Pomeranian province, 23.3% in Lubuskie province and 17.3% in the Varmian-Masurian province), but in the south-eastern regions of the country: in the Subcarpathian province – 31.9%, in Silesian – 30.7% and in Małopolska – 23.3%. In the latter provinces there has also been in the years 1990–2002 the quickest increase of the area of the fallowed and waste agricultural land.

It should be emphasised that more than half (56%) of the area of the fallowed and waste land belonged to family farms not conducting agricultural activity.

CHANGES IN INCOME SOURCES AND DECREASING SHARE OF FARMING ACTIVITY IN PEASANT FARMS

The most important and most influential change was the one of the income source structure of peasant families. Thus, conform to the Agricultural Census of 2002, according to the criterion of the main source of income (more than 50% of total income), agricultural activity was the main source of income for only 585,400 farms (30% of their total number).

These data show that the share of the agricultural sources of income in private farms is relatively low, while, at the same time, the shares of the welfare payments and the incomes gained from employment outside of agriculture are high. This statement changes the overall perspective on the role, essence and significance of the peasant farms in the domains of professional activity and of agricultural production. In the period of 30 years, that is – between the censuses of 1970 and 2002 – the share of households with the use of a farm constituting the exclusive or the main source of upkeep of the agricultural population decreased from 38.1% to 20.8%, that is – by 17.3 percentage points. Hence, agricultural activity, as the main source of income, undergoes systematic decrease, while the signifi-

cance of the non-agricultural activity, and especially of the welfare payments, increases. The process of de-farming, typical for the highly developed countries, is taking place and there is less and less of agriculture in Polish countryside.

The share of incomes from agricultural activity is closely correlated with the area of a farm and generally increases along with the acreage of farms. Thus, among the smallest farms (1–2 hectares) more than half gained from agriculture incomes not exceeding 10% of the respective totals, and around 32% of farms – between 10% and 30%. The proportion of farms with the share of incomes from agriculture in the bracket of 50–90% was the highest in the farms with acreage of 10–50 hectares, while the "most agricultural", gaining more than 90% from farming activity, were the farms of 50–100 hectares, and then those exceeding 100 hectares.

THE SECTORAL PATTERN OF POLISH AGRICULTURE AND ITS TRANSFORMATIONS

Due to a lengthy process of development and mutual adaptation of the production factors a dichotomous structure took shape in Polish agriculture, with the period of market economy having amplified the diversification of its elements. The first component of this bipartite setting is constituted by the farms devoid of development perspectives, welfare- and subsistence-oriented and little commercialised. This component consists of 1.42 million farms, mostly small, which are not linked with agricultural production and largely depend upon incomes from welfare programs, or the ones, in which agricultural activity is oriented uniquely at satisfaction of own nutritional needs, as well as farms with very limited commercial production, meant solely for the local markets. For a significant proportion of these farms the only or the additional source of income is the non-agricultural activity.

The second component of this setting is constituted by the developing farms, commercially oriented, relatively technically and economically effective, innovative and creative, having well developed integrating connections with the non-agricultural sectors, usually bigger in terms of area, managed by better educated farmers, to a large extent younger, having a longer perspective of farming ahead of them. These farms are capable of competing on the EU market. Their number is estimated at 536,000.

The bipartite structure of the population of Polish farms, bearing definite influence on the processes of modernisation and competitiveness of Polish agriculture has its spatial expression – strong concentration in particular regions of the country.

Generally, both in view of the level of development of agriculture and of the intensity of the basic processes, influencing this development, Poland can be

divided into two parts, separated by a line running from the North-east to the South-west. The western part is already now characterised by a significant level of the highly commercial farming, formation of the sector of "Polish agri-business" and a high share of farms conducting non-agricultural business activity. At the same time, on this area the accumulation took place of all the negative problems, associated with transformation of the state sector of agriculture, demanding conceptual solutions to be implemented as soon as possible. For the eastern part – the central, eastern and south-eastern Poland – there is a threat of stagnation and a slow development of the rural areas and marginalisation of farming, currently to a large extent traditional (peasant farming), little commercialised in the central and eastern parts, and welfare- as well as subsistence-oriented in the southern part (Zgliński, 2002).

These two main components of the farm population structure are, however, in their internal morphology not homogeneous. Thus, taking into account the criterion of their classification according to the objective of the activity conducted and the value of the produced commercial agricultural output in the economic year 2001/2002, as well as the connections to the market, on the basis of the data from the Agricultural Census of 2002, within the first of the two components the farms of welfare and subsistence orientation were distinguished, side by side with the peasant farms producing little in terms of commercial output, while within the second component, the one of the commercial farming, the farms were distinguished of medium commercial value of output and high commercial value of output (Figures 1, 2 and 3, Tables 2 and 3).

Table 2. Types of private farming in 2002

Farm types	Farm numbers	
	absolute	in %
Welfare and subsistence	**540,186**	**27.7**
with no economic activity	282,059	14.4
with solely non-agricultural activity	51,894	2.7
conducting activity uniquely for own needs	206,232	10.6
Little commercialised peasant farms	**876,345**	**44.9**
producing mainly for own needs	496,835	25.5
with market-oriented production of 3000–10,000 PLN of value	379,510	19.4
Medium commercial farms	**319,714**	**16.4**
with market-oriented production of 10,000–30,000 PLN of value	319,714	16.4
Highly commercial farms	**215,699**	**11.0**
with market-oriented production of 30,000–50,000 PLN of value	99,561	5.1
with market-oriented production of 50,000–100,000 PLN of value	76,873	3.9
with market-oriented production of>100,000 PLN of value	39,265	2.0
Totals	**1,951,943**	**100.0**

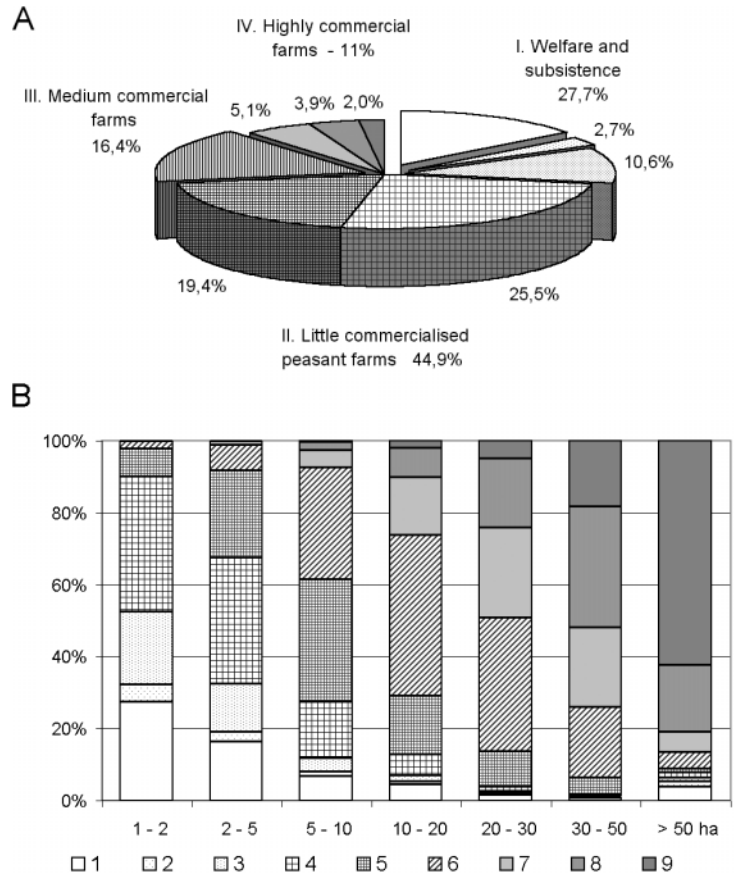

Figure 3. Types of farms according to: A – purpose of production and value of commercial production, B – acreage groups.
Welfare-oriented: 1 – with no activity, 2 – with solely non-agricultural activity, 3 – producing uniquely for own needs; *Little commercial peasant farms*: 4 – producing mainly for own needs, 5 – with commercial production worth 3–10,000 PLN; *Medium commercial farms*: 6 – with commercial production worth 10–30,000 PLN; *Highly commercial farms*: 7 – with commercial production worth 30–50,000 PLN; 8 – with commercial production worth 50–100,000 PLN; 9 – with commercial production worth more than 100,000 PLN.

The here presented structure of the Polish farm population is generally stable and there are no prerequisites, as of now, for expecting that the instruments of the current agricultural policy, including direct payments and other assistance means from the European Union could change this pattern in an essential manner. Yet, this pattern undergoes certain transformations: the role of the most commercialised farms (the "Polish agribusiness") is increasing – mainly of the large-scale farms, having appeared due to privatisation of the former state farms, but there is also an increase in the number of the welfare and subsistence ori-

Table 3. Characterisation of private farms according to farming types

Farm types	Number of farms		Area of farms		Fully employed persons		Commercial production	
	thousand	%	thousand hectares	%	thousand	%	million PLN	%
Welfare and self-supply	540.2	27.7	1715.5	12.1	147.1	7.3	0	0
Little commercial peasant farms	876.3	44.9	3832.4	26.9	729.4	36.1	2392.9	8.8
Jointly non-commercial and little commercial	**1416.5**	**72.6**	**5547.9**	**39.0**	**876.5**	**43.4**	**2392.9**	**8.8**
Medium commercial	319.7	16.4	3239.6	22.8	516.9	25.6	5193.7	19.1
Highly commercial	215.7	11.0	5429.6	38.2	628.0	31.0	19,605.5	72.1
Jointly commercial	**535.4**	**27.4**	**8669.2**	**61.0**	**1144.0**	**56.6**	**24,799.2**	**91.2**
Totals	1951.9	100.0	14,217.1	100.0	2021.4	100.0	27,192.1	100.0

Source: own calculations based on the results of the Agricultural Census of 2002, Central Statistical Office (GUS).

ented farms, producing only for their own needs, and, in particular, of the farms without any agricultural production, including the ones without any economic activity at all.

THE FARMS OF THE WELFARE AND SUBSISTENCE SEGMENT

This group encompasses private farms (of more than one hectare of area), which rely on incomes from welfare programs, conducting agricultural production only for their own needs, and farms not conducting agricultural production at all, including the ones not conducting any economic activity and the ones conducting only non-agricultural activity. These farms are not oriented at the sale of agricultural products and are almost not related with the market at all (they produce only 1.7% of commercial output). There have been altogether 540,200 such farms (27.7% of the total number of private farms) and they disposed of the area of 1,715,500 hectares of agricultural land (12.1%). Agricultural production not associated with the market involved 147,100 fully employed persons (7.3% of the total labour input in private farming), relatively limited share of investment outlays (16.1%) and of current expenditures (1.8%).

These farms fulfil a very important social function of "safekeeping" hundreds of thousands of persons (0.8–1.5 million), not needed in agriculture, who could not find jobs in the non-agricultural professions. This population constitutes hidden unemployment in rural areas, while their costs of upkeep do not put a charge on the state budget, nor on the society.

This type of marginalised professional activity provides, though, the basic living conditions for a significant number of people and protects them against exclusion from the local community. That is why the evaluation of this segment of the farm population from the point of view of productive features is decidedly negative, while in the social categories and in the current macroeconomic situation of the country, given the scale of the phenomenon and the lack of capacity of implementing revolutionary solutions, the evaluation is not so unambiguous.

The biggest numbers of these farms, and their highest shares in the total number, as well as the biggest areas of agricultural land, occupied by them, were observed in the provinces of south-eastern Poland, especially in the Subcarpathian Foothills, in Bieszczady Mts., Sandomierz Bowl, Silesian Upland and Cracow-Częstochowa Upland. There are also significant concentrations of these farms in the suburban zones of the urban and industrial agglomerations, namely those of Warsaw, Upper Silesia, Kielce, Olsztyn, Szczecin and Białystok. One should also mention a significant share of the farms from this segment in the western provinces (Lubuskie, Western Pomeranian and Lower Silesian – especially in Sudety Mts., where, however, in terms of the area occupied and of employment, and in particular – of production – the highly commercial farms dominate).

Farms not conducting agricultural production (with no economic activity and with exclusively non-agricultural activity)

The economic depreciation of agriculture, expressed primarily through low profitability and revenue generation capacity, caused the phenomenon of increasing share of unused production resources. This consists in the withdrawal of farms from agricultural production, both through complete abandonment of crop cultivation and livestock breeding, and through partial fallowing and waste of land.

The number of these farms has been systematically increasing during the transformation of the economy, and, consequently, the users of 333,900 farms in 2002 (17.1% of the total number of farms, that is – roughly every sixth farm, in 1991 – 10.1%), usually disposing of little areas of land (close to half of them belonged to the acreage group of 1–2 hectares and 85.8% of them – to the group of 1–5 hectares), occupying in total 1,150,300 hectares, abandoned agricultural use. They, however, would not get rid of land, but found a more profitable job in the non-agricultural professions. An important reason for stopping agricultural production is also constituted by the demographic situation, advanced age and not too good health of many farmers, while the objective reasons, including incidental ones, played a minor role.

The main source of income in these farms was employment and conduct of the non-agricultural business activity (47%), retirement and pension payments, as well as welfare benefits.

It should, however, be emphasised that in 2002 there were also 891 farms not conducting agricultural activity, with areas exceeding 50 hectares (5.2% of such farms), whose owners most probably treat the land owned as an investment, counting on the increase of its value after the accession to the EU, or as a habitat and the place of residence.

More than half of all these farms were located in five provinces: Masovia, Małopolska, Silesia, Subcarpathia and Western Pomerania. The scale of the phenomenon was the biggest in the provinces of Silesia and Western Pomerania, where every third farm would not conduct the agricultural activity, and the area of not used agricultural land amounted to 36,500 hectares (20.2%). A significant part of the farms without agricultural production existed in the suburban zones of the urban-industrial agglomerations. High percentages of the "idle" farms were observed in the northern and western provinces (Lubuskie – 28.0%, Pomerania – 25.7%, Lower Silesia – 23.6%, Varmia-Masuria – 21.0%).

Farms carrying out agricultural production uniquely for own needs

Farms, producing solely for own needs, do not provide the market-oriented output. In these terms, therefore, their status is similar to that of the previously characterised groups of the "idle" farms, without agricultural production. Yet, their users, not having sufficiently high revenues from the non-agricultural sources of upkeep, conduct agricultural production so as to complement the income through self-supply. The number of such farms displays a downward trend. In 2002 there were 206,200 such farms (10.6% of the total number of private farms), occupying 565,200 hectares (3.9%), and their average area was 2.8 hectares. More than half of them (53.3%) were located in two provinces of the South of Poland, in Subcarpathia (56,100 farms) and Małopolska (53,900), where they occupied the biggest percentage shares of agricultural land (20.3% and 18%, respectively). The share of farms, conducting agricultural production for their own needs in total value of the commercial production is marginal – 1.7%. Yet, they used 20.2% of the labour input in private agriculture. A significant share of arable land, owned by such farms, was fallowed – almost 42%. In the years 1996–2002 the number of these farms decreased by around 36,000. Revenue accruing from agricultural production was the main source of upkeep for 8% of them, while the primary basis for the actual upkeep of 40% of these farms were the retirement and pension benefits, paid to the persons, remaining in the same household with the agricultural producer. A significant area of land, occupied by the farms of this type ought to contribute in the future to the process of concentration of land and restructuring of the more commercially oriented farms.

FARMS OF THE LITTLE COMMERCIAL PEASANT AGRICULTURE

This type of farming, which is the most common in Poland, includes farms producing mainly for their own needs (with commercial production value up to 3000 PLN) and the little commercial farms, whose production to market has the value of 3000–10,000 PLN. This segment of the farm population contains 876,300 farms (44.9%), with the total area of agricultural land of 3,832,400 hectares (26.9%) and commercial production value of 2392.9 million PLN (8.8%). These farms, though, engaged 36.1% of the total labour force of private farming. Such farms were most frequent in south-eastern, eastern and central-eastern Poland, which was largely correlated with high density of agricultural population, high shares of small farms, the educational level and the (advanced) age of farmers.

Farms producing primarily for their own needs

In 2002 there were 496,800 farms oriented primarily at producing for their own needs (that is – reporting the value of commercial agricultural production below 3000 PLN). They accounted for one quarter of the total number of family farms (25.5%), occupied 1,629,900 hectares (11.5%) and engaged 20.2% of labour of the private farms. More than half of them were located in four provinces: Subcarpathia (75,200), Małopolska (72,300), Lublin (68,200) and Masovia (59,400). In relative terms they occupied the biggest areas of agricultural land in the south-eastern provinces: Subcarpathia – 33.5%, Małopolska – 27.8%, but also in Lublin, Lubuskie and in the northern part of Lower Silesian province. These farms are little specialised, and little effective, their production being meant both for self-supply and – the surpluses – for sale. Commercial production of these farms was, however, very low (1.7% of total commercial production of family farms), the average value per farm being at 900 PLN. In terms of characteristic features of the users and production potential, these farms do not differ too much from those producing exclusively for own needs. Numbers of livestock raised on these farms were very low (on the average – 0.8 of cattle units and 1 pig unit, 16.5 of poultry), which clearly indicates the limited possibilities of selling surpluses of animal products. Significant areas of land were fallowed and laid waste in these farms – 252,000 hectares (21.8%). The number of such farms systematically decreases, by some 35,000 per annum, but, alas, they mainly pass to the first segment of the farm population (not conducting agricultural production). Most probably, due to the barrier, constituted by the lack of adequate capital, only few of these farms will adapt to the requirements of the market of the EU.

Little commercial farms producing mainly to market

This group contains farms turning out to market the agricultural produce worth between 3000 and 10,000 PLN. They constitute the second biggest group of Polish family farms (after the farms, producing mainly for their own needs). There are 379,500 such farms (19.4%), occupying 2.2 million hectares of agricultural land (17.6%), and supplying commercial products of the value of 1945 million PLN (7.2% of the respective value for private farming). These farms are somewhat bigger in terms of their area (most of them belong to the group of 5–20 hectares) and are characterised by an important, but differentiated production potential. They dispose, to a large extent, of definite development perspectives (this assessment applying to some 50% of these farms) and have the chances for standing up to the challenge of competitiveness on the EU market. Their biggest number exist in the province of Lublin, in eastern Masovia, in Podlasie, somewhat less on the fertile uplands of southern Poland and in the Sudety Foothills, the least – in the northern and western regions of the country.

FARMS OF THE MEDIUM COMMERCIAL AGRICULTURE

The segment of the farm population, featuring medium degree of commercialisation, was represented by 319,700 farms (16.4% of the total), supplying to the market production worth 10–30,000 PLN. These farms occupied the area of 3,259,600 hectares (22.8%) and engaged more than quarter of the labour force of private agriculture, to produce 19.1% of the commercial output from private farms. These are mainly family farms, having 10–30 hectares of area (the average being above 10 hectares), basing on own labour pool. The farms in this group are exposed to the risk of barely renewing their production potential, while they turn out, at the same time, most labour intensive production, competitive on both domestic and foreign markets. These farms turn out more than 50% of the domestic production of fruits and vegetables, and breed one third of all the livestock.

The biggest number of farms of this type exist in central Poland (28% of the total number of farms in the province of Masovia, 29.7% in Cuiavia-Pomerania, 27% in Lodz province, 25.2% in Wielkopolska), in north-eastern Poland (30.8% of farms in the province of Podlasie and 25.2% in Varmia-Masuria), and on the Upland of Lublin (23% in the province of Lublin).

HIGHLY COMMERCIAL FARMS

The highly commercialised agriculture encompasses in Poland the farms producing mainly to market, with the value of goods produced for sale exceeding

30,000 PLN. This type of farming is currently the most expansive component of Polish agriculture, referred to as "Polish agribusiness". These farms are largely similar to those dominating in many developed countries, with the levels of technical and social effectiveness comparable to those of the non-agricultural sectors, and capable of competing on the domestic and international markets. The revenues, generated by these farms, allow for the renewal of the production potential, modernisation and introduction of innovations.

There were 319,700 (11%) of such farms, occupying altogether 5,430,000 hectares (38.2%) of agricultural land, in which 628,000 fully employed persons were engaged (31%). They produce, though, as much as 72.1% of the commercial output of private farms in Poland.

The biggest numbers of these farms exist in Wielkopolska, in the region of Vistula river delta (Żuławy), in Cuiavia, in the north-western part of Masovia, and in the eastern part of Podlasie.

In this segment larger farms dominate (86.6% of farms from the group of more than 50 hectares each, and 74.2% of those having 30–50 hectares), side by side, however, with the highly specialised smallest farms (0.2% of the latter). A particular significance ought to be attached in this segment to almost 77,000 farms (35.6%) with commercial production worth 50–100,000 PLN, and to 39,300 farms (18.7%) with commercial production worth more than 100,000 PLN. The latter group of farms turned out in the provinces of Wielkopolska, Varmia-Masuria, Western Pomerania, Pomerania, Lubuskie and Lower Silesia (largely the privatised former state farms) more than 50% of the commercial output from agriculture.

It is characteristic, though, for the farms of this segment, that they conduct extensive crop production based on the cereal monoculture (area payments from the EU allow for the attainment of high profits), and only a part of these farms are interested in developing animal husbandry.

Expansion of this segment of Polish agriculture shall be taking place through the increase of commercial production, achieved due to further modernisation of farms and intensification of links with the food processing industry and with the market, and to a lesser extent through the increase of the number of such farms and of the area of agricultural land.

POLISH AGRICULTURE AFTER THE ACCESSION TO THE EUROPEAN UNION

The period, having elapsed since May 1st, 2004, when Poland joined the European Union, is too short to make all the consequences of accession surface, and the statistical data, as well as scientific studies are insufficient for the comprehensive assessment of the changes taking place and the adaptation processes.

Still, it can be stated on the basis of existing data and analyses that the membership in the EU significantly changed the conditions of farming in Poland, namely:

- the pessimistic forecasts that the Polish food market would have been "flooded" by the products imported from the EU have not been fulfilled, similarly as the ones that the Polish land would have been bought out (in the years 2004–2006 only 1005 hectares had been purchased);
- membership in the EU radically changed the economic system of the Polish agriculture; the subsidies addressed at agriculture (not counting the ones supporting the social insurance scheme for farmers nor the preferential credit schemes) increased from 1.8 billion PLN in 2003 to 14.7 billion PLN in 2006 and to around 17.5 billion PLN in 2007; a significant increase of revenues from the sale of the agricultural products, resulting from the increased sales due to growing demand and evening out the prices with the countries of the European Union, given the simultaneously lower increase of the prices of production means, also contributed to the increase of farmer incomes (see Table 4);
- economic growth (up to 6.5% per annum) and low inflation, along with the increase of incomes of the population, were conducive to the activation of demand for food products (their sale increased by 40% in comparison with 2003), which also brought an increase of incomes of agricultural producers;
- membership in the EU became the source of a very good business situation for farming, expressed through a high rate of increase of exports (whose value in 2007 was 2.5 times bigger than in 2003), and this despite the poor yield of cereals in 2006 and of fruits in 2007, as well as the high value of the Polish zloty, lowering the profitability of exports; in the period 2003–2007 the rate of increase of exports was higher (144%) than the rate of increase of imports (120%), which resulted in a significant improvement of the overall trade balance (fourfold increase, from 454 million € to 1359 million €, and with the countries of the EU even five-fold increase);
- the increase of exports resulted, in particular, from high competitiveness of Polish producers, being the effect of both high quality of food, produced in good environmental conditions, but primarily from the competitive price advantage, being the consequence of the lower costs of production, especially low labour costs;
- opening up of the EU market, side by side with the measurable financial benefits, brought also a higher quality of food products, which have to fulfil rigorous EU standards;
- membership in the EU has not impacted significantly upon the level of agricultural production (global production having increased only by 2–3%), especially crop production; there were slight increases of production of cereals, pork, milk and fruits, somewhat higher of vegetables, rapeseed, and even

higher of poultry meat and eggs; there was, on the other hand, a decrease of production of sugar beets, potatoes and other root crops;
- the increase of farmer incomes did not contribute, though, to the increase of investment value in agriculture (their value in current prices increased from 2.2 billion PLN in 2003 to 2.7 billion PLN in 2006); there has been, though, the advantageous phenomenon of the increase of demand for mineral fertilisers (by 27% in the years 2003–2007), as well as pesticides and herbicides;
- there has been a significant acceleration of development of food processing; production of food processing industry in constant prices was higher in 2007 by 37.5% than in 2003; nowadays, this industry is the most modern one in the entire EU;
- the area payments, as well as product-oriented subsidies, associated with the acreage of farms, supported to a higher extent the bigger farms, contributing to their production and investment capacities;
- the compensatory payments within the LFA – Less Favoured Areas – scheme, as well as the payments to the little commercial farms, had the character of a short-term support for the farmer incomes, and only in a very limited degree contributed to the improvement of production effects, not resulting in the improvement of the structure of Polish farming; likewise, the structural rents have not resulted in a significant improvement in these terms, since only 50,000 farmers participated in this scheme, having sold their land to other farmers and thereby having abandoned farming.

Table 4. Additional cash flows of the farms (in billion PLN, increase with respect to the state as of 2003)

Flow item	2004	2005	2006	2007
1. Agricultural subsidies	0.8	7.5	8.4	9.9
2. Increase of revenues from sales	6.3	4.2	6.5	13.2
3. Increase of expenditure on production means	3.5	4.7	5.7	8.3
4. Increase of monetary incomes (1+2-3)	3.6	7.0	9.2	14.8

Source: R. Urban (2007).

CONCLUSION

The period of transformation, 1989–2007, has not brought a radical change in Polish agriculture, while the disadvantageous macroeconomic conditions (especially in the first years after the shift to the market economy) caused stagnation, or even regress in its development. Evening out of the interregional differentiation in the level of development of agriculture did not occur, and the conditions for this development have not changed significantly. The regions backward in

the past developed too slowly, or remained in stagnation, while in the regions, where the level of development of agriculture had already been the highest, underwent positive processes of restructuring and modernisation.

Yet, the rate of transformation of Polish agriculture seems, in my opinion, to be determined. It cannot be a revolutionary process, which might bring about significant social tensions, but only a path of evolutionary, slow, but controlled changes, forced both by the market mechanisms and by the interventions of the state.

In the years to come the process of structural polarisation of farms will advance, and there will be an improvement of the agrarian structure. Due to a limitation on the possibility of increasing the areas of farms on the basis of land from the privatised former state farms, the sole determinant for the process of concentration of agricultural land will be the decrease of the number of private farms, and especially the reduction of the excess employment in agriculture, and their transfer to the non-agricultural sectors of economy. Yet, low mobility of the agricultural population, low educational level and difficulties on the labour market cause that such chances ought to be sought, first of all, in the multi-functional development of rural areas – development of farming-oriented service, social and technical infrastructure, of agro-tourism, etc.

Likewise, no essential changes will occur in the structural pattern of the types of Polish farms. It does not seem plausible that in the nearest future the welfare-based farms could be disappearing. Their number might even increase. Currently, in conditions of lack of non-agricultural jobs, both in towns and in the countryside (especially for the workers with low level of skills), and of excess of labour force and land, given the increasing competitiveness of agriculture, there is no alternative for this type of agriculture. The fundamental strategic problem, on the other hand, is to create the chances for a decent living for the young, originating from this social environment, through a system of scholarships and the development of the educational system, adapted to the requirements of the modern society and economy, and the labour market.

The increasing competitiveness of agriculture, along with the disparity of the farming incomes, shall most probably bring about essential changes in the group of little commercial peasant farms. For a limited group of dynamic producers an alternative is constituted by the passage towards the group of medium commercial farms, or even the highly commercial ones, while for the majority of farmers – a gradual phasing out of their activity in the domain of agriculture and a shift to the non-agricultural activities, possibly also specialisation of production, adapted to market conditions (including ecological farming), or, finally, a complementary mixture of the spheres of agricultural and non-agricultural activity. The use of the structural funds of the EU might stimulate this process to a large extent.

The share and the significance of the sector of large, highly commercial farms shall increase (due, in particular, to the area payments). These farms, though, ought to change their production profile (abandoning the cereal monoculture towards inclusion of animal husbandry and the more labour intensive orientations in crop production).

The group of medium commercial farms (319,000 in 2002), mostly family farms, shall need support in a particular manner, not only because they correspond to almost 520,000 jobs for agricultural population, but also because they turn out the most labour intensive and most competitive products (30% of the domestic animal production, 50% of fruit and legume production). Besides, these farms are the ones, which to the highest extent fulfil the environmental and production criteria of sustainable agriculture.

In the transformation of Polish agriculture first of all the chances and all the possibilities ought to be taken advantage of that are associated with the membership in the EU and the funds meant for the development of farming and the rural areas. The membership signifies that Poland is included in the Common Agricultural Policy, the programmes of the structural funds and of other community funds. Since May 1st, 2004, there has been, in fact, abandonment of the agricultural and rural policy to date, with Polish agricultural market being incorporated into the Common European Market, which means liquidation of limitations in trade of Poland with other member countries of the EU, adoption of the outer custom tariffs, as well as inclusion in the EU system of market intervention. In the framework of realisation of the community policies and the negotiated conditions in the first years after the accession, 2004–2006, Polish agriculture and rural areas obtained from the budget of the EU around 7.2 billion €, that is – 2.4 billion € per annum, on the average, approximately twice as much as the budgetary expenditures had been on agriculture and rural areas in 2002. In the following years the means for these purposes shall be even much bigger.

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Tomáš DOUCHA, Emil DIVILA
Research Institute of Agricultural Economics
120 58 Prague 2, Mánesova 75, Czech Republic
doucha@vuze.cz; divila@vuze.cz

CHANGES IN CZECH AGRICULTURE IN THE YEARS 1990–2005

Abstract: The document presents the main tendencies in the recent transformations of the Czech agriculture, reflecting the stages of the Czech agricultural policy in the period of 1990–2005. The transformation consisted in the process of property restitution and privatisation of agricultural assets, followed by the process of restructuring, meaning the changes in production and land use structures and in the economy of the sector and individual farm categories. The emphasis is placed on the changing role of the Czech agriculture, the development of its multifunctionality, linked with environment and rural areas.

Keywords: Czech Republic, agriculture, transformation, farm structure, farm economy, land use, multifunctionality

INTRODUCTION

Like other sectors of the Czech national economy after 1990, also agriculture has entered the path of transformation, that is, adjustment to new social and economic conditions. For a number of reasons, this transformation has not been finished yet and has been even continuing after EU accession, under the conditions of the EU Common Agricultural Policy (CAP).

The paper presents the main tendencies in the up-to-date transformation of the Czech agriculture, which has been significantly influenced by the agricultural policies applied and by other conditions in the national economy, including the institutional development of the society. A specific emphasis is put on the present situation in the Czech agriculture and its multifunctional roles, linked with the environment and rural development.

The stages of the Czech agricultural policy in the period of 1990–2005 are defined in the first part. The main characteristics of the agriculture (farm structure, production, number of workers, etc.) during the reform period are presented in the next part, followed by an assessment of the present situation in the Czech agriculture after EU accession, from the point of view of its multifunctionality. Risks for the multifunctionality of the Czech agriculture after EU accession are presented in the conclusion section.

Figures characterising the developments in the Czech agriculture are based prevailingly on the annual Reports of Ministry of Agriculture and Research Institute of Agricultural Economics and on the databases of FADN and the Agricultural Policy Development of the Research Institute of Agricultural Economics in Prague.

STAGES OF THE CZECH AGRICULTURAL POLICY

Following the changes in the government and the external pressures, the Czech agricultural policy after 1990 has been developing in the stages, which are summarized in Table 1 (content of the stages) and in Table 2 (budgetary expenditures).

1990–1992: Shock therapy

The agricultural policy in the period of 1990–1992 was characterised by the following main features:

- Price liberalisation accompanied by the abolition of subsidies for food consumers (the so-called negative turnover tax applied in the previous regime).
- The acceptance and initial functioning of restitution and property transformation laws (the Land Law, the Transformation Law for original coops).
- Continuing support for restructuring and farm income, similar to the support from the previous regime (direct subsidies, market price supports).

1993–1994: Liberal policy

The right wing parties won the elections of 1992 and the agricultural policy in the period of 1993–1994 was characterised by large cuts in direct income support for farms. The investment support for restructuring changed from direct subsidies into interest free loans.

1995–1997: Restructuring

The agricultural policy in the period of 1995–1997 was characterised by the following main features:

- Continuing support for restructuring and stabilisation of the new emerging farm structure (41% of total budgetary support).

- Introduction of new support instrument for grassland in "less favoured areas" (LFA) as a maintenance of landscape.
- Support for environment/multifunctionality, oriented mainly at "LFA payments", but with newly emerging support for non-food use of agricultural production (mainly for biofuel).
- Higher level of the protection of domestic consumers through administrative barriers for imports (cereals, oilseeds, etc.).
- Protection of domestic producers on the general level agreed in the Uruguay Round of the GATT (approximately 2–2.5 times lower than the EU protection), only slightly eroded by bilateral and multilateral trade agreements (Central European Trade Agreement, etc.).

Table 1. Phases of the Czech agricultural policy 1990–2005

Phases/ /Domains	1990–1991 Shock therapy	1992–1994 Liberal	1995–1997 Restructuring	1998–2003 CAP like	2004–2005 CAP
Property transformation	Restitution laws – Land and Transformation (coops) laws	Capital market laws, land registration	Privatisation of state non-land assets	Privatisation of state land	Privatisation of state land
Market	Liberalisation, abolition of consumer subsidies, pre-reform protection, fixed EXR	State Fund for Market Regulation (SFMR), praparation for EU treaty and GATT, Custom Union with Slovakia	Erosion of autarchy: CEFTA GATT commitments, floating EXR	CAP like market measures, SFMR changing into intervention and payment agency, double profit, double zero agreements with EU	CAP measures, EU single market
Access to finance	Grants – advanced payment	Interest-free loans	Support and Guaranty Farm and Forestry Fund (SGFFF)	SGFFF, writing off debts, SAPARD	SAPARD Operational programme, SGFFF
Income support	socialist	abolished	gradually increasing	compensations for disasters, green oil	enormous increase (SAPS, TOP-UP)
Environment and RD	socialist	Landscape, land, water protection laws	Agricultural Law respecting multi-functionality, enlargement of protected areas	Agro-envi programmes, LFA payments, preparation for acquis	HRDP (incl. LFA payments), acquis (Nitrate Sensitive Areas), Good Farming Practices
General services – land consolidation/ reparcelling	Land consolidation law	very slow progress	very slow progress	very slow progress	slow progress
Summary	**Shock therapy, socialist support**	**Autarchic market, low supports**	**First concepts of multifunctionality, GATT commitments**	**Preparation for CAP and EU single market**	**CAP, EU single market**

Source: own compilation.

Table 2. Annual budgetary support for the Czech agriculture 1995–2005 according to policy goals

Phases/Goals	1990–1992[1)]		1993–1994		1995–1997		1998–2003		2004–2005	
	CZK mio	%	CZK mio	%	CZK mio	%	CZK mio	%	CZK mio	%
Restructuring	4278	41.72	3932	51.94	4635	41.38	5457	30.27	4878	16.13
Income	5098	49.72	3420	45.17	2208	19.72	6780	37.61	16,756	55.42
Environment	878	8.56	219	2.89	2469	22.04	5518	30.61	7993	26.44
Consumers	0	0.00	0	0.00	1888	16.86	271	1.50	609	2.01
Total	***10,254***	***100.00***	***7571***	***100.00***	***11,199***	***100.00***	***18,025***	***100.00***	***30,235***	***100.00***
PSE[2)]		**53**		**26**		**13**		**23**		**x**

1) Data available only for 1991 and 1992.
2) Producer Subsidy Estimate according to the OECD methodology.
Source: Database of agricultural policy, VUZE Prague; OECD Monitoring of Agricultural Policies.

1998–2003: CAP like policy

The agricultural policy in the period of 1998–2003, oriented at a gradual adjustment to the CAP and the future EU accession, was characterised by the following main features:

- Growing total level of support (by more than 60% in nominal terms compared with the previous period), particularly in the category of income support (38% of all budgetary support), based on CAP-like marketing organisations and measures.
- Growing share of support for environment and multifunctionality (31% of all budgetary support): the implementation of LFA payments and the continuing high level of support for non-food use (biofuel).
- Decreasing actual tariff protection through the implementation of new trade agreements with the EU ("double-profit", "double-zero" agreements), but still on a higher level than in the EU.

2004–2005: CAP

The Czech agricultural policy after EU accession can be characterised for the first years, 2004–2005, by the following main features:

- Sharp increase in the total level of budgetary support (by 68% compared with the previous period).
- Prevailing share of income support in the total budgetary support (more than 55%). Income support in the form of direct payments consists of decoupled SAPS[1] payments and coupled national complementary direct payments (the so-called TOP-UP payments). However, with a high share of coupled

[1] Simplified Administrative Payment Scheme.

TOP-UP payments, all the direct payments are functioning as coupled support in this starting period.

- Direct payments are conditioned by "Good farming practices", but with lower enforcement effects.
- Increase of support for environment and multifunctionality, with a prevailing share of LFA payments and a growing share of other support (biodiversity, rural development), but with a sharp decrease of the budgetary support for biofuel (as a consequence of EU regulations in this sector). However, owing to relatively weak payment conditions and other factors, LFA payments and some other environmental support types are functioning in the reality as additional direct payments.
- Entry into the EU single market with "zero" protection on it, but – compared with the pre-accession period – with a higher average level of protection against the rest of the world.

TRANSFORMATION OF THE CZECH AGRICULTURE IN THE YEARS 1990–2005

POSITION OF AGRICULTURE IN THE NATIONAL ECONOMY

The position of agriculture in the national economy during the transformation has reflected the general reduction of sources utilised in the sector (except, partly, for the land use) and the large decrease of its production (Table 4). The share of the primary sector (including hunting) in the Gross Domestic Product has dropped from about 7.4% in 1989 to about 2.6% in 2004 (when calculated according to the Economic Account for Agriculture, even to about 1.2–1.6% in the last years). This corresponded to the decreasing share of the sector in the total national employment, from about 9.4% in 1989 to about 2.9% in 2004. Taking into account lower total productivity of the sector (in spite of its increase by the factor of 2.7 during the transition), this reduction can be positively assessed, with both shares approaching the situation in the more developed EU countries.

FARM STRUCTURE – LAND USE AND OWNERSHIP

In 1989, almost 100% of the Czech Utilised Agricultural Area (UAA) was occupied by coops and state farms. Due to historical reasons, there were millions of original private land-owners; about 20% of the UAA was owned by the state and other public sectors. Land use was characterised by enormously large fields, adjusted to the prevailing large-scale, industrial way of farming.

During the transformation a new farm structure has emerged, based on:

- The Land Law functioning since 1991 and enabling:
  - restitution of ownership rights, almost totally suppressed during the communist regime, pushing forward new land lease contracts between land users and owners;
  - restitution of ownership titles related to land, subject to expropriation after 1948, which, together with other supports, has led to the re-establishment of family farms[2].
- The Transformation Law of 1992, as a special legislation for the restitution of non-land assets of socialistic coops (the distribution of the assets among people on the basis of claims, according to a special formula, resulting in a physical restitution of assets or in the issue of special transformation shares – bonds) and for the conversion of the coops into new (transformed) farms. The first wave of the transformation was realised in 1992–1993, resulting mainly in the establishment of transformed coops or limited liability companies. After 1993 and up till now there has been a process of a secondary transformation of new coops, especially into joint stock companies. The driving force for this second wave of the transformation is avoiding the settlement of the transformation debts toward the owners of the so called transformation shares and to enable concentration of ownership in few hands (particularly concerning the managerial buyout of shares).
- Privatisation of the state agricultural assets originally – after 1989 – leased to private farms:
  - privatisation of non-land assets by their original tenants mainly in 1994–1995;
  - privatisation of the state land since 2000 according to the State Land Privatisation Law[3].
- "Secondary restitution" of assets gained in the primary restitution, or restitution titles, respectively[4].
- Investment support for farms (direct subsidies – grants up to 1992, interest free loans in 1992–1994, interest subsidies and state guarantees since 1995,

[2] This kind of restitution has not been totally completed by 2005. Unsettled claims have been converted into special bonds to be applied with some priorities in the privatisation of the state land, or to be settled in cash by the state, respectively.

[3] The privatisation of the state land concerns about 15% of the Czech agricultural area. About 70,000 hectares of agricultural land, located especially in the border regions, have been annually brought onto the land market since 2002. The original tenants farming on the leased state land have some priorities in the privatisation, but the main part of the privatised land was being bought by other investors, partly by non-agricultural and foreign capital.

[4] The so called secondary restitution is a very important process in the property transformation of agricultural assets. It concerns e.g. physical assets gained by primary restituents, which were (sometimes immediately after restitution) sold to other people – real farmers, or restitution claims (bonds) to the state land, sold by restituents to real exchange agencies, etc.

EU support through the SAPARD Programme since 2000 and through Operational Programmes since 2004).

However, farm structure development has been strongly influenced also by the quality of the emerging land and capital market. The development of the land market has been hampered by the very slow progress in the land consolidation (re-parcelling) of cadastres, issuing in high transaction costs linked with any transaction on the market (physical identification of plots, physical access to plots, etc.). As a consequence, land leasing under a local monopoly power of land users is still the prevailing feature of the Czech land market. Nevertheless, the privatisation of the state land creates a temporary dynamics on the land market (each year about 60,000–70,000 hectares of the state land appear on the market, but under special legislative conditions).

Table 3 shows how the Czech farm structure, land use and land ownership look like after 15 years of transformation. The main conclusions derived from Table 3 are as follows:

- An extreme concentration in land use (about 5% of the largest farms occupy almost 75% of the UAA[5]). The dual structure in the land use stands against an extreme fragmentation in the land ownership (millions of small owners).
- Czech farms own only about 12–13% of land, the remaining part of the land is leased.
- Family farms occupy only about 13% of the UAA.
- Large individual farms (including partnership farms and limited liability companies) are the most dynamic farm category, occupying nearly a half of the UAA at present. Their share in the UAA (also supported by land privatisation) has been growing due to enlargement of family farms and also by formal or informal changes of those collective farms (coops, joint stock companies), where a property concentration or a concentration of economic power in the hands of its managers has been in the progress.
- From a different point of view, about two thirds of the UAA are occupied by "profit oriented" farms; the remaining one third of the UAA is occupied by "income oriented" farms with stronger self-employment behaviour.
- In the land ownership and land use, non-agricultural and foreign capital[6] has been increasingly penetrating during last years (as an obvious consequence of the present and expected profitability of the Czech farm/land sector).

[5] Utilised Agricultural Area represents approximately the area of Czech agricultural land eligible for direct payments. The acreage of the UAA (about 3.5–3.6 million hectares) differs from the total acreage of the Czech agricultural land (4.3 million hectares) based on the registration of ownership plots. A part of the difference (about 300,000 hectares) can be considered as abandoned land.

[6] It should be noted that according to the Czech laws foreigners cannot still "simply" buy the Czech agricultural land. However, Czech companies (owned by foreigners) or foreigners farming in the Czech Republic for several years are eligible to buy the land. Undoubtedly, there are also "white horses" – Czech citizens – who are buying the land for foreigners.

From the spatial point of view, the path dependencies and the agricultural reform policy have led to some differences in the farm structure among Czech regions:

- Large individual farms and limited liability companies have been developing particularly in the border regions, based mainly on the privatisation of the pre-reform and extremely large state farms. These state farms were established after 1948 in those (Sudeten) regions, from where the original German population was expelled following World War II.
- In spite of special support (particularly at the beginning of the reform) for reconstructing family farming, this farm category, for a number of reasons has not developed on the originally expected scale. Family farms are scattered throughout of the country, but are more concentrated around large towns and cities.
- Collective farms – coops and joint stock companies – dominate in more productive regions (e.g. in the South Moravia), but also in the large area of the Czech-Moravian Highland, in the middle of the country. This region is characterised by a higher agro-environmental sensitivity, with a higher share of land included in landscape, water and nature protected areas and with some environmental limits for farming.

Table 3. Shares of individual subjects in the Czech UAA[1)]

Farms/ /Owners	State	Municipalities	Farms--PE[2)]	Farms--LE	PP-LE	Other PP	Total 000 ha	Total%	Number	Average size (ha)
Subsistence			40				**40**	**1.11**	**19,189**	**0.2**
Family	30	5	205			185	**425**	**11.81**	**30,231**	**14.1**
Individual	320	10	65	60		1150	**1605**	**44.58**	**3704**	**433.3**
CF-M	125	5		40	75	395	**640**	**17.78**	**668**	**958.1**
CF-O	110	5		20	180	540	**855**	**23.75**	**667**	**1281.9**
Other	35						**35**	**0.97**	**180**	**194.4**
Total 000 ha	**620**	**25**	**310**	**120**	**255**	**2270**	**3600**	**100.00**	**54,639**	**65.9**
Total%	**17.22**	**0.69**	**8.61**	**3.33**	**7.08**	**63.06**	**100.00**			
Number	**1**	**6000**	**2000**	**28,000**	**50,000**	**3,000,000**	**3,086,001**			
Average size (ha)	**620,000**	**4.17**	**155.00**	**4.29**	**5.10**	**0.76**	**1.17**			

PE/LE = physical/legal entities; PP = physical persons; CF-M/O = coops and joint stock companies
M = with a power of management; O = with a power of owners; other companies included in the category of individual farms.
1) Utilised Agricultural Area 3,6 mil. ha, in 2004.
2) Land leased by PE to other categories of farms is included in OPP.
Source: Czech Statistical Office, Land Office, RIAE estimates.

Such land use and land ownership structures have some implications for the further development of the Czech agriculture and its multifunctional roles:

- In principle, there are high transaction costs accompanying any changes in the land use or in the land ownership. These costs entail passive behaviour of land owners on the land market, or serious barriers for land users, e.g., to the needed (and therefore supported) conversions of arable land into grassland, respectively ("land owners block this conversion").
- The risk of an extremely high leakage of direct payments out of agriculture and out of rural areas through the land ownership and leased land (an important number of land owners live in towns today). In the Czech Republic, and for the present, the leakage of support is hampered by a low flexibility of the land market, so the risk is more for the future.
- The prevailing profit orientation of farms represents another risk for multifunctionality. The continuing investment support for farm modernisation will evidently lead to a further reduction of labour, without proper motivation for the establishment of new job opportunities on those farms, if new non-agricultural activities are not sufficiently profitable.

INPUTS

Labour

After 1989 and particularly in the first half of the nineties there was a huge exodus of workers from agriculture. They left the sector:

- after the separation of non-agricultural activities (maintaining, repairing and construction services, manufacturing, etc.);
- by going to other sectors, especially the younger and the more educated workers (e.g. economists to the financial sector);
- to retire.

A large number of the released workers were thus absorbed in other sectors of the national economy and did not generate a significant pressure on the rural unemployment. The absorption capacity of the national economy was relatively high in the nineties, smoothing and facilitating the necessary reduction of labour inputs in the Czech agriculture.

During the period of 1990–2004 almost 75% of workers have left agriculture. Nevertheless, there is still need for a further labour reduction, mainly in the livestock production and in the staff of collective farms. In general, the Czech agriculture has not functioned both as a social buffer and as a generator of job opportunities in rural areas. To the contrary, the willingness of the dominating profit oriented farms to initiate new job opportunities for the released workers in non-agricultural activities is limited. On the other hand, there is (especially in

the livestock production) a continuous growth in the share of hired workers from abroad (from Ukraine, Moldova and other eastern countries).

The prices for labour in the Czech agriculture were extremely high in the previous regime and the wages in agriculture were almost by 10% higher compared with the average in the national economy. It should be also stressed that the members of coops did not personally pay any taxes, social and health insurance. During the reform, as a part of the process of price adjustments, the wage parity to the average of the national economy has been gradually decreasing, reaching about 72% in 2004.

Fertilizers

The development in the consumption of fertilizers during the period 1989–2004 (see Table 4) to a large extent copied, with a one or two year delay, the development in the economic situation on farms. After the price liberalisation in the beginning of the nineties of the last century the price scissors between the farm-gate prices and input prices enormously opened (see Figure 1) and the economic situation of farms was bad at that time. Consequently, an extreme reduction in the consumption of fertilizers (and pesticides) occurred, down to one fourth in 1992–1993 compared with 1989. However, since 1995, reflecting a steady improvement of the farm economy, the consumption of fertilizers (and pesticides) has been gradually increasing, reaching almost 50% of the 1989 level after EU accession in 2004.

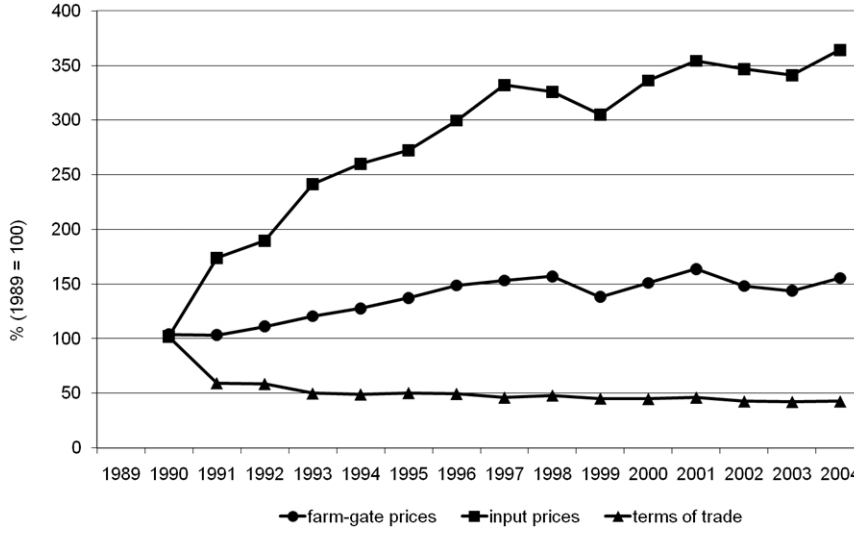

Figure 1. Terms of trade for the Czech agriculture 1990–2004
Source: calculations of authors based on indicators of the Czech Statistical Office.

Table 4. Indicators of the Czech agriculture in 1990–2004 (annual averages)

Indicator	Unit	1989	1990–1992	1993–1994	1995–1997	1998–2003	2004	Index 2004/1989
Position in the national economy								
Share in GDP[3)]	%	7.4	5.5	3.1	3.7	2.8	2.6	35.14
Share in employment	%	9.4	8.2	5.0	4.8	4.6	2.9	30.85
GAO[1)]/worker	CZK 000	204	206	314	366	439	548	269.12
Level of production								
GAO	CZK bio	108.6	85.0	81.2	79.6	74.3	77.3	71.18
– crop production	CZK bio	49.0	35.7	36.4	35.8	33.4	38.9	79.39
– livestock production	CZK bio	59.6	49.3	44.8	43.8	40.8	38.4	64.43
Crops								
Agricultural area[4)]	000 ha	4307	4289	4283	4280	4278	4265	99.02
Share of arable land[2)]	%	75.3	74.9	74.1	72.7	72.0	71.6	95.13
Grassland[5)]	000 ha	705.1	735.3	806.2	888.5	886.0	858.1	121.70
Cereals	000 ha	1661.9	1611.6	1690.0	1614.3	1594.2	1609.5	96.85
Oilseeds	000 ha	121.5	152.4	220.6	290.6	413.9	382.4	314.73
Sugar beet	000 ha	126.6	120.3	98.9	96.4	72.4	71.1	56.16
Potatoe	000 ha	115.3	111.0	89.8	78.7	56.8	42.1	36.51
Hopgardens	000 ha	10.5	10.0	9.0	8.0	6.0	5.8	55.24
Livestock								
Cows	000 heads	1248	1156	881	740	617	573	45.91
– suckler cows	000 heads	0	0	0	28	86	136	x
Milk yield	l/year	3982	3787	3910	4261	5363	6006	150.83
Sows	000 heads	312	317	309	312	299	251	80.45
Poultry	000 heads	32,479	32,005	26,596	27,379	29,288	25,494	78.49
Agricultural trade								
Imports	CZK bio	20.4	21.4	35.9	54.0	66.4	93.5	458.33
Exports	CZK bio	11.5	21.1	30.5	35.7	45.3	61.5	534.78
Trade balance	CZK bio	–8.9	–0.3	–5.4	–18.3	–21.1	–32.0	359.55
Labour								
justrightNumber of workers	000 pers.	533.1	412.2	258.7	217.5	169.3	141.0	26.45
Wage parity[6)]	%	109.0	101.2	85.9	81.5	74.1	71.8	65.87
Other inputs								
Fertilizers (NPK)	kg p.e./ha	222.8	106.2	72.2	80.3	79.8	99.4	44.61

1) Gross Agricultural Output, at 1989 constant prices.
2) Share of arable land in the total agricultural area.
3) Agriculture and hunting.
4) According to the Czech Cadastral Office (the sum of ownership parcels).
5) Since 2003: changes in the methodology.
6) With respect to the national economy averages.
Source: Reports on the situation of the Czech Agriculture 1994-2004. Ministry of Agriculture – RIAE.

PRODUCTION

As a consequence of new market conditions (see Figure 1 – the development of farm-gate and input prices 1989–2004) and in spite of huge income support (mainly in the form of direct payments coupled with production) the Czech agricultural production, particularly livestock production, has significantly dropped after 1989. This is evident from the figures of Table 4. The Gross Agricultural Output has been steadily decreasing during the transformation. Compared with 1989 it has dropped in 2004 by about 30%, of which the crop production by about 20% and the livestock production by more than 35%.

In crop production, the decrease after 1989 concerned particularly these commodities, which are more dependent on labour inputs: sugar beet (limited, however, by the production quotas since 2000), potatoes, vegetable and permanent crops (attacked especially after EU accession by competitors from other EU countries, including Polish producers). However, the acreage and production of oilseeds has increased almost 4 times, especially as a consequence of large supports for bio-fuel applied since 1993 (partly reduced after EU accession). The acreage of cereals has remained approximately on the pre-reform level, generating in "good years" extreme surpluses of grain, accompanied by a large decrease of farm-gate prices.

In the livestock sector, the largest decrease after 1989 concerned the cattle sector, limited also by the implementation of the milk quotas since 1998. The increase in milk yield by more than 50% under the quota system has resulted in large reduction of dairy cows herds, which has not been sufficiently compensated by the higher number of suckler cows. The pig and poultry production, largely carried out in large industrial factories without land, has slightly decreased; the reduction of herds by about 20% has been partly compensated by a higher effectiveness in production.

As a summary, the Czech agriculture even under the conditions of the EU single market has maintained its competitiveness, particularly in those commodities, which are not much dependent on the quantity and quality of labour and which can utilise the economies of scale in the still prevailing large-scale farms and on huge fields. To the contrary, the competitiveness is much lower in the production of commodities, which depend much more on the quantity and quality of labour or technology, or on natural conditions, respectively. The technical efficiency (measured e.g. by the quantity of production per labour unit) in the cattle breeding is still by about 50% lower than in the EU-15 countries (FAL 2005).

AGRICULTURAL TRADE

As concerns agricultural trade, the Czech Republic even before 1989 was a net importer, with a permanent negative trade balance. Imports represented

particularly the non-competitive products, like tropical fruits and vegetables, spices, etc. During the transformation, the negative trade balance has enormously increased (see Table 4), in spite of large and permanent export subsidies since the beginning of the reform (especially for dairy products and cereals). Particularly during the last years and after EU accession, the growth of the negative trade balance has been generated also by the increasing exports of agricultural raw materials (grains, oilseeds, milk, young cattle, pigs, etc.) to other EU countries, accompanied by the increasing imports of processed products (meat, dairy products, etc.). This tendency has been still continuing, caused by the conditions on the EU single market, by a lower efficiency of the Czech processing industry and by some impediments in the marketing and logistics in the Czech chains.

SECTOR AND FARM ECONOMY

The development of the economic situation in the Czech agricultural sector during the reform in nominal terms is presented in Table 5. The available (comparable) figures from this period show a volatile sector economy, reflecting the stages of the Czech agricultural policy and the general economic environment of farms. The situation in the period of 1998–2003 is characterized by heavy losses, because of disasters (droughts, floods), occurring almost every year, and not fully compensated from the side of the government. The situation was bad particularly in 2003. After EU accession the economy of the sector showed an outstanding improvement, caused mainly by an enormous increase of support (e.g. almost 60% increase of the net value added per AWU in 2004–2005 compared with the period of 1998–2003).

Table 5. Economic situation in the the Czech agriculture in 1990–2004 (annual averages)

Indicator	Unit	1989	1990–1992	1993–1994	1995–1997	1998–2003	2004–2005	Index 2004–5/1998–2003
Operational surplus[1)]	CZK mio	n.a.	n.a.	–991	3107	–1357	8091	x
NVA/AWU[2)]	000 CZK	n.a.	n.a.	n.a.	160.4	141.4	224.5	158.77
Indebtedness – LE[3)]	%	n.a.	n.a.	n.a.	57.3	48.1	45.3	94.10
Indebtedness – PE[3)]	%	n.a.	n.a.	n.a.	31.0	19.4	14.7	75.82

1) According to the Economic Account for Agriculture.

2) Income from factors/AWU = Indicator "A" of the Economic Account for Agriculture (nominal terms).

3) Outside capital/Total capital * 100; LE = farms as legal entities; PE = farms as physical entities.

Source: Reports on the situation of the Czech Agriculture 1994–2004. Ministry of Agriculture – RIAE.

The indebtedness of farms provides another view on farming economy. In principle, the Czech farms have been indebted by three generations of debts during the transformation:

- pre-reform debts to the state (starting to be written-off after 1995);
- transformation debts:
  - transformation shares of coops resulting from their transformation in 1992–1993 according to the law: debts to private persons, so far not fully settled by descendant farms and in spite of more (unsuccessful) attempts from the side of some political parties to find a feasible solution, still being a "time bomb" for the future;
  - interest-free loans, given by the government to new farms in 1992–1994 (starting to be partly and gradually written-off after 1995);
  - debts to the state for the privatised state non-land assets (since 1994–1995; starting to be reduced after 1998) and for the privatised state land (since 2000);
- new debts due to bank credits, especially for investments on farms.

Figures in Table 5 show that particularly farms as legal entities, as descendants of original coops and state farms, are still seriously indebted. The rate of indebtedness (outside capital to total capital) is still higher than 45%, compared with a lower indebtedness of farms as physical entities. It is, however, evident that any solution to this situation from the side of the government is and would be accompanied by a "moral hazard".

The situation in the farm economy, by individual farm categories, in 2004 compared with 2003[7] is presented in Table 6. It is evident that the EU accession, accompanied by a sharp increase of support, has had an enormous positive impact on the economy of almost all farm categories, except for farms more oriented at horticulture, permanent crops, pig and poultry production. These farms have been more attacked after EU accession by new market conditions and by the competition on the EU single market.

Nevertheless, the real "winners" during the last years under the CAP-like (before EU accession) or under the CAP conditions (after EU accession) are large individual farms (see Table 7). Considering the years 2003–2004, the net value added per AWU[8] in this farm category is by almost 60% higher than on collective farms (coops and joint stock companies), as generated by a very high production extensity (production per hectare two times lower than on collective farms) and by a very low labour intensity (1.63 AWU/100 hectares, compared to 4.22 AWU/100 hectares on collective farms). Farms as limited liability companies are the "follow-up" winners, with indicators very similar to the ones for the

[7] Based on the available FADN data.
[8] Annual Working Unit.

Table 6. Farm economy by individual farm categories

Legal entities	Coops			Joint-stock companies			Limit.liability companies					
	2003	2004	Index	2003	2004	Index	2003	2004	Index			
NVA/AWU (000 CZK)	162.7	301.8	185.5	185.3	301.0	162.4	215.7	378.3	175.4			
Production/ha (000 CZK)	30.5	36.1	118.4	36.0	39.6	110.0	25.9	29.8	115.1			
AWU/100 ha	4.26	4.05	95.1	4.48	4.22	94.2	3.04	2.76	90.7			
Interim consumption/Production (%)	75.35	70.73	93.9	74.40	70.18	94.3	75.99	72.94	96.0			
Depreciation/Production (%)	8.19	7.10	86.7	8.02	8.00	99.8	7.55	6.05	80.1			
Operational subsidies/ha (CZK)	2446	4772	195.1	2560	4654	181.8	2753	4624	168.0			
Physical entities (PE)	**to 50 ha**			**51–100 ha**			**101–300 ha**			**above 300 ha**		
	2003	**2004**	**Index**	**2003**	**2004**	**Index**	**2003**	**2004**	**Index**	**2003**	**2004**	**Index**
NVA/AWU (000 CZK)	119.5	202.6	169.5	157.9	305.9	193.7	302.0	463.9	153.6	375.2	492.6	131.3
Production/ha (000 CZK)	29.9	32.6	109.0	24.7	25.6	103.6	21.3	21.1	99.1	15.8	19.0	120.3
AWU/100 ha	5.02	4.97	99.0	3.04	2.91	95.7	2.00	1.79	89.4	1.26	1.64	130.4
Interim consumption/Production (%)	69.66	66.41	95.3	72.23	67.09	92.9	68.81	67.65	98.3	73.75	68.09	92.3
Depreciation/Production (%)	13.48	12.49	92.7	14.55	12.49	85.8	12.52	11.00	87.9	11.86	10.11	85.2
Operational subsidies/ha (CZK)	1310	3677	280.7	1748	4092	234.1	2407	4151	172.5	2614	4135	158.2
Regions (according to LFA[4])	**Hilly[1]**			**Other than hilly[2]**			**Partly LFA[3]**			**non-LFA**		
	2003	**2004**	**Index**	**2003**	**2004**	**Index**	**2003**	**2004**	**Index**	**2003**	**2004**	**Index**
NVA/AWU (000 CZK)	177.8	297.6	167.4	165.7	297.8	179.7	177.8	311.7	175.3	201.5	338.3	167.9
Production/ha (000 CZK)	21.4	24.6	115.0	26.2	30.0	114.5	34.5	34.4	99.7	36.7	41.4	112.8
AWU/100 ha	3.49	3.38	97.0	3.73	3.46	92.9	4.35	3.50	80.5	4.16	4.01	96.4
Interim consumption/Production (%)	78.20	74.56	95.3	76.55	72.84	95.1	74.84	73.23	97.8	72.93	67.48	92.5
Depreciation/Production (%)	9.13	7.96	87.2	8.20	7.73	94.2	8.23	6.85	83.3	8.32	7.84	94.2
Operational subsidies/ha (CZK)	3741	6049	161.7	2562	4858	189.6	2453	4599	187.5	2226	4042	181.6

Production orientation	Crops on arable land			Horticulture			Permanent crops			Milk		
	2003	2004	Index	2003	2004	Index	2003	2004	Index	2003	2004	Index
NVA/AWU (000 CZK)	191.3	343.5	179.6	236.1	186.3	78.9	294.0	222.5	75.7	164.1	268.5	163.6
Production/ha (000 CZK)	30.3	35.4	116.8	148.7	123.2	82.9	79.0	87.5	110.8	25.7	31.4	122.2
AWU/100 ha	3.65	3.44	94.1	20.41	19.62	96.1	14.81	14.97	101.0	4.46	4.53	101.5
Interim consumption/Production (%)	73.37	68.59	93.5	61.50	61.02	99.2	35.27	47.10	133.5	76.32	73.71	96.6
Depreciation/Production (%)	8.83	7.97	90.2	7.45	11.83	158.8	9.05	16.37	180.8	8.08	7.32	90.6
Operational subsidies/ha (CZK)	2208	4114	186.3	2931	3771	128.7	792	1809	228.4	3614	6497	179.8
Production orientation	**Cattle breeding**			**Pigs and poultry**			**Mixed production**					
	2003	**2004**	**Index**	**2003**	**2004**	**Index**	**2003**	**2004**	**Index**			
NVA/AWU (000 CZK)	195.7	343.5	175.5	231.7	146.8	63.4	171.5	302.0	176.1			
Production/ha (000 CZK)	11.7	13.9	118.8	186.4	162.5	87.2	29.7	34.1	114.8			
AWU/100 ha	2.40	2.01	84.1	14.55	17.36	119.3	3.99	3.80	95.2			
Interim consumption/Production (%)	89.25	88.14	98.8	76.02	73.97	97.3	75.99	72.27	95.1			
Depreciation/Production (%)	11.25	8.71	77.4	6.59	12.39	187.9	7.99	7.13	89.2			
Operational subsidies/ha (CZK)	4923	6677	135.6	2748	4654	169.4	2548	4875	191.3			

1) More than 50% of agricultural area in the LFA-H category.
2) More than 50% of agricultural area in the LFA-O and S categories, unless the LFA-H category is lower than 50%.
3) Agricultural area ranged in LFA, but not under point 1) and 2).
4) LFA = Less Favoured Areas according to the definition.
Source: FADN database 2003 and 2004, RIAE Prague.

large individual farms. To the contrary, the smaller individual farms – family farms – show the worst index values.

Table 7. Characteristics of farms by legal status

Indicators – 2003 + 2004	Coops + Joint stock companies	Limitied liability companies	Physical entities up to 100 ha	Physical entities with more than 100 ha
Deviation from the sample average (%)				
Net Value Added/AWU	–4.92	21.14	–24.97	52.19
Production/ha	8.44	–16.09	–24.10	–43.73
AWU/100 ha	10.97	–25.00	–10.01	–57.17
Interim consumption/production	–0.12	2.03	–3.28	–3.07
Depreciation/production	–0.80	–15.34	67.86	57.56
Operational subsidies/ha	–0.35	4.91	–26.77	–10.15
Share of arable land in total acreage	3.60	–6.99	–3.17	–11.19
LU of ruminants/100 ha	9.00	–20.21	–23.43	–50.93
Share of LFA	–3.41	–3.72	–2.21	14.13
Share of non-agricultural incomes in total incomes	–1.81	30.26	–46.45	–68.17
Share of non-agricultural production in total production	–0.25	17.78	–55.63	–46.86
Absolute values				
Net Value Added/AWU	221,082	281,675	174,472	353,873
Production/ha	35,201	27,238	24,638	18,264
AWU/100 ha	4.22	2.85	3.42	1.63
Interim consumption/production	73.70	75.29	71.37	71.52
Depreciation/production	7.73	6.60	13.09	12.28
Operational subsidies/ha	3377	3555	2481	3044
Share of arable land in total acreage	83.30	74.79	77.86	71.41
LU of ruminants/100 ha	35.59	26.05	25.00	16.02
Share of LFA	48.30	48.14	48.90	57.07
Share of non-agricultural incomes in total incomes	15.53	20.60	8.47	5.04
Share of non-agricultural production in total production	6.95	8.20	3.09	3.70

Source: FADN data 2003 and 2004.

CZECH AGRICULTURE AND ITS MULTIFUNCTIONALITY

How the Czech farms have been reacting to policy goals and measures related to the environment and rural development (RD)? The main indicators used to elucidate this question are shown in Table 8.

Table 8. Indicators of multifunctionality – Czech agriculture

Indicator	Unit	1989	1995	2004	Index 2004/1989
Land abandonment	000 ha	300	300	300	100.00
Share of arable land in agricultural land	%	75.00	73.00	71.70	95.60
Share of land threatened by erosion	%	35.00	33.00	33.00	94.29
Share of ecological farming in agricultural land	%	0.00	1.00	5.97	x
– of which on arable land and permanent crops	%	0.00	0.50	7.70	x
Number of cows (dairy and suckler)	000 heads	1248	768	574	45.99
Number of sheep	000 heads	399	80	140	35.09
Number of workers in agriculture	000 pers.	533	222	141	26.45
Share of non-agricultural incomes in total farm incomes	%	30.00	20.00	16.00	53.33

Source: calculations of authors based on indicators of the Czech Statistical Office.

LAND ABANDONMENT

There are no official statistics on the land abandonment. However, the official acreage of the Czech agricultural land, based on the registration of parcels/land owners, is about 4.3 million hectares. The acreage of the UAA, based on the registration of land blocks used by farms and eligible for EU supports, is only about 3.6 million hectares. A part of the difference, i.e. of the 0.7 million hectares – about 0.3 million hectares – can be assigned as an abandoned land. The highest differences are identified particularly in the border regions[9]. Considering a relatively high direct payments per hectare and a natural effort of farmers to increase the acreage of their eligible land, the land abandonment can be mainly explained by administrative and physical discrepancies between the registered plots and the registered land blocks[10]. In any case, the land abandonment does not seem to belong among the main problems in the Czech agriculture and RD.

WATER QUALITY

To improve water quality by farm practices is a long-term process. The overland (area) water quality has started to improve since the beginning of the transformation because of the rapid and deep reduction in the consumption of fertilizers and pesticides on farms. However, there are still the following threats:

[9] For example, the share of the UAA in the total official acreage of agricultural land amounts to about 40% in the north-western districts.

[10] Land parcel is a different category than land block. Beside this, parcels identified as agricultural land, have been partly naturally afforested (by a succession, etc.), without adequate changes in their registration.

- increasing financial resources of farms, particularly after EU accession, leading to a gradual recovery in the consumption of fertilizers and pesticides (partly limited by the implementation of the nitrate directive since 2004, applied in the Nitrate Sensitive Areas, covering about 40% of the UAA);
- point pollution in livestock production (as a main problem for the future in this field);
- increasing intensity of fish production in watersheds (ponds, etc.), together with the leakage of nutrients from fields, leading to an enormous eutrophication of water, strongly also reducing recreational potentials in many rural areas.

WATER RETENTION AND EROSION

Water retention and erosion have remained among main problems in relations between agriculture and environment, with a very small progress during the transformation. The problem has intensified particularly after 1998 with frequent (annual) and disastrous floods/droughts. The retention capacity of the soil is still very low, contributing to large negative effects of the disasters on the whole society. The acreage of grassland has increased only slightly, leaving more than 70% of the UAA under arable land; in spite of support for grassland (including LFA payments), the share of arable land has decreased only by about 3 percentage points during the last 15 years.

BIODIVERSITY

Owing to the reduction in the consumption of fertilizers and pesticides, conditions for biodiversity have generally slightly improved, measured e.g. by numbers of wild animals in the fields. However, special support for the establishment/maintenance of natural sites for animals or plants (wetlands, florid meadows, etc.) attracted only few farms.

To the contrary, the pre-reform organisation and utilisation of farmland – it means extremely large fields without any natural sites (hedges, balks, grass-zones, etc.), accompanied by a strong soil compression (as a consequence of the use of heavy machinery) still utterly prevail in the Czech agriculture. The situation improves under the land consolidation in cadastres, but the progress is very slow (only about 400 cadastres from their total number of 13,000 have completed the land consolidation programmes).

ECOLOGICAL FARMING

Ecological farming has started to be popular in the Czech agriculture, occupying today almost 6% of the UAA. However, this farming is almost completely

oriented at livestock production on grassland; only about 8% of the area devoted to ecological farming is oriented at crop production (including permanent crops). An explanation for this discrepancy can be relatively low transaction costs of conversion from conventional to ecological farming on grasslands.

RURAL EMPLOYMENT AND AGRICULTURE

Agriculture is by far not one of the main sectors for rural employment. The share of agricultural employment in the total number of active population differs significantly by districts, depending on the prevailing legal status and size category of farms. The total number of workers on farms decreased from 533,000 in 1989 by almost 75%, and it should be expected that a subsequent labour reduction shall take place in the future.

There are large variations in farm employment among the farm categories, measured by the number of AWU/100 hectares. The prevailing "profit orientation" of farms stimulates their managers to reduce labour through changes in production orientation (more extensive production, liquidation of livestock production, etc.) or buying/applying new effective machinery and technologies (using EU and national support for modernisation). Table 6 presents large differences in labour inputs among the farm categories (particularly between large farms as physical entities with about 1.6 AWU/100 hectares and collective farms with more than 4.0 AWU/100 hectares).

On the other hand, the prevailing orientation of farms does not stimulate enough their managers to create new (non-agricultural) job opportunities for the released workers, the condition being that the new activities be sufficiently profitable (not only income/job generating). This fact reflects the share of non-agricultural incomes in the total income of farms, which has been going down since 1989 (from about 30% to about 16% in 2003–2004). However, if we consider the share of non-agricultural production in the total production of farms (processing activities, farm services, agro-tourism, etc., according to the FADN definition), collective farms are (surprisingly) better than other farms. To sum up: collective farms still generate more job opportunities in rural areas than other farm categories, however, mainly to the detriment of their effectiveness (see e.g. net value added per AWU in the different farm categories in Table 6).

AGRICULTURE AND RURAL INFRASTRUCTURE/SOCIETY

The relations between farms and rural infrastructure/society differ significantly by localities. However, from various information sources and case studies it is evident that the relations have been gradually changing from the pre-reform

situation, when large collective/state farms fulfilled some social roles in villages, to a complete disappearance of the relations or even contradictory functions of farms. There are some examples of this new situation:

- many of the large farm units from the pre-reform period, built usually at the outskirts of villages, are completely abandoned, creating new "agricultural brownfields" in the countryside;
- some municipal activities, like construction of bike-routes, green zones, etc., outside of villages are destroyed by unsuitable activities of farmers;
- the same applies for the rural cultural heritage in the countryside (small chapels, field crosses, etc.), e.g. without a physical access on the large fields;
- little care from farms about the recreational quality of rural water (over-intensification of fishery, leakage of nutrients from fields, etc.).

Besides, the Czech agriculture based mainly on very large (non-family) farms does not stimulate the entrepreneurial activity and quality of rural human capital, preserving villages as "dormitory" for hired manual workers. In addition, local people – in spite of a relative high level of rural unemployment – are not willing to work on farms (particularly in livestock production) and the farm labour is saturated more and more by newcomers from abroad. The face and the demography of the Czech villages have been changing.

CONCLUSIONS

Is the Czech agricultural policy really addressing the needed progress in multifunctional role of farms, and problems in RD? Considering Parts 2 and 3 of the paper, the answer is problematic. Why?

- Environmental support has been oriented more at the "status quo" strategy than at the positive changes in the land use. Transformation costs for participating in the most "popular" agro-environmental programmes (maintenance of landscape, pasturing, interim crops and ecological farming) are relatively low, but with relatively high payments. It has resulted in only slight changes for the environment and in the overcompensation (compensations are considered as other direct payments). The overcompensation is also linked with lack of "internalisation" feeling of many farmers, e.g. in improving soil quality and soil erosion problems, because a prevailing part of the land is leased, not owned.
- LFA payments represent a special case. They are paid on all eligible grassland with minimum and maximum livestock units per hectare without size limits. Farm in marginal (border) regions, some of them owned by foreigners, with many thousands of "inherited" grassland (even with 10,000 and more hectares) gain extreme support for very extensive farming.

- Although many agro-environmental programmes and LFA payments concern only grasslands, the share of grasslands in the UAA has increased only slightly. The main barrier is the fragmented land ownership. Any basic changes in the land use have to be accepted by landowners, which increases transaction costs of the changes[11]. These costs decrease with the completed land consolidation. However, in spite of the policy declarations the land consolidation is heavily lagging behind the needs, particularly due to lack of the public finance[12].
- Agriculture is not fully in compliance with rural employment. Managers of the profit oriented farms – especially those without social links with a locality – are reducing labour without the proper care about creating new job opportunities in villages.
- Agriculture does not generate stimuli for the improvement of human and social capital in rural areas and locally creates barriers for rural entrepreneurial activities, e.g. in rural tourism.

To sum up: the Czech profit oriented farms, prevailing in terms of the UAA, were becoming more competitive (and rich) after EU accession, leaving elementary (particularly water) environmental problems in the Czech countryside almost "untouched", and at the same time functioning to a large extent separately from other RD issues. Problems in rural regions – especially job opportunities in rural activities competitive on global markets – have not been sufficiently solved. The present agricultural policy (CAP) cannot be a right instrument, unless it is deeply re-oriented to support activities of all rural population and much more effectively and territorially shaped to address basic environmental and social problems in rural areas. The still prevailing orientation of the policy on farm modernisation and incomes is not a solution. From this point of view, the relations between Pillar I and Pillar II of the CAP and the proper orientation of structural support are really fundamental for the future.

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[11] For example, the conversion of a field block from arable land into grassland usually involves dealing with many landowners, whereas some of they would often not accept the change.

[12] Benefits from the slow progress in land consolidation are on the side of the present large land users, particularly coops and joint stock companies with their land rented from many private owners, local or town people.

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Stanislav MARTINÁT
Institute of Geonics
Academy of Sciences of the Czech Republic
Studentská 1768,708 00 Ostrava-Poruba, Czech Republic,
martinat@geonika.cz
Pavel KLAPKA, Eva NOVÁKOVÁ
Institute of Geonics, branch in Brno
Academy of Sciences of the Czech Republic
Drobného 28, 602 00 Brno-Černá Pole, Czech Republic
klapka@geonika.cz; novakova@geonika.cz

CHANGES OF SPATIAL DIFFERENTIATION IN LIVESTOCK BREEDING IN THE CZECH REPUBLIC AFTER 1990

Abstract: The article deals with the issue of spatial differentiation of livestock breeding in the Czech Republic after 1990. These activities are studied from the geographical point of view in relation to the transition from the centrally planned economy to the market economy with regard to the developments after country's accession to the EU. The first part concerns the changes having taken place during the period 1990–2001, with districts treated as basic units. In this part, special attention is paid to the changes in districts with predominantly mountainous and sub-mountainous natural conditions. In the second part, dealing with the period 2001–2005, regions are basic spatial units. The last part analyses the changes in spatial distribution of livestock during the whole period under consideration and a future development of livestock breeding is discussed.

Keywords: livestock breeding, spatial differentiation, Czech Republic, agriculture transformation, agricultural geography

INTRODUCTION

The Czech agriculture went through significant structural changes after the fall of the communist regime in 1989. Its importance changed as well. Czech agriculture entered the new market system from the centrally planned one, supported by massive subventions. Its crucial objective was maximum intensification of agricultural activities, regardless of existing natural conditions. High productivity and coveted food self-sufficiency were to be reached before 1989 by the use of mineral fertilizers. Agriculture was conceived as a certain type of industrial production (industrial agriculture). This approach, however, brought, apart from environmental problems, such as groundwater and soil pollution, soil

firming, increased erosion, high percentage of arable land in sub-mountainous areas, loss of biodiversity etc., and the ethical problems (for instance insufficient welfare of animals in high-capacity facilities or the rupture of farmer – soil relationship), in socio-economic difficulties (dependency of rural areas on agriculture, oversized capacities of agricultural facilities, etc.). Czech agriculture faces the consequences of all these processes even now. This article deals with the results of the structural changes mentioned on the example of livestock breeding (in the period 1990–2005).

AGRICULTURAL CHANGES AFTER 1990

Oversized Czech agriculture enjoyed, before the changes of the beginning of the 1990s, a completely different status than nowadays. While in 1990 the importance of agriculture for the national economy was at around 7.3% of gross domestic product, 14 years later it was at the mere 4.4% (2004). When analysing gross agricultural production in this period (in constant 1989 prices) we find out its 29% decrease to present CZK 77.3 billion (Green Report, 2004). The structure of gross agricultural production changed as well. While before 1990 it was characteristic to have unnaturally vast share of livestock production in the gross agricultural production (as late as in 1990 it was 58%), which was caused by an effort to intensify livestock breeding regardless of growing of the closely related crops (Jančák and Götz, 1997), after political changes the importance of crop production has been gradually increasing (between 1999 and 2003 the average share was 45% of gross agricultural production).[1]

Changes in employment in agriculture were intense as well. According to the last census data (2001), 4.4% of the economically active population (230,475 persons) were employed in agriculture, forestry and fishing in the Czech Republic, while the preceding census of 1991 recorded 11.6% of economically active population. In combination with the above mentioned data for gross agricultural production we find out that there has been almost doubling of the productivity of labour per person employed in this branch. The importance of agriculture cannot be characterised only through economic data, the landscape function of agriculture is important, too. The communist view of agriculture affected this area as well. The Czech Republic preserves unnaturally high percentage of arable land (71.5%) in the European context, even though after 1990 arable land considerably shrank. Overall, in the period 1993–2005, agricultural land decreased by 5.5% (arable land by 4%), mainly in the sub-mountainous areas. Together with the decrease in the crop area (almost by one fifth compared to 1985), crop struc-

[1] In 2004 the gross value of crop production overtook livestock production (50.3%), which was, though, rather a consequence of exceptionally favourable climatic conditions in this year than of a systematic increase.

ture changed as well. Areas under alternative crops increased, although cereals do account for 60% of crop area, which considerably impedes their market use and every year a part of cereal crop remains unutilized. High proportion of cereals, as well as high percentage of arable land (71.5%) can be considered as heritage of socialist agriculture, which is preserved with state support until present. Apparently, the greatest changes were experienced in livestock breeding, the subject of this article.

METHODOLOGY

Geographical analysis is the main method used for assessment of spatial differentiation of livestock breeding. Intensity of breeding of particular livestock animals, their numbers, representation of individual districts (regions) and its changes were analysed in referential years of 1990, 2001 and 2005. The whole period 1990–2005 was divided for the sake of data comparability into two parts in which two different kinds of spatial units were assessed. In the first period (1990–2001) livestock breeding indices were analysed at the level of districts (77), with certain specificity taken into account. Given the changing areas of selected urban districts in the 1990s (Prague, Brno-město, Plzeň-město and Ostrava-město) and the impossibility of livestock data adjustment for a single spatial unit during the whole period, these districts were left out from the analysis of temporal changes. The Šumperk and Jeseník districts were united since the Jeseník district was created out of the Šumperk district in the second half of the 1990s and the relevant data do not exist. The number of analysed districts dropped, then, to 72. The second part of the period (2001–2005) was assessed in a different way. This was caused by a change in methodology and spatial units for which the Czech Statistical Office collects the data. Since 2002 the numbers of livestock are not collected in districts but only in regions. There are 14 regions but the data for the capital city of Prague (enjoying the status of a region) are united with the data for the Central Bohemian region. The number of units for this part of analysis is, then, 13. Districts can be composed to form the new regions, which, theoretically, should enable spatial comparison in the whole period under consideration. Unfortunately, the methodology of yearly registers of livestock changed as well. By conformity with methodology of Eurostat (since 2002) data on hobby farming activities of the population were left out from the registers, making comparison with earlier data rather complicated (see further). The 2001 data were adjusted according to the new methodology at the regional level.

Data needed for the calculation of livestock intensity (agricultural land for cattle and sheep and arable land for pigs, poultry and fowl) came from the Land

Resources Yearbooks (Ročenka půdního fondu 1990, 1993, 2001 and 2005) published yearly by the Czech Office for Surveying, Mapping and Cadastre.

Geographical literature, dealing with changes in the Czech agriculture after 1990 is not very extensive. Věžník and Bartošová (2004) deal with geographical aspects of the Czech agriculture in the post-transformation period. These changes are analysed, for the first half of the 1990s, by Věžník (1995), Bičík and Götz (1996), Ptáček (1996), a longer period is assessed by Bičík and Jančák (2002), Věžník (2002). The analysis of changes in Czech agriculture starting with 1960 was carried out by Jančák and Götz (1997). Methodologically inspiring from the point of view of agricultural geographical research are works of Spišiak (1991, 2005), Götz and Novotná (1995), Jančák (2004), Bičík (2005), Robinson (2004), Bański (2001) or Kulikowski (2003, 2005). Differentiation of agriculture in highly productive agricultural areas is dealt with by Spišiak and Lelkes (2003) on the example of Slovakia, specificity of farming activities in mountainous and sub-mountainous areas are dealt with by Martinát (2004), organic forms of agriculture by Klapka et al. (2005) or €ufan (2001).

Intensive studies of agricultural economists should be mentioned as well. Hrabánková et al. (1994) studied, for example, the influence of regional policy on Czech agriculture, Horská and Spěšná (1994) dealt with the social context of agricultural transition. Relation between rural development and state of agriculture was followed up by Vaněk (2007).

LIVESTOCK BREEDING

The change in the economic system and the opening of domestic market for food imports from abroad had to affect the scale of Czech agriculture. The basic view of changes in livestock number in 1990–2005 is presented in Table 1. A considerable decrease was recorded in all the registered livestock animals. It is necessary, though, to be aware of the methodological change in the census of livestock animals. As implied earlier, since 2002 the so called hobby activities of the population are not listed among registered subjects. These were defined by the Czech Statistical Office as subjects farming less than 1 hectare of agricultural land or breeding less than 2 pigs, 4 sheep or 50 pieces of poultry (all subject breeding cattle are registered). This fact considerably complicates the comparison of data for livestock breeding (with the exception of cattle) with the period before 2001. Owing to the 2001 data, which are accessible for both methodologies used (they were recalculated) and supposing that trends in the development of numbers of individual livestock animals in these hobby activities are in the period 2001–2005 relatively stable (self-supplying activities do not succumb to market pressures as much), a detailed overview of the numbers of livestock animals in hobby activities, and qualified estimate of the total numbers of

livestock, can be obtained. While the numbers of pigs, sows and sheep increased by 1–2% for 2005 after recalculation and inclusion of hobby activities, not a significant increase, the number of poultry and fowl increased considerably (poultry by 10% and fowl even by around 30%), which radically changes the view of real changes of numbers of these livestock animals in the monitored interval. Poultry numbers oscillate around 90%, estimates for fowl reach 70%. The number of cattle decreased in 2005 by three fifth in comparison to 1990, the number of pigs by 40%. Sheep number experienced in this interval a drop by two thirds.

Table 1. Numbers of selected livestock animals in the Czech Republic in 1990 and 2005

	1990	2005	2005/1990 (%)
Cattle	3,506,224	1,397,308	39.9
– out of which cows	1,236,213	573,724	46.4
Pigs	4,789,898	2,876,834	60.1
– out of which sows	310,869	232,449	74.8
Sheep	429,914	140,197	32.6
Poultry	31,981,100	25,372,333	79.3
– out of which fowl	15,437,483	5,940,971	38.5

Source: Soupis hospodářských zvířat k 1.1. 1990; Soupis hospodářských zvířat k 1.4. 2005.

The main causes of changes in numbers of livestock animals in the Czech agriculture are the economic unprofitability of livestock breeding, cheap imports of meat and other products to the Czech Republic, primarily, though, the general transformation and restructuring of agriculture to fit market conditions. Financial accessibility and fears about transmission of animal diseases to humans (BSE, bird flu) play an important role, and are most probably factors substantially influencing consumption preferences of the Czech population (Table 2).

Table 2. Development of consumption of selected foodstuffs per capita in the Czech Republic in 1990–2003 (kg)

	1990	1995	2000	2003	2003/1990 (%)
Meat total	96.5	82.0	79.4	80.6	83.5
– pork	50.0	46.2	40.9	41.5	83.0
– beef	28.0	18.5	12.3	11.5	41.1
– poultry	13.6	13.0	22.3	23.8	175.0
Milk and dairy products	256.2	187.8	214.1	223.4	87.2
Eggs (pieces)	340.0	290.0	275.0	256.0	75.3

Source: Statistická ročenka České republiky 2005.

The table shows that after 1990 the consumption of meat in the Czech Republic decreased (by 15.9 kg per capita in 1990–2003). However, this is not true for all types of meat. Beef consumption drop (to 41% of that in 1990) was compensated by an increase of poultry consumption (by 175%). Nevertheless, pork remains the most popular meat in the Czech Republic despite medical warnings; its consumption even slightly increased after 2000. Milk consumption experienced at the beginning of the 1990s a considerable slump but later a positive increasing trend in consumption was recorded (87% in comparison to 1990). On the contrary, egg consumption systematically decreases since the beginning of the period analysed.

Future estimates are that poultry consumption will increase, while increase in consumption of fish (5.3 kg per capita in 2003) or rabbits (2.7 kg per capita in 2002) would be desirable. Popularity of pork in the Czech kitchens, however, will probably remain unchallenged. The numbers of livestock animals are probably not going to increase considerably, given the EU quotas and taking into account the abnormally low numbers of livestock animals in the Czech Republic in the second half of the 1990s. The following section concerns spatial differentiation of changes in individual livestock animal breeding, first in 1990–2001, at the level of districts, and then in 2001–2005, at the level of regions.

CHANGES IN SPATIAL DEVELOPMENT OF LIVESTOCK BREEDING IN 1990–2001

In 1990 more than 3.5 million of cattle were bred in the Czech Republic. Their number decreased till 2001 by 54%. Spatial distribution of the decrease in 1990–2001 is shown in Figure 1. It is evident that important decreases were experienced in the whole republic, with maximum in the Teplice district (decrease more than by 95%). Surprisingly high decreases (70% in average) were recorded in Prague and its nearer (the Praha-východ and Praha-západ districts) and more distant (the Kolín, Mělník and Kladno districts) hinterland and in the densely populated Karviná district (decrease by 93%). Decreases were also recorded in the Northwest Bohemia and Southern Moravia (by more than 70%). Generally, the most important decreases were registered in the hinterland of large urban centres (Prague, Brno, Ostrava, Plzeň, Liberec or České Budějovice) and in the most fertile districts (Znojmo, Břeclav). On the contrary, relatively lower decreases in the numbers of cattle (under 40%) can be found in the Českomoravská vrchovina highland (the Pelhřimov, Jihlava, Havlíčkův Brod and €ďár nad Sázavou districts), in the traditional cattle breeding sub-mountainous Ústí nad Orlicí district or in the mountainous districts in the northern part of the Šumava Mts. – Klatovy and Doma€lice.

Intensities of cattle breeding per 100 hectares of agricultural land for 1990 and 2001 are next features studied. While in the first case a certain spatial balance is obvious (regardless of natural conditions) with local maximums in the Olomouc district (124 heads of cattle per 100 hectares of agricultural land), Eastern Bohemia (the Ústí nad Orlicí, Hradec Králové, Rychnov nad Kně€nou districts – more than 90 heads of cattle per 100 hectares of agricultural land) or in the Českomoravská vrchovina highland, eleven years later a substantial differentiation appeared. Relatively higher intensities (over 45 heads of cattle per 100 hectares of agricultural land) were preserved in the Southern and Eastern Bohemia and in the Českomoravská vrchovina highland (absolute maximum in the Ústí nad Orlicí district with 68 heads of cattle per 100 ha of agricultural land). Lower intensities appear on fertile areas, where the numbers of cattle decrease more sharply. Very low intensities are registered in the whole north-western Bohemia.

When assessing the changes in spatial distribution of cattle according to the shares of districts in the total numbers we find out that in 1990 ten districts with the highest numbers of cattle represented 22.4% of the total number, while eleven years later this figure increased to 29.8%. Thus, we see a concentration of cattle breeding with the stable basis for cattle breeding being mainly the districts of the Českomoravská vrchovina highland (Třebíč, €ďár nad Sázavou, Havlíčkův Brod, Pelhřimov), Eastern Bohemia (Ústí nad Orlicí, Svitavy), Southern Bohemia (České Budějovice, Jindřichův Hradec) and the Klatovy district in Western Bohemia. The Znojmo district registered probably the most important change with this respect. While in 1990 Znojmo, together with Třebíč, were the districts with the highest proportion in the numbers of cattle (2.6%) by 2001 this proportion dropped to only 1.3%. A reverse process is observed in the Doma€lice district (2.5% in 2001). The maximum share in this year was registered in the district of €ďár nad Sázavou (3.8%).

There were 1.24 million cows in 1990. Until 2001 this number dropped by 50%. The whole decade of the 1990s was marked by the search for competitiveness in cattle breeding. Given the drop in beef consumption by more than two thirds, the possible way is breeding of milk cows. In the period considered the proportion of cows in the cattle increased from 35% (1990) to almost 39%. From the spatial point of view we can say that while in 1990 only in the Jablonec nad Nisou districts we registered an increased proportion of cows (over 40%), in 2001 there were 25 such districts (with maximums over 45% in the Jablonec nad Nisou, Děčín, Sokolov, Ústí nad Orlicí, Praha-západ and Chomutov districts). On the contrary, the lowest numbers of cows are registered in areas oriented at beef production (the Most, Mělník, Teplice, Vyškov, Beroun or Praha-východ districts).

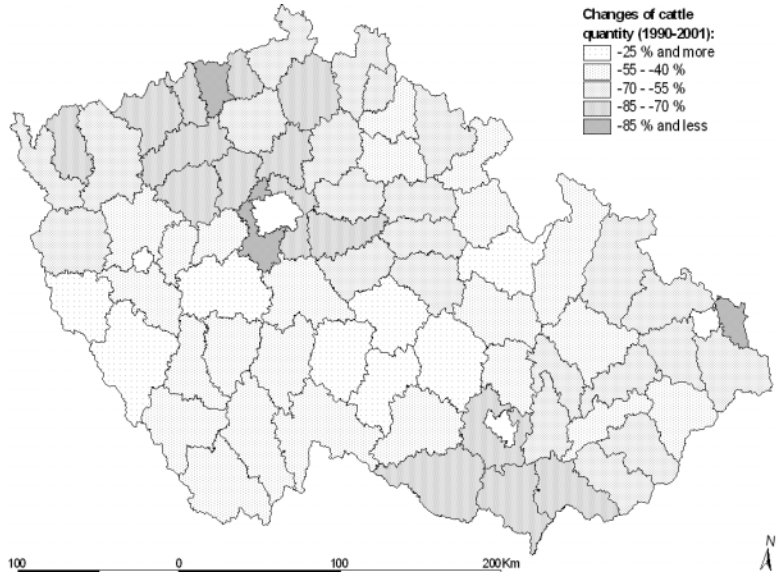

Figure 1. Changes of cattle breeding in the districts of the Czech Republic in 1990, 2001
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2001.

Figure 2 documents spatial distribution of changes in numbers of cows in the period studied. The trends are, like for intensity indices, in coincidence with changing numbers and intensity of the totals for cattle.

The analysis of spatial concentration of cows (proportion of cows in the total numbers for individual districts) showed that 10 districts with the highest numbers of cows accounted in 1990 for 22.1% of the total. This proportion increased in following 11 years to 29.8%, with similar spatial consequences as for cattle.

In the period studied there was a decrease in the number of pigs by one fourth, from 4.8 million in 1990 to 3.6 million in 2001. The spatial image (Figure 3) shows, apart from the prevailing decrease, which is much more markedly differentiated than in the case of cattle and cows, three districts having experienced an increase (the districts of Znojmo – by 11.6%, Rychnov nad Kněžkou – by 1.1%, and Ústí nad Orlicí – by 0.3%). The absolute figures confirm the importance of the increase only in the Znojmo district (by more than 23,000 pigs). The districts of Prachatice, Berou, Benešov, Náchod and Strakonice experienced only marginal decreases. On the contrary, the maximum decreases were registered in the districts of Most (93%), Praha-západ, Ústí nad Labem, Karviná and Praha-východ (54–69%). Yet, the decreases in the numbers of pigs are not as distinct as with cattle and cows. The highest absolute decreases were recorded in the Hradec Králové, Kolín, Brno-venkov districts (by more than 50,000 pigs), Hodonín, Praha-východ, Mladá Boleslav, Přerov, Plzeň-sever and Nový Jičín (by 30–50,000 pigs). A distinct area of decrease is

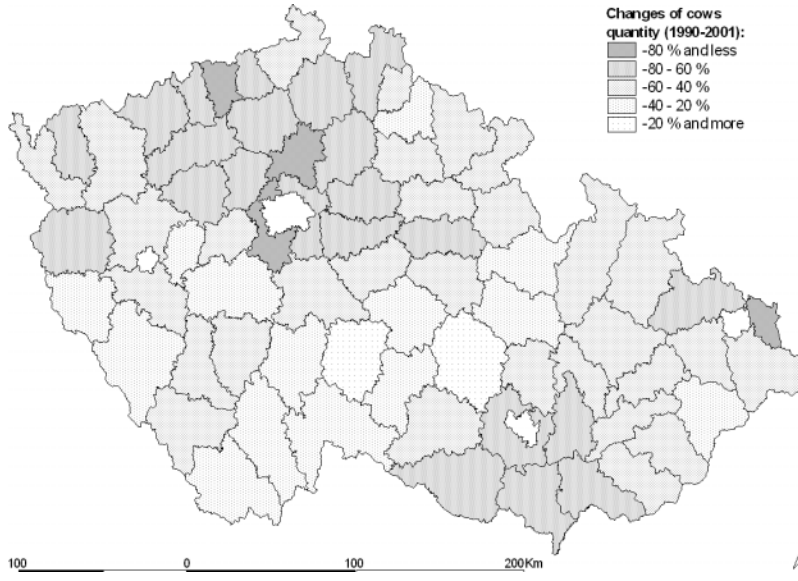

Figure 2. Changes of cow breeding in the districts of the Czech Republic in 1990, 2001
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2001.

formed by the hinterland of Prague, extending northwards, the Plzeň region, and the strip of districts along the Slovak border.

The proportion of districts with the highest numbers of pigs in the total numbers and their spatial distribution did not considerably change between 1990 and 2001, compared to other livestock animals (it is at 31.7%).

Breeding of pigs was in the 1990 most intensive in the Olomouc, Hodonín and Hradec Králové districts (more than 260 pigs per 100 hectares of arable land), Nový Jičín, Teplice, Brno-venkov, Pardubice and Jindřichův Hradec districts (more than 200 per 100 hectares of arable land). By 2001 an area of increased intensity of pig breeding (more than 150 pigs per 100 hectares of arable land) developed in Eastern Bohemia (districts of Hradec Králové, Pardubice and Rychnov nad Kně€nou), along with districts in the southern part of the country (districts of Znojmo with 213 and Jindřichův Hradec with 160 pigs per 100 hectares of arable land). On the contrary, very low intensity of pig breeding is registered in lowland areas of the north-western Bohemia.

Sheep breeding experienced in the period analysed the most important drop. As early as in 1990 there were almost 430,000 sheep. By 2001 we would be able to find in the Czech Republic only little more than 80,000 of them (drop by 79%). As it is suggested in Figure 4, the decreases are spatially distinctly differentiated. In 22 districts decreases exceeded 90%, then in 19 districts this number was higher than 80%. In absolute figures the area of Beskydy Mts. features the highest losses, of more than 46,000 sheep (districts of Frýdek-Místek, Nový

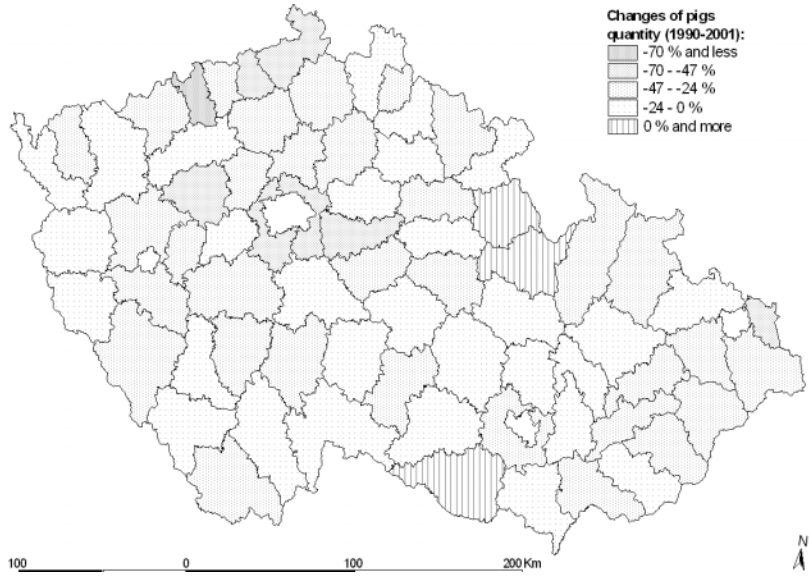

Figure 3. Change of pig breeding in the districts of the Czech Republic in 1990, 2001
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2001.

Jičín and Vsetín), where at the beginning of the 1990s more than 13% of sheep in the Czech Republic were bred. Relatively high decreases are, however, recorded in the strip of districts from Frýdek-Místek south-westwards towards Třebíč. In Bohemia, the most important decreases centred at the Krušné hory Mts., Plzeň region and Českomoravská vrchovina highland. On the contrary, the lowest decreases of the sheep numbers were recorded in the Sokolv, Příbram and Strakonice districts. The intensity of sheep breeding per 100 hectares of agricultural land was in 1990 the highest in the Beskydy Mts. region in the east of the country (maximum of 54 sheep per 100 hectares of agricultural land in the Frýdek-Místek district) and in north western Bohemia (districts of Teplice, Most, Ústí nad Labem). Locally, higher intensity of sheep breeding was registered in 1990 in the Blansko district in South Moravia. In 2001 the highest sheep breeding intensities were registered in the mountainous and sub-mountainous areas (the Vsetín district – 14 sheep per 100 hectares of arable land). Sheep breeding intensity dropped 10 times in the neighbouring Frýdek-Místek district, yet it ranked fourth in the sheep breeding intensity in 2001. The second concentration of higher sheep breeding intensity is in Western Bohemia (districts of Sokolov and Karlovy Vary). Sheep have almost completely vanished from districts of Nový Jičín and Teplice.

The share of 10 districts with the highest numbers of sheep in the total was 32% in 1990, while eleven years later in was already at 41.7% (however, the maximum was reached in 1997 – 47%).

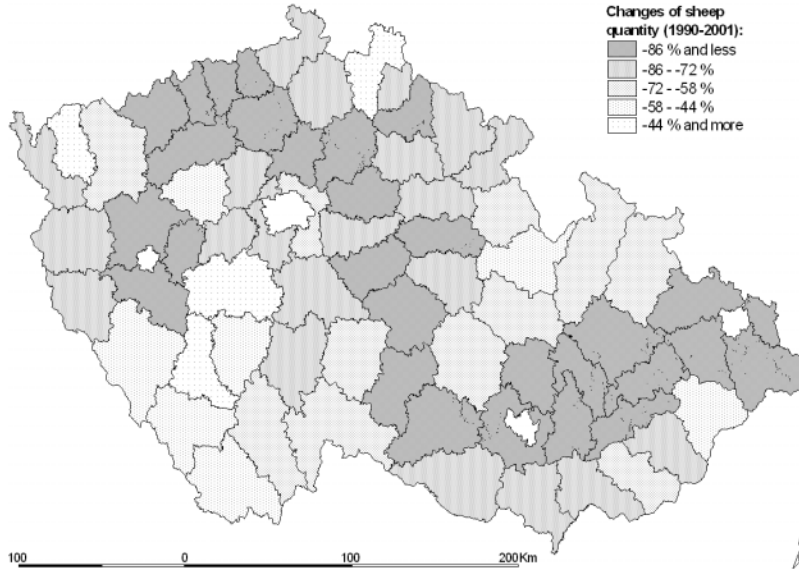

Figure 4. Changes of sheep breeding in the districts of the Czech Republic in 1990, 2001
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2001

Poultry breeding underwent a completely different development. The numbers slightly increased as compared to 1990, by 2%, to 32 million birds in 2001. Nevertheless, in some parts of the country dramatic drops in numbers took place. As examples we can mention the districts of Děčín, Brno-venkov and Prague with drops of more than half a million. In the Kutná Hora and Šumperk districts the decreases amounted to more than 300 thousand. The relative decreases were, however, the highest in the Ústí nad Labem district (by 93%), important limitations of poultry breeding are also observed in the Mladá Boleslav, Česká Lípa, Liberec and Karviná districts (decrease by more than 50%). On the contrary, close to half of districts experienced increases in the numbers of poultry, by more than 100% in the districts of Mělník, Prachatice, Znojmo, Trutnov, České Budějovice and Tábor (Figure 5).

The highest intensities (per 100 hectares of arable land) were in 1990 registered in north-western Bohemia – districts of Teplice and Ústí nad Labem (more than 4000 birds per 100 hectares of arable land). They were followed by Prague. Zones of higher intensities were located in 1990 also in Eastern Bohemia (maximums in the district of Pardubice), in surroundings of Brno (districts of Brno-venkov, Znojmo) and in Eastern Moravia (districts of Zlín and Uherské Hradiště). Eleven years later intensity of poultry breeding was spatially more differentiated. A new centre of poultry breeding developed in the Klatovy and Strakonice districts (around 2500 birds per 100 hectares of arable land – high poultry concentration noted in the whole of Southern Bohemia), high intensities

were registered also in the districts of Sokolov, Mělník (in the hinterland of Prague) or Nový Jičín (the region of Ostrava). Intensities remained high in Eastern Moravia and in almost entire Eastern Bohemia.

Index of spatial concentration (the share of 10 districts with the highest numbers) was in 1990 at around 25% of the total, while in 2001 it was at almost one third. The highest increase was registered in the district of Znojmo (5.8% of the total). At the beginning of the 1990s this district ranked in the teens with the share of 2.2%. On the contrary the district of Brno-venkov dropped in 2001 below the twentieth rank.

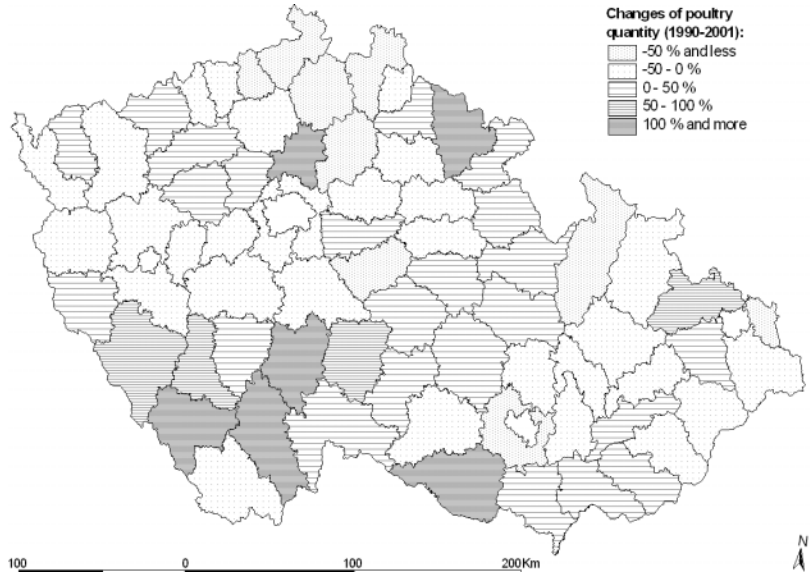

Figure 5. Changes of poultry breeding in the districts of the Czech Republic in 1990, 2001
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2001.

Conclusions concerning spatial distribution of fowl breeding are similar to those regarding poultry (Figure 6). There is a difference in the decrease of their numbers in the period studied (almost by one fourth, down to 11.7 millions birds). The shares in the total numbers of poultry and their change are more interesting. More than 80% of fowl were recorded in 1990 in the districts of Kladon, Mělník, Cheb, Pelhřimov and Jablonec nad Nisou, while other kinds of poultry dominated in the Teplice, Český Krumlov, Zlín, Ústí nad Labem and Most districts (less than 20% of fowl). Eleven years later the percentage of fowl in the poultry considerably decreased (by 12%, to approximately one third) and the districts of Třebíč, Mladá Boleslav, Klatovy, Jihlava and Znojmo joined the latter ones, mentioned above.

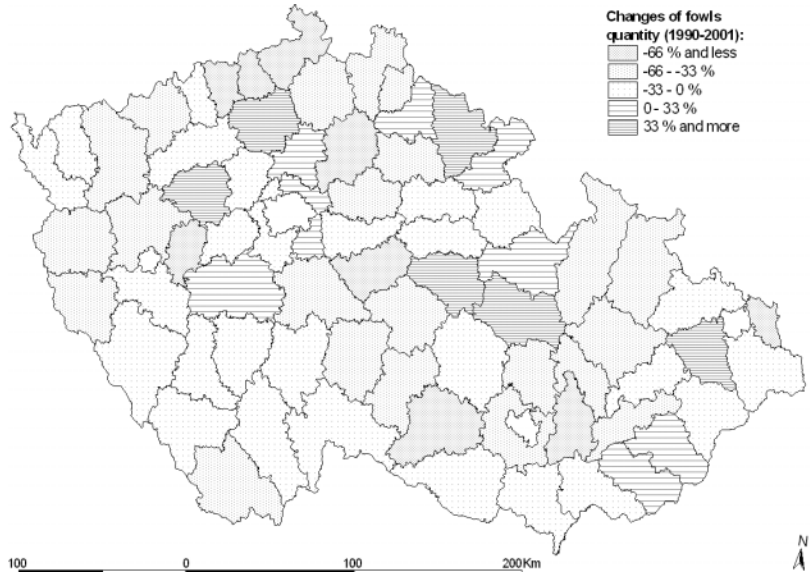

Figure 6. Changes of fowl breeding in the districts of the Czech Republic in 1990, 2001
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2001.

CHANGES IN SPATIAL DISTRIBUTION OF LIVESTOCK BREEDING IN 2001–2005

In this section we shall deal with spatial changes of livestock breeding in 2001–2005. As indicated before, in this time interval we analysed individual regions of the Czech Republic. These 13 spatial units (Prague being treated together with Central Bohemia) are too large for a more detailed analysis and their sizes differ considerably. Interregional differences and comparisons are thus reduced; we will pay only limited attention to them. These data do not contain the so called hobby activities of the population.

In 2001–2005 the decrease in the numbers of cattle in the Czech Republic continued (Figure 7). Compared to the preceding period the decrease was relatively very low (11.7%). The most important decrease was registered in regions of South Moravia, Ústí and Central Bohemia, where the numbers of cattle dropped by one fifth, an important decrease was registered in the region of Zlín, as well. On the contrary, the region of Karlovy Vary experienced as the only one an increase of 8.4%, but the intensity of cattle breeding remains relatively low. The highest intensity is observed traditionally in the Vysočina region (53 heads per 100 hectares of agricultural land) and in the regions forming the southern, eastern and western rim around Central Bohemia (more than 40 heads per 100 hectares of agricultural land). Central Bohemia, being the agricultural hinterland

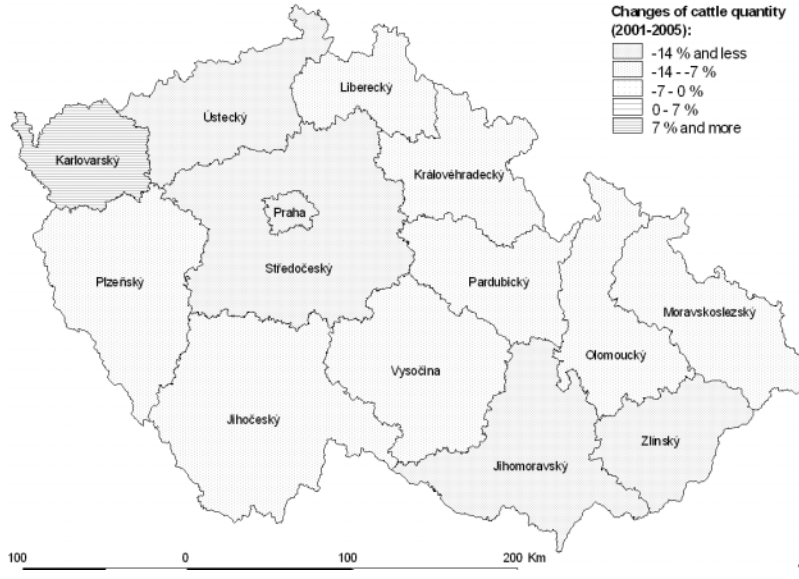

Figure 7. Changes of cattle breeding in the regions of the Czech Republic in 2001, 2005
Source: Soupis hospodářských zvířat k 1.4. 2001; Soupis hospodářských zvířat k 1.4. 2005.

of Prague, has lower intensity of cattle breeding. The lowest intensity is registered in regions of South Moravia and Ústí (less than 20 heads per 100 hectares of agricultural land).

In 2001 30% of cattle were bred in two regions (Vysočina and South Bohemia). This share increased by 1% until 2005. A high share of the cattle number is observed also in Central Bohemia (11% in 2005), due, apparently, to the large area of the region.

The situation with cow breeding is similar (Figure 8). The share of cows in cattle in the period here considered increased (to 41% in 2005). The decrease of the number of cows in 2001–2005 is lower than of cattle, only by 6.2%. The highest decrease of the number of cows is registered in regions of Central Bohemia and Ústí (around 14%), while a serious increase was recorded only in the region of Karlovy Vary (like in the case of cattle) – 10%, a slight increase having been observed yet in the Liberec region. The absolutely highest decrease in the numbers of cows was registered, apart from the case of Central Bohemia (9445 cows), also in the Vysočina region. The increase in the numbers of cattle (and of cows in particular) in the region of Karlovy Vary can be probably linked to the vicinity of dairy processing facilities in Germany, where western Bohemian farmers export their products after the EU accession.

The regions of Vysočina, South Bohemia, and, somewhat less, Central Bohemia and Plzeň, can be considered to be the centres of cow breeding. In these four regions a majority of cows is bred.

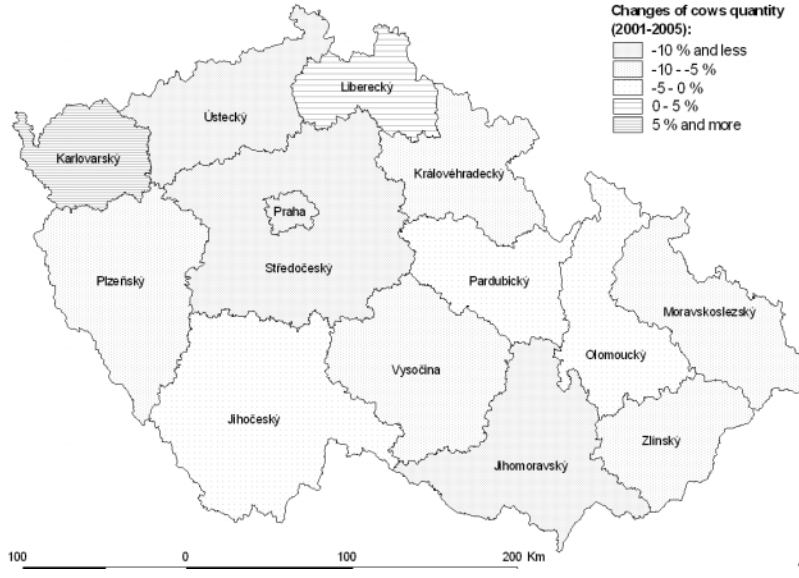

Figure 8. Changes of cow breeding in the regions of the Czech Republic in 2001, 2005
Source: Soupis hospodářských zvířat k 1.4. 2001; Soupis hospodářských zvířat k 1.4. 2005.

The number of pigs in the period here considered in the Czech Republic decreased approximately by 17%, the decrease being not as important as in the preceding period. In this period the decrease has a general character, the decline by more than one fifth recorded in 7 regions (with maximums in the Liberec and Ústí regions – the declines by 26% and 23%, respectively). A slight increase is recorded only in the Vysočina region (0.8%) – see Figure 9. As for the intensity of pig breeding, it was the highest in South Moravia, with 156 pigs per 100 hectares of arable land (the highest intensity being observed in the Znojmo district). More recently, this region was, after a decrease, overtaken by the Vysočina region (123 pigs per 100 hectares of arable land). High pig raising intensity is observed also in regions of Hradec Králové, South Bohemia and Olomouc (Figure 9). Low intensity is recorded in regions of Ústí and Liberec (less than 65 pigs per 100 hectares of arable land).

When analysing the shares of regions in the total numbers of pigs we find out that more than 55% of pigs are bred in only four regions (South Moravia, Central Bohemia, Vysočina and South Bohemia).

The development of the numbers of sheep after 2001 is very interesting (Figure 10). While in 1990–2001 there was a huge drop, after 2001 we register 60% increase. It is the highest in the region of Pardubice (by 112%), followed by Zlín and Central Bohemia (by more than 80%). The highest intensity of sheep breeding is recorded in the Karlovy Vary region, with almost 11 sheep per 100 hectares of agriculture land, followed by Zlín, Moravia-Silesia and Liberec.

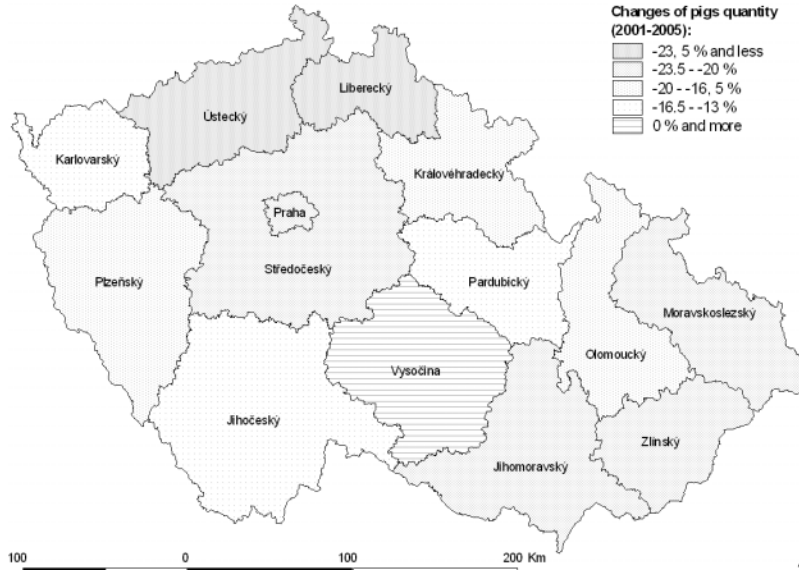

Figure 9. Changes of pig breeding in the regions of the Czech Republic in 2001, 2005
Source: Soupis hospodářských zvířat k 1.4. 2001; Soupis hospodářských zvířat k 1.4. 2005.

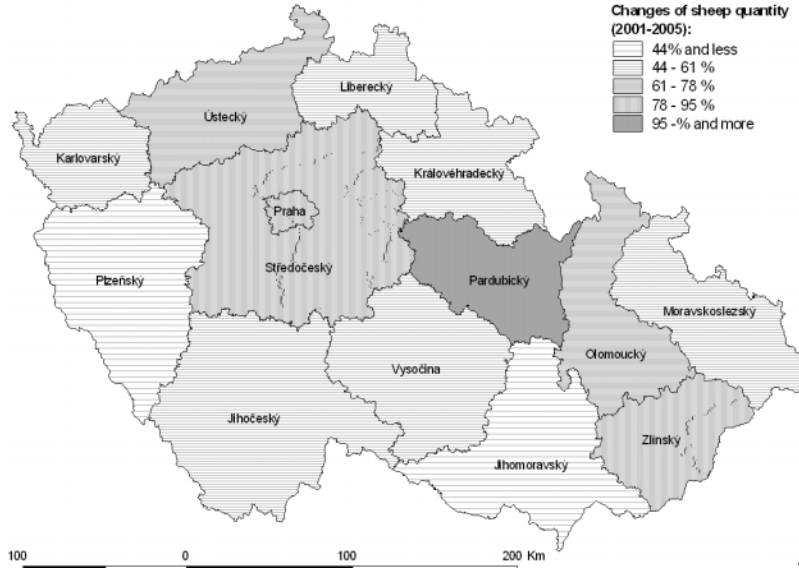

Figure 10. Changes of sheep breeding in the regions of the Czech Republic in 2001, 2005
Source: Soupis hospodářských zvířat k 1.4. 2001; Soupis hospodářských zvířat k 1.4. 2005.

In terms of regional shares one third of sheep is bred in regions of South Bohemia, Plzeň and Karlovy Vary, then – almost one fifth in the eastern parts of the republic – the Zlín and Moravia-Silesia regions.

In the case of poultry breeding (without the so called hobby activities, which considerably influence the numbers, as shown before) the numbers decreased by 12% in 2001–2005. Spatial distribution of increases and decreases is highly differentiated. In three regions there was an increase (Central Bohemia, South Bohemia and South Moravia), in the first two cases by more than 7%. On the other hand, the highest decrease took place in regions of Karlovy Vary, Olomouc and Pardubice (by more than 40%, see Figure 11). In the case of the Pardubice region it was by far the highest absolute decrease of approximately 1.25 million of birds, while the increases in the hinterlands of Brno and Prague reached 300,000 birds.

The highest intensity of poultry breeding is observed in South Bohemia (1450 birds per 100 hectares of arable land), high numbers were also recorded in the densely populated Moravia-Silesia and South Moravia. Low intensity of poultry breeding is observed in regions of Vysočina, Liberec and Olomouc. As for the shares of regions in the total numbers, 55% of poultry is bred in Central Bohemia, South Bohemia and South Moravia, that is – by 10% more than in 2001.

Fowl breeding displays similar trends as poultry breeding. The overall decrease was, however, somewhat more distinct (15%). The highest numbers of

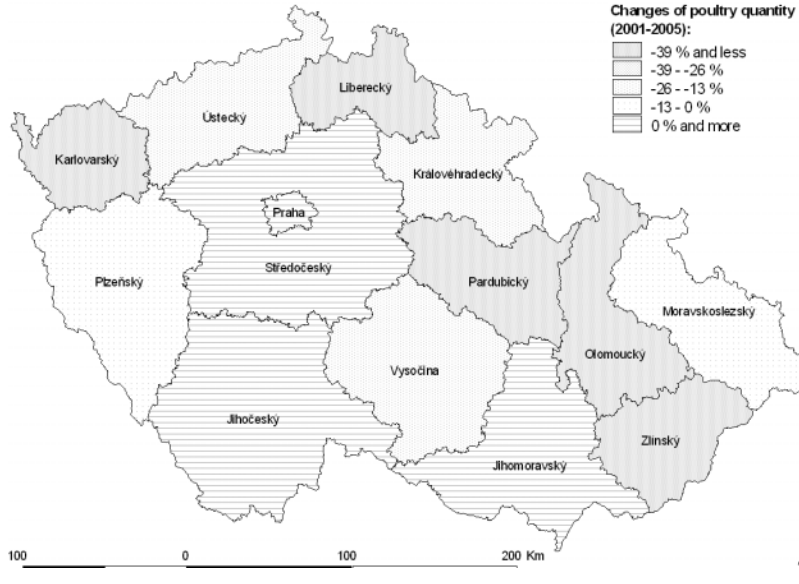

Figure 11. Changes of poultry breeding in the regions of the Czech Republic in 2001, 2005
Source: Soupis hospodářských zvířat k 1.4. 2001; Soupis hospodářských zvířat k 1.4. 2005.

fowl are bred in Central Bohemia (1.1 million), followed by South Bohemia, Hradec Králové, Pardubice and Ústí regions (600–800,000 birds). The highest relative numbers of fowl in poultry totals are registered in regions of Karlovy Vary, Hradec Králové, Pardubice and Olomouc (more than 35%). An important decrease of fowl numbers (Figure 12) was registered in the period studied in the regions of Liberec and Olomouc (more than 50%), on the contrary, an increase was registered in regions of Hradec Králové and Ústí (20% and 4% respectively).

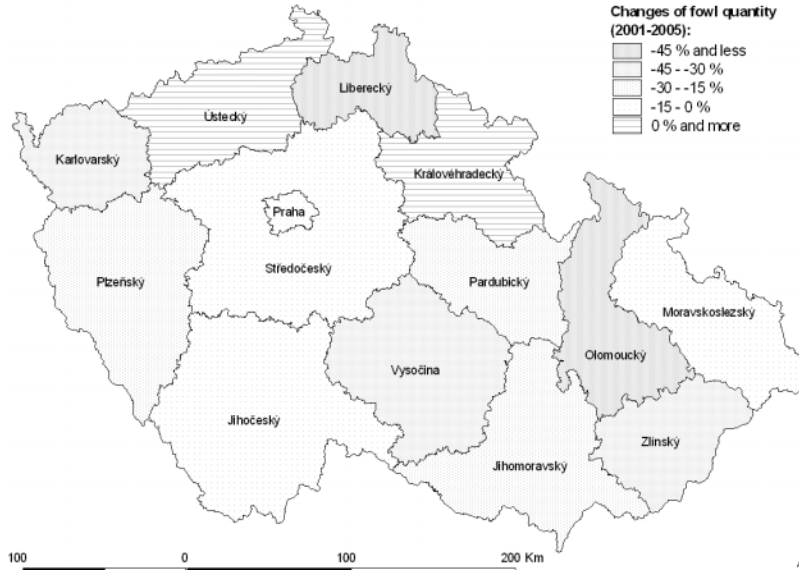

Figure 12. Changes of fowl breeding in the regions of the Czech Republic in 2001, 2005
Source: Soupis hospodářských zvířat k 1.4. 2001; Soupis hospodářských zvířat k 1.4. 2005.

Fowl breeding is most intensive in eastern Bohemia (regions of Pardubice and Hradec Králové), in regions of Moravia-Silesia and Ústí, with more than 300 birds per 100 hectares of arable land. Higher intensity is recorded also in South Bohemia (250 birds per 100 hectares of arable land).

CONCLUSION

The numbers and the breeding intensity of all types of livestock decreased considerably in the period analysed. The number of cattle decreased since 1990 by 60%, of cows by 54%. As it is suggested in figure 13, the highest decrease in the number of cattle (by more than 80%) was registered in the fertile regions of

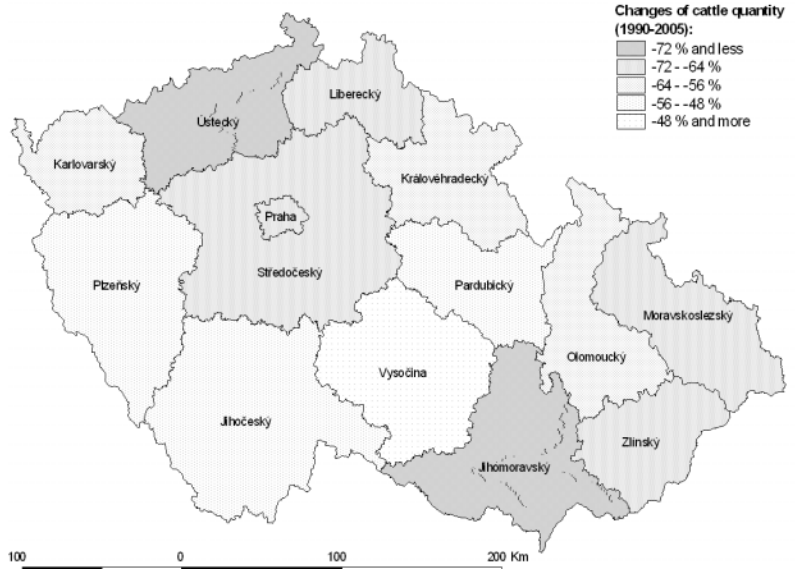

Figure 13. Changes of cattle quantities in the regions of the Czech Republic in 1990–2005
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2005.

South Bohemia and in region of Ústí. In the case of cow breeding we must also mention Central Bohemia, with decrease by more than 65% (Figure 14). The region of Vysočina was influenced relatively little, but even there the decrease by 40% in the numbers of cattle and cows took place. We can conclude that after 1990 the importance of milk cows increases at the expense of meat cattle. The primary trend is significant reduction of cattle breeding in fertile areas (South Moravia, Central Bohemia), while the mountainous areas experienced only relatively low decreases. As a future problem we can see reduction in cattle and mainly cow breeding in hinterland of large cities (Prague, Brno, Plzeň, Ostrava), where former facilities are still in use. In the peripheral areas these facilities have often fallen into disuse.

Assessing the changes in the numbers of pigs, sheep, poultry and fowl in 1990–2005 is methodologically very complicated (mainly for poultry and fowl, as explained before). Yet, we can attempt at least marking the main tendencies. There was 40% reduction in pig number after 1990. The decrease is general at the regional level (the biggest in Central Bohemia and Liberec). The reduction is again evident in the hinterland of large cities (Prague, Plzeň, Ostrava, Brno), increase is registered particularly in the Znojmo district and eastern Bohemia or the Hodonín district (Figure 15). However, high consumption of pork seems to secure the future of pig breeding in the Czech Republic.

Radical decrease in the numbers of sheep in the 1990s was partly compensated by an increase in the first years of the 21st century. Nowadays, the Czech

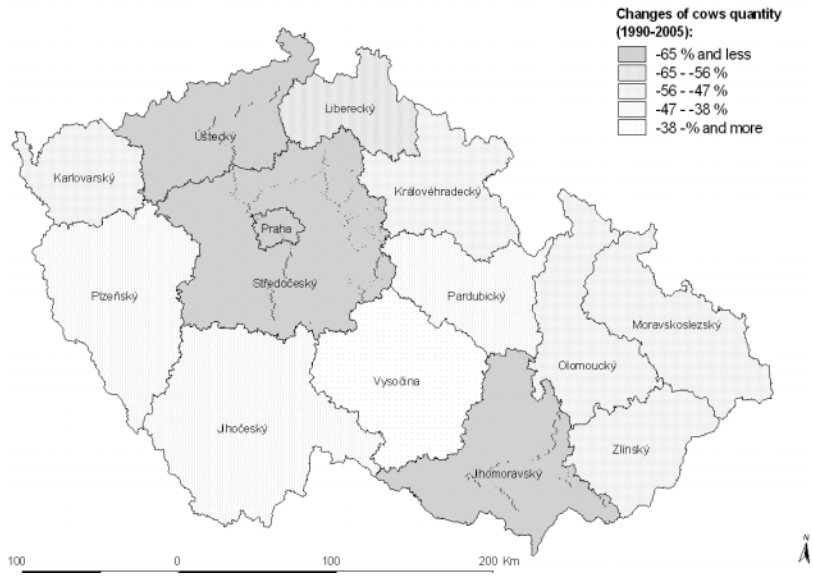

Figure 14. Changes of cow quantities in the regions of the Czech Republic in 1990–2005
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2005.

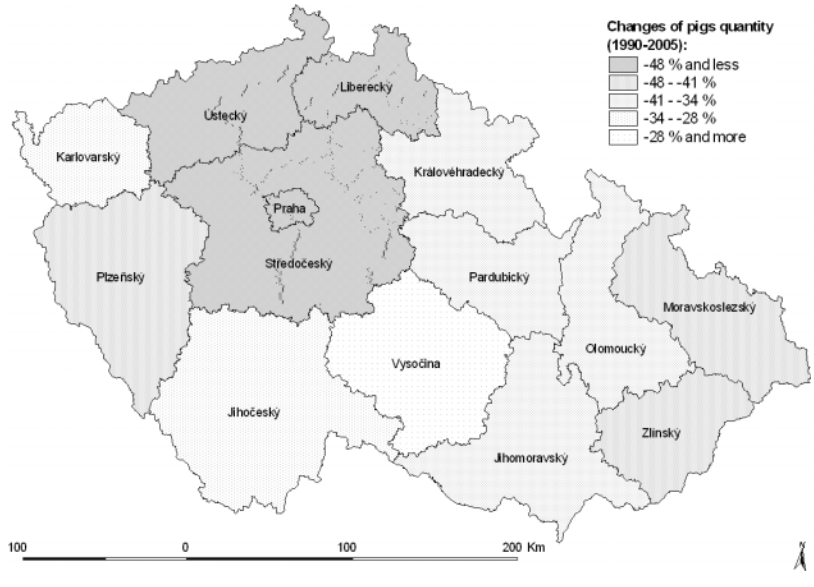

Figure 15. Changes of pig quantities in the regions of the Czech Republic in 1990–2005
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2005.

Republic has several centres of sheep breeding (Figure 16). Besides traditional Valašsko (districts of Vsetín and Frýdek-Místek), there are the region of Karlovy Vary (particularly the district of Sokolov) and the north western part of the Šumava Mts.

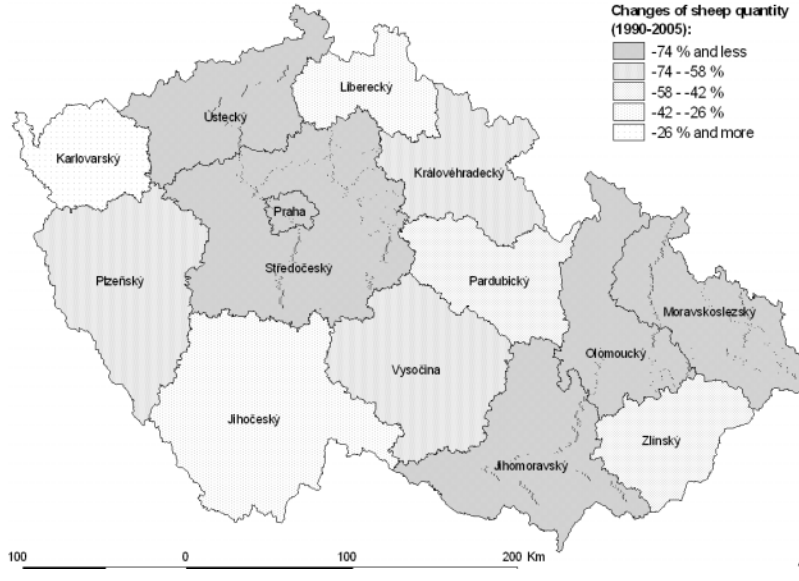

Figure 16. Changes of sheep quantities in the regions of the Czech Republic in 1990–2005
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2005.

Important decrease in the numbers of poultry took place after 1990 also in the hinterlands of large cities (Prague, Plzeň, Brno, and less significantly Ostrava). Around one tenth of the total numbers of poultry is bred by small farmers (up to 50 birds), this phenomenon being even more significant for the numbers of fowl (around one fifth). The highest numbers of poultry bred by small farmers are concentrated in Central Bohemia, South Bohemia, South Moravia and Moravia-Silesia, in regions of Liberec, Zlín and Vysočina, in terms of relative figures (more than 50%). The highest increases in the numbers of poultry are registered in South Bohemia and South Moravia, the highest decrease in regions of Karlovy Vary, Liberec and Olomouc (Figure 17). The same conclusions may be drawn for the changes in the numbers of fowl (Figure 18). As for the future of poultry breeding in the Czech Republic we can assume that thanks to the increasing popularity of poultry, Czech farmers will increase the numbers of poultry as well.

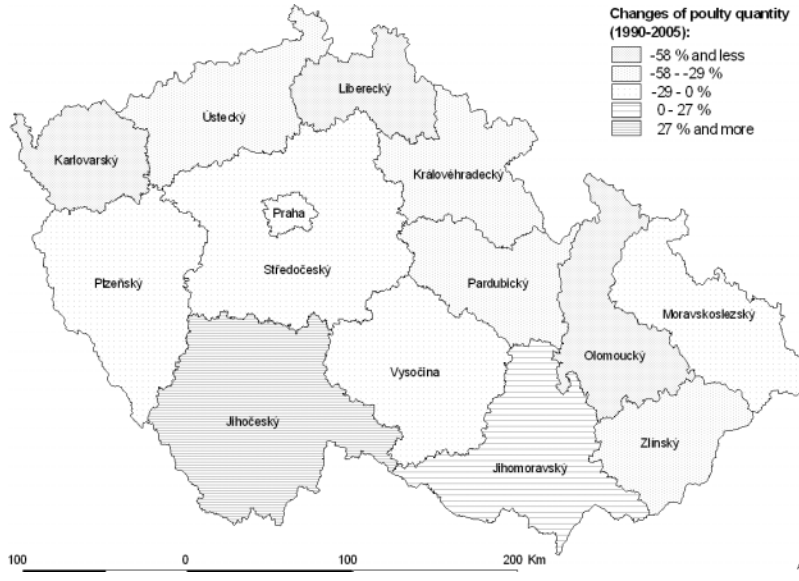

Figure 17. Changes of poultry quantities in the regions of the Czech Republic in 1990–2005
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2005.

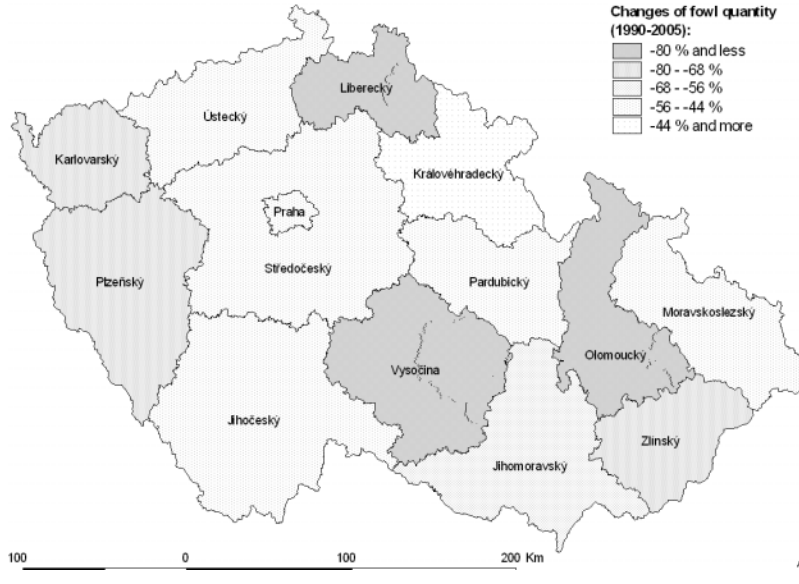

Figure 18. Changes of fowl quantities in the regions of the Czech Republic in 1990–2005
Source: Soupis hospodářských zvířat k 1.3. 1990; Soupis hospodářských zvířat k 1.4. 2005.

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Peter SPIŠIAK
Institute of Geography, Faculty of Natural Sciences, UPJŠ
Jesenná 5, 040 01 Košice, Slovak Republic
spisiak@fns.uniba.sk
Ján FERANEC, Jan OT'AHEL, Jozef NOVÁČEK
Institute of Geography, Slovak Academy of Sciences
Štefánikova 49, 814 73 Bratislava, Slovak Republic
feranec@savba.sk, otahel@savba.sk, novacek@sazp.sk

TRANSITION IN THE AGRICULTURAL AND RURAL SYSTEMS IN SLOVAKIA AFTER 1989

Abstract: Rural areas play an important role in the socio-economic development of Slovakia. The present structure of the Slovak rural areas is the result of long-term historical development, influenced by intensive industrialization of the country and the large-scale reconstruction of the agricultural sector.
Transition of rural areas in Slovakia is expected to take place in the following spheres, involving also potential problems to be resolved: economic and production functions, socio-demographic functions and environmental functions. Authors of this paper aspire to reach two aims: to describe rural area of Slovakia and its transformation after 1989 and to emphasize some specific features of the Slovak agriculture, its adaptation to market economy, changes in land use and some new methodological procedures.

Keywords: transition, rural areas, agricultural sector, changes in land use, Slovakia

INTRODUCTION

Rural areas play an important role in the socio-economic development of Slovakia. The present structure of the Slovak rural areas is the result of long--term historical development, influenced by intensive industrialization of the country and the large-scale reconstruction of the agricultural sector. Rural areas are in Slovak conditions characterized by a considerable degree of fragmentation of rural settlements. In the 1970s and 1980s the number of rural settlements was reduced. Only settlements with distinct economic functions survived, and the rest lost their original socio-economic efficiency and acquired other functions (for instance, weekend or holiday residence for urban population) or simply decayed.

In recent decades, it was precisely the urban areas that were affected by the general trends of socio-economic development, such as concentration, specialization of production, preferred construction in urban centres to the detriment of smaller settlements. However, marked changes also occurred in the structure of agricultural production, formerly the main basis of employment and income of rural population, these changes having been associated above all with the scientific and technological development and the overall change in the lifestyle (Spišiak et al., 2005).

The authors of this paper aspire to reach two aims: to describe the rural areas of Slovakia and their transformation after 1989 and to emphasize some specific features of the Slovak agriculture, its adaptation to market economy, changes in land use and some new methodological procedures.

RURAL AREAS IN SLOVAKIA

TRANSITION IN RURAL AREAS

Development of the production system in Slovakia led to concentration of population in towns and, simultaneously, the agriculturals' character of rural communes was fomented. The rural communes were concentrated under the idea of centralized administration. This concentration also started in the sphere of production, above all in agriculture. Extensive farm agglomerations were formed and the burden they represented for the environment developed into a problem. Migration of farm workers followed, with the result that the relationship of people to their proper land and commune weakened.

Rural regions are identified following the EU criteria, which rely on demographic indicators (population density, natural increase, migration, indices of economic intensity), natural resources (structure of land use), economic structure (representation of the primary sector, industry, commercial and public services), infrastructure (water supply, sewage, road network density, gas supply network), socio-economic conditions (mean monthly wages, unemployment, rate of investments).

EU defines rural areas as follows:

- dominant position of farming activities (economic core of the region),
- prevailing "green zones" with ecological function,
- low population density, dispersed settlement structure over a large territory,
- limited sizes of settlements,
- prevalence of jobs requiring manual work,
- existence of specific natural assets,
- existence of local or regional culture stemming from the relationship between humans and nature.

Rural areas are, therefore, based on the following attributes: economic, ecological and social, and they are exploited not only by the population living there but also by the urban population. One of the solutions for delimitation of the rural regions, in turn, is the share of rural population living in the region. A region is considered rural if more that 50% of population live in rural areas. If the percentage of rural population is 15–50%, we deal with a mixed region and if this percentage drops below 15, the region is urban. There are additional criteria: general demographic characteristics and processes, economic structure and performance, social level and social security, land use, environment and sustainability. The above criteria were applied to the classification of rural, mixed and urban regions in Slovakia (Fáziková et al., 1998).

Table 1. Selected characteristics by types of regions in Slovakia

Selected indices by type of region	Rural regions	Mixed regions	Urbanized regions	Slovak Republic
1. General geographic indices				
Number of regions	32	38	9	79
Percentage of population	37	50	13	100
Percentage of area	50	49	1	100
Population density (inhabitants/1 sq. km)	82	112	1129	110
2. Demographic characteristics				
Percentage of pre-productive population	20.9	19.7	16.9	19.2
Percentage of productive population	61.1	62.4	65.3	63
3. Employment by sectors (%)				
Agriculture	15.5	8.2	0.7	8.7
Industry	33.4	38.3	22.8	33.7
4. Labour market and unemployment				
Economically active population (%)	47	47	52	48
Unemployment rate	20.2	14.7	12	15.6
Mean monthly wage (SKK)	8661	9132	12,566	9332
with distinction of:				
agriculture	7893	8039	9545	8151
industry	8907	9307	13,423	9614
5. Land use				
Agricultural land	53.8	46.0	39.5	49.8
Forest	37.2	44.8	25.5	40.7
Other	9	9.2	35.1	9.4
Total area	100	100	100	99.9

Source: Regional comparison in Slovak Republik, Slovak Statistical Office (SSO), Bratislava, 2000.

At present, 43.3% of total population in Slovakia live in rural settlements, in these settlements 71.5% of population are active in broadly understood agriculture, covering farming and both the forest and water management. The essential pat of this population, though, is active in farming (see Figure 1).

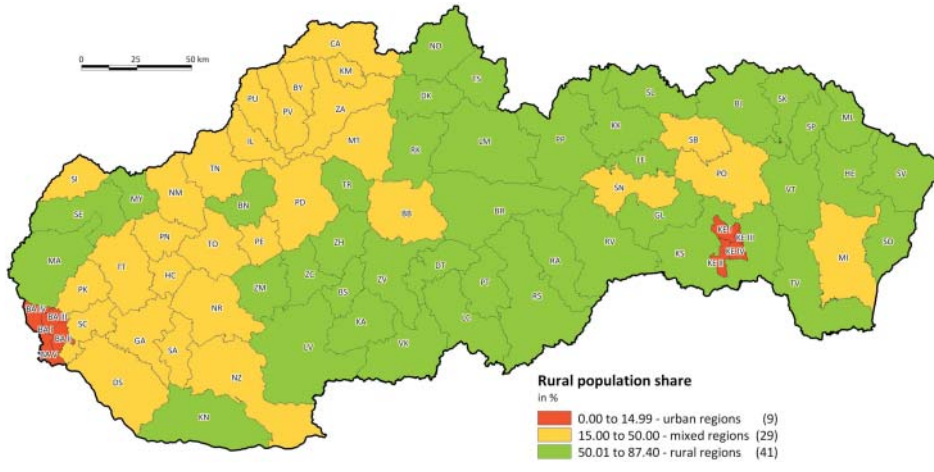

Figure 1. Rural, mixed and urban regions according to OECD in Slovakia
Source: Slovak Statistical Office 2000.

DEVELOPMENTAL TRENDS IN RURAL AREAS

Transformations of rural areas in Slovakia are expected to take place in the following spheres, involving also potential problems to be resolved:

a) economic and production functions:
- the principal burden as regards foodstuff production will fall on the transformed large-scale firms (agricultural co-operatives),
- advanced agricultural firms will adopt combination of agricultural and other productions,
- self-supplying food system will thrive,
- transformation of small recreation areas near bigger towns into the self-supplying ones will take place,
- enlargement of land area under restitution proceeding, gradual decrease of the number of applicants requiring land restitution will occur;

b) socio-demographic functions:
- gradual disintegration of rural communes,
- partial decrease of rural employment in regions, where transformation was accomplished earlier,
- moderate increase of rural employment in principal farming regions,

- transformation of employment of rural population in towns (in services, commerce, partially agriculture),
- increasing problems in rural boundary areas;

c) environmental functions:

- interpretation of ecological landscape management,
- gradual development of alternative agriculture,
- change of production in regions with special conditions (national parks, protected landscape areas, water protection, marginal areas).

The principal problem of rural region is now their relationship to land and landscape, the latter not being in their exclusive ownership, since all people own it. This is the reasons why the sustainability issues with regard to rural landscape do not only concern the rural population, but all citizens. However, rural areas are very differentiated, which impedes application of the same approaches in all cases. The policies, applied to the development of the rural areas by other, especially advanced countries, are multisectoral, and along with the agrarian policy they also include training of local leaders and authorities, technological assistance, involvement of the private sector, conservation of the environment, subsidized credits and direct investments, coordination between the state administration and local self-government, the national government, regional and local managing centres, transferred payments and special developmental programs for employment, health care, and education and for the human capital in general. If the sustainability program is to successfully continue, it is indispensable to take into account the lowest level – the local one (Spišiak, 1998, 2000).

AGRICULTURE OF SLOVAKIA IN THE TRANSITION STAGE

THE BACKGROUND

Agriculture in Slovakia has been subject to a marked transition in recent years. It was mainly caused by transition of the economy from the centrally managed to market economy and the related change of ownership relations. The Act No. 42/1992 about adaptation of property relationships and satisfaction of property claims in agricultural cooperatives (since the share of cooperatives was the largest in the agricultural sector) codified it.

One of the most important changes in agriculture was the gradual and noteworthy decrease of agricultural production by 30% in 1990–1997, even in spite of the real GDP increase after 1994. This decrease was caused by two combined factors: decrease of consumption and increase of import of food products. Decrease of food consumption per capita caused the increase of production. It is also worth mentioning that the European food markets are saturated with

agricultural products so that the search for outlet is difficult. Just on the contrary, EU countries were the ones that contributed to the import of food products to Slovakia. However, it is a paradox that the import from the CEFTA countries increased but not enough (it also concerns the Czech Republic and Hungary).

These processes, naturally, also found reflection in the number and type of agricultural firms and number of workers in this sector. Transformation of the original cooperatives (JRD – CO) and state properties (ŠM – SP), whose total number was 1187, led to establishment of 23,045 agricultural firms already in 1997, this number having decreased to 21,741 in 2000.

The sluggishness of land restitution was due to several causes, for example, proving of property rights is quite problematic. But the substitute solutions (e.g. other plot in the same price), applied when the original property cannot be returned, are also slow. The result of efforts to assume correct relationships in the sphere of property is also constituted by a great number of leased real estates, where the biggest lessor is the Slovak land fund.

Table 2. Share of agriculture in basic indicators of the national economy in Slovakia

Indicator	Share in GDP (%)			
	1990	1995	2000	2004
Total GDP	100.00	100.00	100.00	100.00
including:				
agriculture, forest, hunting, fishing	7.34	5.42	4.29	3.63
industry, construction	56.22	34.90	29.97	29.68
service	30.97	51.22	65.66	66.68

GDP – Gross domestic product.
Source: SSO, 1992, 1997, 2002, 2004.

In spite of the introduced amendments of legislation concerning the restitution of property rights to legal owners, the individual farming is not wide spread. Ten years after the systemic change (1995), the area of land worked by natural persons (self-employed farmers – SEF) does not exceed 10% of total farmland area in Slovakia.

The result of transformation is that a great number of persons obtained property rights to what was once in ownership of cooperatives. It means that the mean value of property corresponding to one qualified person remains low. The process of concentration of property in cooperatives did not progress as was expected after the issue of the law amendment No. 2 64/1995, which provides for the capitalization of the property shares.

MAIN CHARACTERISTICS OF THE DEVELOPMENT AND POSITION OF AGRICULTURE AND COMPARISON WITH THE EU

According to the data of the Statistical Office of Slovakia, agriculture was among the branches where dynamics of year-to-year real growth of GDP (9.7%) in 2004 was above the average level of national economy (5.5%). The real growth of GDP in agriculture was influenced more by the faster growth of gross production (5.8%) than of consumption (2.2%). Higher real growth of GDP in agriculture, compared to the average for the Slovak economy, was attained with a decrease of employment (5.1%), as opposed to its average moderate growth across the branches (0.3%). This was reflected in higher growth of mean wages (17.5%) compared to the national economy (10.2 %) and in slight improvement in the disparity in wages (from 73.3 to 78.2%), but also a more distinct increase of work productivity measured by the GDP per employee (15.6%) than on the average in branches of the national economy (5.2%). In contrast to the average for branches of the national economy, where the generation of gross fixed capital increased, it decreased in agriculture as the effect of a long-term deficit of finances and shift of terms of the new subsidy system to the end of the year.

Agriculture in 2004 can be characterized as follows:

- Its share in economic performance of Slovakia increased as measured by GDP and gross added value (GAV), with a moderate growth of its share in gross production and drop of its share in consumption across years;
- Its share in overall employment decreased, with a positive effect in terms of closing the gap of labour productivity, measured by GDP per employee, between agriculture and national economy; labour productivity in agriculture, measured by gross agricultural production (GAP) per employee exceeded the rate proper for the national economy, and mean wages in agriculture were getting closer to those in the national economy.

International comparison of the position of agriculture in the national economy of Slovakia and in other new EU member countries (except for Malta), based on most recent data available for 2002 and 2003, shows that the share of agriculture in GAV in Slovakia in 2002 placed our country in the position (data for all evaluated countries) following Lithuania, Estonia and Latvia, which reached the highest values of this indicator. At the same time, Slovakia, in contrast to these countries, belongs among the ones with the smallest share of agriculture in overall employment.

Slovakia, in terms of share of agricultural and food products in overall import of the country in 2002 followed Hungary and Czechia, and in 2003 only Hungary, meaning the countries that featured the lowest such share in overall import value. Regarding the share of export of these commodities in total exports, Hungary is among the countries with the highest such share, while Slovakia registered the lowest one among the countries considered.

STRUCTURAL CHANGE

Structure of business

In the immediate past period, the business environment in the sector was determined by activities connected with preparation of accession of Slovakia to the EU. Development of the structure of the business in the evaluated branches of the agricultural sector varied also because of different conditions and requirements related to the EU accession.

According to the preliminary data of the Slovak national Statistical Office, the number of business companies, above all the limited liability ones, continued to increase well in 2004, while the number of cooperatives increased only slightly as did the number of farms run by natural persons.

According to the results of structural inquiry about farms in 2003, their number increased compared to 2001 in the group of farms run by legal and natural persons. Comparative analysis also confirmed the increasing trend in the number of farms without farmland. Their share in the structure of farms held by legal persons is 7.0% (116 farms, including 104 commercial companies), among those held by natural persons it is at 6.5% (425 farms). These are farms involved in animal production, but also those that lease their farmland to other entities.

Table 3 demonstrates the development of the number of businesses according to legal forms and individual branches:

Table 3. Number of businesses by branches and legal forms in Slovakia

Legal form	Agriculture			Agricultural services		Food industry	
	2001	**2003**	**2004**	**2003**	**2004**	**2003**	**2004**
State firms	6	5	6	4	1	0	1
Cooperatives	722	644	668	13	13	4	7
Business companies	825	941	1171	1062	946	461	471
including: PCC	*2*	*1*	*1*	*19*	*15*	*4*	*4*
Limited cos.	*700*	*817*	*1044*	*878*	*801*	*324*	*340*
Share-holding companies	*123*	*123*	*126*	*165*	*128*	*133*	*127*
Other legal persons	83	70	72	84	55	28	16
Total legal persons	636	1660	1917	1163	1015	493	495
Self-employed farmers	5874	6550	6669	324	280	3293	2685
Total	**7510**	**8210**	**8586**	**1487**	**1295**	**3786**	**3180**

PCC – public commercial company.

Source: Agriculture in 2001: SSO, Structural Farm Census in Slovakia, 2001; 2003: SSO, Structural Farm Survey 2003; 2004: SSO, Register (preliminary data).

As far as the farms owned by legal persons are concerned, the greatest increase is observed among commercial companies (115), limited liability companies above all (110), which are in fact the most widespread legal form. Cooperatives preserved their dominant position in terms of managed areas in spite of the 11% drop in the number of entities. They manage 55.8% of total area held by legal persons or 48.9% of the total area of farms. The highest decrease of the number of cooperatives (-33 units) and simultaneously the highest increase of number of commercial companies (+32 units) have been observed in the region Prešov.

Table 4. Basic indicators of farm structure by legal form in Slovakia

Legal form	Number of farms		Agricultural land (hectares)		Average area (hectares)		Share in agricultural land (%)	
	2001	**2003**	**2001**	**2003**	**2001**	**2003**	**2001**	**2003**
Total farms with agricultual land	6995	7668	2,104,031	2,083,513	301	272	100.00	100.00
including: state firms	6	5	17,105	16,917	2851	3383	0.81	0.81
cooperatives	715	637	1,131,428	1,018,085	1582	1598	53.77	48.86
commercial companies	722	837	723,438	779,359	1002	931	34.38	37.41
inlcuding: PCCs	*1*	*1*	*390*	*420*	*390*	*420*	*0.02*	*0.02*
limiteds	*627*	*737*	*549,900*	*612,271*	*877*	*831*	*26.14*	*29.39*
Shareholding companies	*94*	*99*	*173,148*	*166,668*	*1842*	*1684*	*8.23*	*8.00*
Other legal persons	79	65	17,498	9103	221	140	0.83	0.44
Total legal persons	1522	1544	1,889,469	1,823,464	1241	1181	89.80	87.52
Total SEF	5473	6124	214,562	260,049	39	42	10.20	12.48
Total farms without agricultual land	515	541	x	x	x	x	x	x
Total farms	**7510**	**8209**	**2,104,031**	**2,083,513**	**301**	**272**	**100.00**	**100.00**

Source: 2001: SSO, Structural Farm Census in Slovakia; 2003: SSO, Structural Farm Survey 2003.

The mean area of farms held by legal persons has slightly diminished, mainly due to the decreased mean area owned by commercial companies, from 1002 hectares of agricultural land in 2001 to 931 hectares in 2003. In the group of commercial companies there are great differences in the average farm size (shareholding companies – 1684 hectares, limited liability companies – 831 hectares). Areas of cooperatives slightly increased and reached the mean of 1598 hectares in 2003. The farm group, accounting for the largest area (42.8%), remained the farms with acreage over 1000 hectares, owned by legal persons, managing 82.14% of the total area of farmland owned by legal persons in 2003.

The group of farms of natural persons experienced a distinctly higher increase of managed area (+21%) than the increase in the number of farms (+11%). This is due to the increase of the average area of farms owned by natural persons, 42 hectares in 2003 (2001 – 39 hectares). Farms of natural persons managed in total 260 thousand hectares of agricultural land in 2003. The largest share in this category (38%) was that of farms in the size interval of 100–500 hectares and the most numerous were the farms of legal persons with area 1–5 hectares (30.1%) and 10–50 hectares (25.3%). The largest share of the total number of farms of natural persons (27.6%) functioned in the region of Nitra on the area of 74.4 thousand hectares of agricultural land, which is equivalent to 28.6% of the total farm area of natural persons in Slovakia.

The size structure of farms is expressed for the purposes of international or intersectoral comparison in ESU (European Size Unit, 1 ESU = 1200 EUR). Farms are classified into ten classes of economic sizes. The following table (Table 5) quotes the classification under ESU (based on computation of the Standard Gross Margin, SGM) in 2001 and 2003.

Table 5. Size structure of farms by economic size classes

ECS*	Interval of ESU**	Size class	Farms of legal persons				Farms of registered natural persons			
			number		%		number		%	
			2001	2003	2001	2003	2001	2003	2001	2003
TOTAL			1636	1660	100	100	5874	6550	100	100
I	< 2	very small	75	80	6.72	7.47	2713	3086	46.19	62.95
II	2–4		35	44			848	1037		
III	4–6	small	22	33	2.57	4.10	471	498	13.32	12.50
IV	6–8		20	35			312	321		
V	8–12	moderately small	45	34	4.52	4.34	392	466	10.69	10.95
VI	12–16		29	38			236	251		
VII	16–40	moderately big	129	183	7.89	11.02	572	552	9.74	8.43
VIII	40–100	big	254	301	15.53	18.13	249	251	4.24	3.83
IX	100–250	very big	420	379	25.67	22.83	67	68	1.14	1.04
X	over 250	extra big	607	533	37.10	32.11	14	20	0.24	0.30

* ESC (Economic size class)

**1 ESU (European Size Unit) = EUR 1200 of standard gross profit obtained by an enterprise (average value of production per 1 hectare or 1 unit – variable costs incurred in such production)

Source: SSO, Structural Farm Census 2001, Structural Farm Survey 2003, own calculations.

The overview suggests that, according to this farm size classification, in case of farms owned by legal persons, the groups of big farms prevail, primarily the extra big farms, while in the group of big farms the share of moderately big and big farms increased over the years at the expense of very big and extra big

farms. In the category of farms owned by natural persons, small farms prevail and their share increased across years. In the groups of small farms, the very small farms are most frequently represented in category of farms owned by natural persons.

Property relationships in primary agricultural production, particularly in the sector of cooperatives are still not settled. According to the available information, about a hundred thousand shareholders did not obtain their property share from cooperatives, because their property share sheets (PPS) have not been issued. These, as a rule, are cooperatives in bankruptcy and operating under the legal regime of liquidation. According to the Transformation Act No. 3/2005 that amends the Act No. 42/1992 about modification of property relationships and settlement of property claims by cooperatives in the wording of the later issued regulations, cooperatives were obliged to do so before do 31.5.2005. This deadline was also obligatory for cooperatives that issued PPS, but which also filed the not settled eligible claims of non-members. In case of cooperatives in bankruptcy, administrators could do so. In case of bankruptcy and settlement, the eligible persons are shareholders of the cooperative in position of creditors but as rule they did not apply for their property claims within the deadline. Administrators of bankruptcy or the management of cooperatives will not issue PPS to shareholders of these cooperatives. Their property participation in cooperative (like the property share of cooperative members) legally ends with the disappearance of the cooperative.

Structure of agricultural land and its changes

Changes of agricultural landscape with application of new methodological procedures

One of important factors that still influences the transformation of agriculture is the land fund. Privatisation of agricultural land has not yet acquired the scope that would show the effect in the changed rural landscape structure. Collective land use by agricultural firms still prevails. Hinterlands of rural settlements are those that changed most as privatisation of land manifested in increased number of small field parcels or meadows and permanent cultures. In this context, it is necessary to distinguish regional natural conditions and particularities connected with agricultural orientation, traditional rural management and land use. In hinterlands of rural settlements in the south of Slovakia, above all in the Danube Lowland, Podunajská ní€ina, privatisation of land was reflected through parcellation of arable land, which is characterized by the mosaic of alternation of the one-year crops. Viticultural areas are also typical for the increase of the mosaic consisting of fields, gardens and vineyards. Grassland areas are characteristic for submountain and mountain areas of central and northern Slovakia, as determined by relief and climate. Typically, in these areas, cattle and sheep are

kept, accompanied by the diary production. This trend also exists in the structure of small-scale use of agricultural land in areas with a relatively high share of grassland areas.

The data and the methods of the CORINE Land Cover (CLC) Image and CLC2000 (I&CLC2000) (Heymann et al., 1994; Bossard et al., 2000; Büttner et al., 2004; Nunes de Lima, 2005; Feranec et al., 2007) Projects were applied to land cover changes for the 1990–2000 period.

Identification of land cover changes of Slovakia, that is – also of changes in the agricultural landscape, was based on the principle of updating (Feranec et al., 2004) using the CLC90 data layer and Landsat 7 ETM satellite images from 2000 (+/– one year).

Derivation of land cover change data layer of Slovakia for 1990–2000 is the result of the GIS operation in which the data layers CLC90 and CLC2000 were overlaid and in this way a new layer was generated – the minimum area of identified changes is 5 hectares, its minimum width is 100 m and minimum area of the newly identified area is 25 hectares (Nunes de Lima, 2005; Feranec et al., 2007). Areas of identified change in agricultural landscape by districts of Slovakia are presented in Figures 2, 3 and 4. They make it possible to present the changes of rural landscape structure and to point to changes of agricultural use according to natural conditions and possibilities of regional development in individual districts of Slovakia. It was possible to classify the types of change (Feranec et al., 2000, 2004 and 2005) into groups that indicated processes of

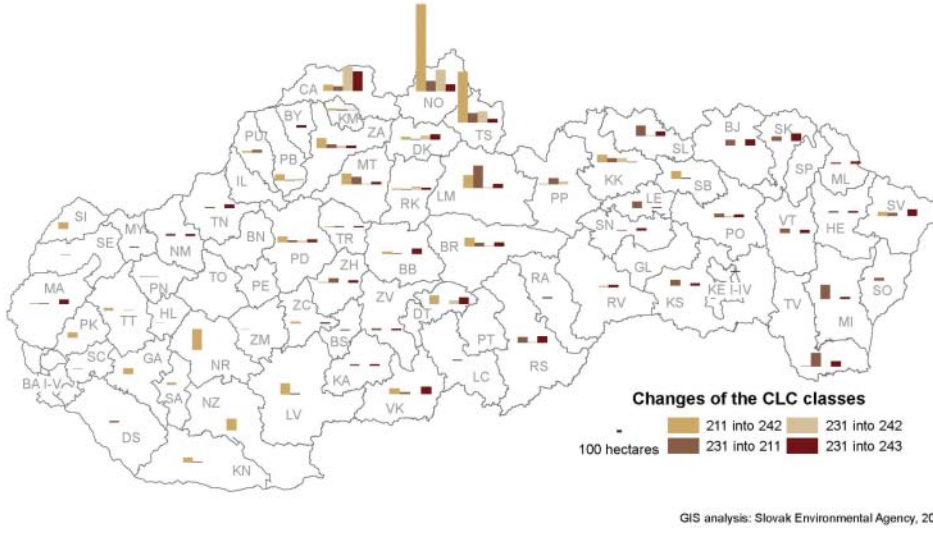

Figure 2. Changes of the CLC classes (211–242, 231–242, 231–211) (district abbreviations in the map are explained in the text)
Source: Slovak Environmental Agency, 2006.

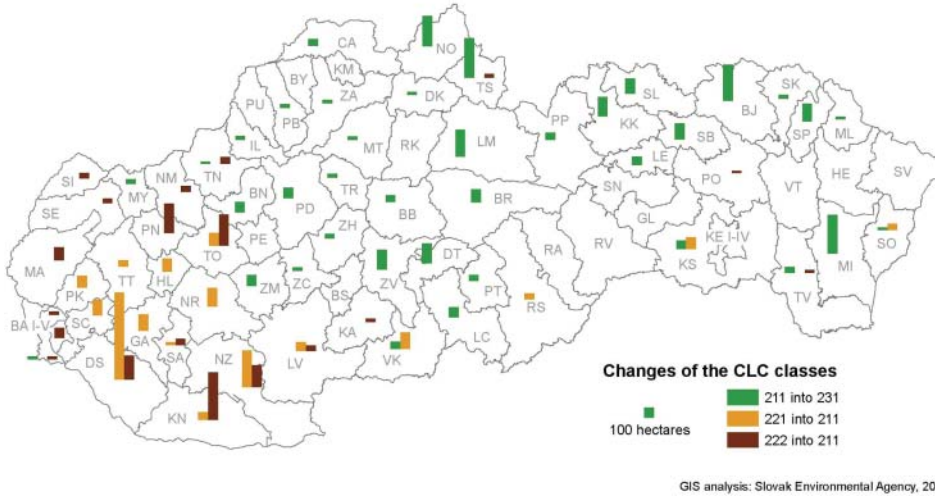

Figure 3. Changes of the CLC classes (211–231, 221–211, 222–211) (district abbreviations in the map are explained in the text)
Source: Slovak Environmental Agency, 2006.

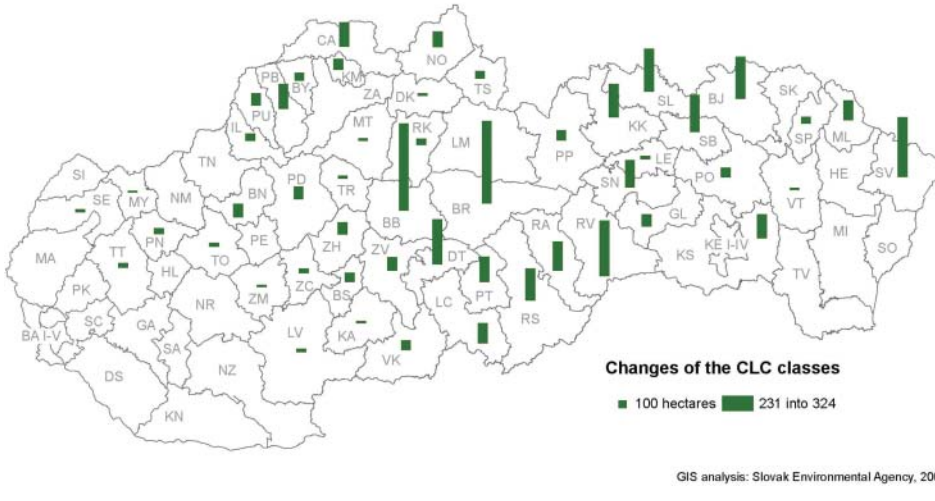

Figure 4. Changes of the CLC classes (231–324) (district abbreviations in the map are explained in the text)
Source: Slovak Environmental Agency, 2006.

intensification or extensification of agricultural use. Changes of arable land (211), mainly of the large-area parcels, into the class (242) complex cultivation pattern indicate activation of agricultural land use by little users and owners, independent farmers or land leaseholders. In difference from large collective

farms, small owners and users differentiate the farmland into small parcels of arable land, meadows or permanent crops also depending on economic (capital), technological and cultivating options.

The largest changes of arable land (211) into complex cultivation pattern (242) took place in districts of the northern and central Slovakia: Námestovo (NO – 3499.7 hectares) and Tvrdošín (TS – 2053.9 hectares). They were connected with possibilities of privatisation of farmland and tradition of smaller farms before collectivisation.

The process of privatisation or the possibilities to lease farmland also determined the land cover structure in south-western and southern Slovakia. Large-scale transformations of arable land into the complex cultivation pattern, or most frequently into small-area vineyards, gardens and orchards were identified in typical vine growing areas. The largest changes took place in the districts of: Nitra (NI – 839.8 hectares), Nové Zámky (NZ – 461.5 hectares) and Levice (LV – 439.0 hectares). Similar incentives influenced the change of meadows and pastures (231) into complex cultivation pattern (242) in submountain and mountain districts of the northern and central Slovakia. The biggest changes took place in the districts of: Čadca (CA – 970.8 hectares), Námestovo (NO – 884.8 hectares) and Tvrdošín (TS – 458.6 hectares).

Changes of grassland areas (231) into arable land (211) indicate intensification of agricultural use. The largest such changes took place in the already mentioned districts of northern and central Slovakia: Liptovský Mikuláš (LM – 906.2 hectares), Námestovo (NO – 419.6 hectares), but also in districts of eastern Slovakia: Michalovce (MI – 569.3 hectares) and Trebišov (TV – 531.5 hectares).

Changes of land cover suggesting extensification of agricultural use indicate another important trend in agricultural landscape. The most frequently identified changes were those of arable land (211) into meadows and pastures (231), or the initial stages of development of grassland on abandoned arable land. The largest changes were identified in districts of northern, central and eastern Slovakia: Tvrdošín (TS – 390.7 hectares), Michalovce (MI – 385.6 hectares) and Bardejov (BJ – 359.4 hectares).

Change of vineyards (221) into arable land (211), identified in districts of viticultural regions in the southern Slovakia, indicated a similar trend of extensification. The biggest changes were identified in the districts of: Dunajská Streda (DS – 858.7 hectares) and Nové Zámky (NZ – 362.3 hectares).

Trend of extensification in agricultural land use can be also confirmed by the change of orchard areas (222) to arable land (211). These changes were identified above all in the districts of: Komárno (KN – 468.5 hectares) and Topoľčany (TO – 307.9 hectares).

Extensification of agricultural land use is associated with the change of the agrarian policy after 1989, when the regular state subsidies of agricultural firms were either dramatically limited or definitely withdrawn. Increase of the areas of

meadows and pastures in submountain and mountain regions, in relation to the cattle and sheep husbandry tradition in Slovakia, deserves a special attention. Economically demanding cultivation of one-year crops on arable land, oriented to milk production, was not efficient with regard to the way cattle is kept.

Extensification of agricultural land use was also manifested through the change of meadows and pastures (231) into the transitional woodland scrub (324). Increase of the area in this class was connected with abandoned farmland or pastures and the natural rejuvenation (succession) of forest, which was identified as its transitory form. The largest scale of changes of meadows and pastures into transitory woodland scrub was identified in districts of central and eastern Slovakia: Banská Bystrica (BB – 897.6 hectares), Brezno (BR – 850.3 hectares), Snina (SV – 618.6 hectares).

In 2004, the approach to measuring land used in agriculture based on orthophotomaps was adopted. According to data of the Statistical Office of Slovakia, in 2004, 1,934,659 hectares of agricultural land were used in the country. The largest share corresponded to arable land (70.35%) and permanent meadows and pastures (26.59%).

The present use of agricultural and arable land

Thus, in the structure of the present agricultural landscape two categories dominate – arable land (AL) and permanent grassland (PG), which account for more than 96% of agricultural land. There is, however, a significant spatial differentiation with this respect. In southern areas of Slovakia, with lowlands and warm basins, AL prevails in contrast to central and northern Slovakia where PG dominates (Figure 5).

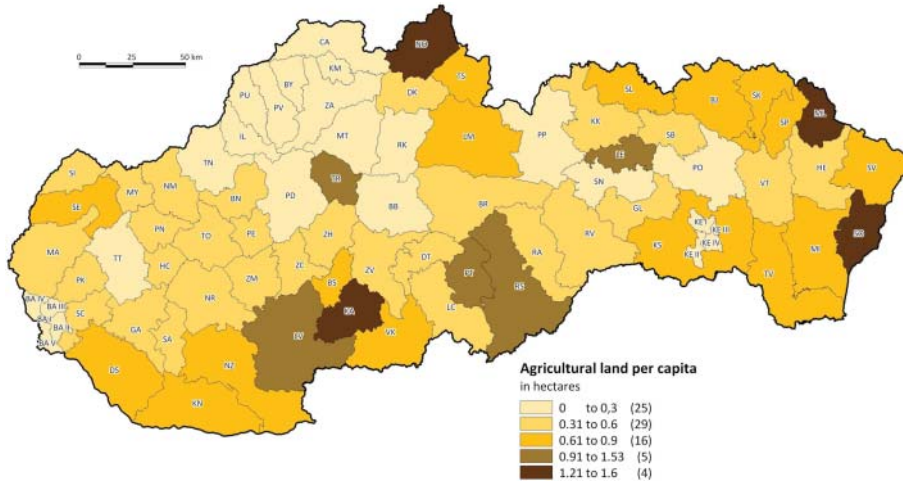

Figure 5. Intensity of charging agricultural land on population in Slovakia
Source: Slovak Statistical Office 2005.

Table 6. Area and structure of the used agricultural land in 2004

Indicator	Area (ha)	Structure (%)
Use of agricultural land	1,934,659	100.00
including: arable land	1,360,893	70.34
permanent crops	26,663	1.38
other areas, including house gardens	3469	1.68
permanent grassland and pastures	514,478	26.59
crops in greenhouses	156	0.01

Source: SSO 2005.

Cereals and fodder on arable land, along with industrial crops, represented the greatest share in the structure of arable land use (they accounted for 92.43% of the total arable land area (Figures 6 and 7).

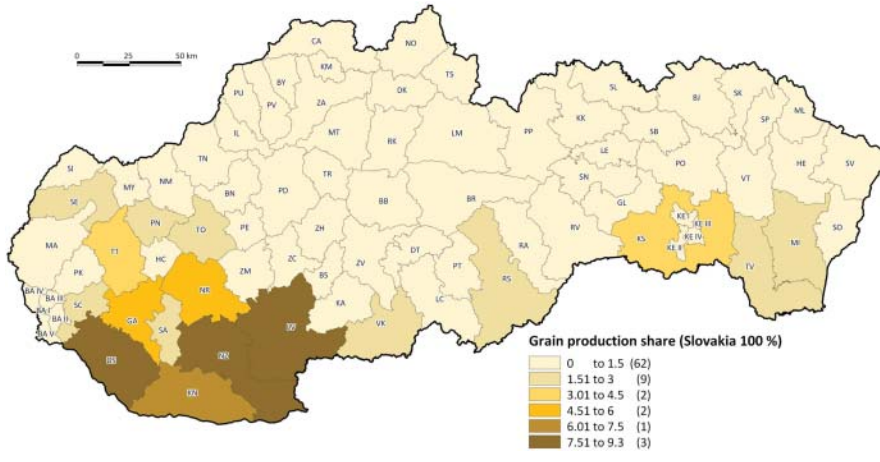

Figure 6. Production of grains in Slovakia
Source: Slovak Statistical Office 2003, 2004.

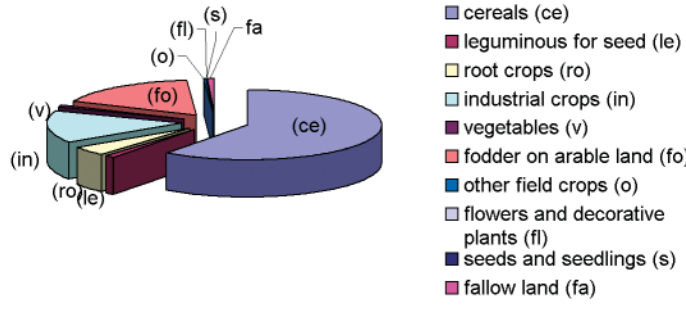

Figure 7. Structure of arable land use in Slovakia (2004)
Source: Slovak Statistical Office 2005.

Labour

In 2004, 86.6% of inhabitants of rural areas worked in agriculture. This was by 12.8 thousand persons (10.9%) less than in the previous year. The number of women has more markedly decreased (by 20%) than that of men (by 9.1%). In spite of this, the relative employment, per 100 hectares of agriculturally used land increased from 4.4 employees in 2003 to 4.5 in 2004.

Compared with the previous year, the structure of positions of workers in employment in 2004 changed in favour of businessmen (owners of firms, tradesmen, individual farmers) with their share in the total of working persons having increased by 4.5 percentage points. On the contrary, the share of employees and the assisting family members decreased by 4.4 and 0.1 percent points respectively.

There were 51,019 natural persons (mean number reported) working in ***organisations with 20*** and more employees (agriculture, crop production, animal husbandry, mixed agriculture), what was by 8.8 thousand natural persons less than in 2003. Number of women (number reported as of the last day of the period) decreased by 1897 persons (11.7%) and the number of persons working under agreement decreased from 12.9 thousand to 11.8 thousand, i.e. by 8.3%. The overall year-to-year decrease of the number of employees reached 14.7%, and it was higher by 3.1 percent points than in the preceding year. The decrease of the number of employees was also manifested through the share of workers (employees) in the total number of persons professionally active, which decreased from 78.6% to 77.7%, including the share of women (workers) which decreased from 26.2% to 25.6%. The highest share in employment in agriculture within the organisations having 20 and more employees was the one of agricultural cooperatives (67.8%), even though their decrease deepened across years. On the contrary, the share of employees in commercial companies and organizations with state contribution increased, although in absolute terms the number of employees also decreased in the firms of these legal forms.

AGRICULTURAL PRODUCTION AND AGRICULTURAL MARKET

According to preliminary data for 2004, the gross agricultural production increased (in current prices by 15.47% and in constant prices by 1.17%) across years – plant production increased by 12.67% and animal production decreased by 7.14%. This was how the share of plant production in gross agricultural production increased from 41.9% to 46.7%, while the share of animal production decreased.

Plant production

In 2004, the overall sown area of agricultural crops decreased by 23.5 (1.7%). Among the crops, the sown areas of the following crops increased: rapeseed (by

70.2%), wheat (by 19.8%), technical sugar beet (by 10.3%) and fodder hoe crops (by 4.8%). In case of rapeseed and wheat, it was the response of growers to climatic conditions in the autumn of 2003 and spring 2004, which contributed significantly with respect to the terms for sowing. In case of sugar beet it meant fulfilment of the national quota for Slovakia, established by the EU for production of sugar. A more distinct decrease across years was observed for sunflower (by 31.8%), vegetables (18.9%), barley (by 17.1%), and perennial fodder (by 10.6%). Changes in area of crops have been manifested subsequently in the structure of sown crops, with the shares of wheat and rapeseed increasing. The shares of barley and sunflower were those that decreased the most.

The yields increased for the majority of crops in effect of favourable climatic conditions, with abundance of moisture having made a significant contribution. The most marked increase of yields was observed in rapeseed, leguminous plants and wheat. The dynamics of development of the cropped areas and yields was manifested in total production of plant commodities by an increase, most markedly in the cases of rapeseed and wheat. The decrease in production of sunflower was caused, apart from the decrease of crop area, by moisture deficit during the maturing time and increased occurrence of pathogens.

Table 7. Total production of main crops

Crop	Total production (thousand tons)		Index 2004/2003
	2003	2004	
Total cereals	2490.3	3793.2	152.3
including: wheat	930.4	1764.8	189.7
barley	804.2	915.9	113.9
maize	601.4	862.4	143.4
Technical sugar beet	1171.7	1598.8	136.5
Potatoes	392.4	382.0	97.3
Rapeseed	53.0	262.7	495.7
Sunflower	252.7	196.4	77.7
Leguminous crops	24.6	37.6	152.8
Fodder hoe crops	67.8	56.9	79.2
Fruit	88.9	60.9	68.5
Vegetables	368.8	380.6	103.2

Source: Location commodity and perspective news, Research Institute of Agricultural and Food Economics (RIAFE) Bratislava; SSO 2003, 2004.

Development of plant production was influenced, apart from climatic conditions, by the level of nutrient application, protection and phyto-medical care. Analysis of the inputs and their consumption in agriculture showed that nutrient application slightly improved across years as did the protection of agriculturally

used land, but in the consequence of higher yields in 2004 more nutrients were drawn from the land, what meant deepening of the net NPK deficit on the area of the assessed crops with the exception of potatoes.

Animal production

According to the data from the Slovak Statistical Office, the unfavourable development in animal production continued in 2004. The number of animals in all categories except for ewes decreased. The number of pigs (decrease by 20.4%), and above all of sows (decrease by 21.9%), dropped the most, which was followed by the decrease in the number of cattle (by 9%) and poultry (by 3.5%). It was the consequence of problems with sales and stronger competition on the common market of the EU.

Considerable differences in across-year changes in individual kinds of farm animals were observed between administrative regions in 2004. Decreased numbers of pigs and cattle were recorded in all regions. Decrease of the number of cattle oscillated from 5.1% (region of Nitra) to 13.8% (region of Košice). Decrease of the number of pigs ranged between 2.5% (region of Bratislava) to 43.6% (region of €ilina). Numbers of sheep increased in three regions, with Trnava (11.7%) at the leading position. Their decrease among the remaining regions was the highest in the regions of Bratislava and (17.4%) Nitra (4.8%).

The number of farm animals per area unit at the end 2004 was 27.9 heads of cattle/100 hectares of farmland (including 12.0 cows), 20.6 sheep and goats/100 hectares of farmland, 84.5 pigs/100 ha of arable land (including 6.0 sows), 1007.7 heads of poultry/100 hectares of arable land (including 415.0 hens).

Indicators of utility and reproductive properties of farm animals developed in different ways for individual species. In cattle, only the annual milk production improved by 54.7 litres per milk cow. All parameters improved in pig keeping. Number of pigs born per litter, number of litters per sow, number of reared pigs per sow, and increases in pig fattening improved. This development demonstrated the improving conditions in the individual holdings. In sheep keeping, the previous improvement of parameters was followed by deterioration of reproductive indicators. Egg laying per one hen also decreased. There are still great differences in reproductive and utility properties of animals in terms of regions. For instance, the mean milk production per year and per cow ranged from 4079.6 litres (region of €ilina) to 6219.8 litres (region of Trnava), the mean gain in the domain of cattle raising oscillated between 0.520 kg per feeding day (region of €ilina) and 0.840 kg (region of Trnava), and the mean gain in pig fattening ranged between 0.470 kg (region of Bratislava) and 0.540 kg (region of Trenčín).

Table 8. Numbers of farm animals in Slovakia

Class, category of farm animals	Reality		Difference 04–03	Index 04/03
	as of 31.12.2003 (in thousand)	as of 31.12.2004 (in thousand)		
Cattle	593.2	540.1	–53.1	91.0
including: cows	245.8	231.9	–13.9	94.3
milk	*214.5*	*201.7*	*–12.8*	*94.0*
cows	*31.3*	*30.1*	*–1.2*	*96.2*
Fattening of cattle*	66.3	57.2	–9.1	86.3
Total pigs	1443.0	1149.3	–293.7	79.6
including: sows	105.2	82.2	–23.0	78.1
Mean number of pigs in fattening*	737.2	615.3	–121.9	83.5
Total sheep	325.5	321.2	–4.3	98.7
including: ewes	216.5	224.0	7.5	103.5
Goats	39.2	39.0	–0.2	99.5
Total poultry	14,216.8	13,713.2	–503.6	96.5
Including: hens	6126.9	5647.5	–479.4	92.2
Mean number of hens	5931.8	5629.6	–302.3	94.9

* Only reporting units included in the Farm Register.
Source: Animal production and market of products from agriculture, Census animal, SSO.

ECONOMIC RESULTS

Economic analysis of the results of the primary agricultural production in 2004 and of their developmental tendency was carried out on the basis of data of agricultural firms, provided by the Slovak Ministry of Agriculture in the form of Information Sheets. The evaluated set covers 2456 entities, legal and natural persons with the number of employees below 19 and over 19. Given that Information Sheets data concern agricultural firms that manage 81.72% of the used agricultural land in Slovakia, and thus are not exhaustive, these data were computed per hectare of agricultural land and were used as background material for analysing development tendencies of selected economic and financial indicators. Analyses of the legal and natural persons were carried out separately, because of different accounting systems applied.

Natural persons, sometimes referred to as independent farmers, who managed 8.08% of agricultural land in Slovakia, increased the economic result (by 44%) and its level per firm including the personal income of farmer was 163 thousand

SKK and 85.9% firms ended with a profit. After subtraction of personal income of farmer, its level was, of course, substantially lower.

The positive economic result was reached at a slight yield increase (by 0.8%) and a distinct cost decrease (by 5%). Increase of overall subsidies (22.2%), which partially compensated for the decrease of sales, and increased the share of current subsidies in yields or income (by 3.1%) to 13.3%, with higher share for natural persons (19.4%) than for legal persons (12.9 %), contributed to the positive economic result as well.

SPECIFIC REGIONAL FEATURES IN AGRICULTURE OF SLOVAKIA

In this section we shall present, for the eight regions of Slovakia, the specifics of organisation of agriculture.

Regarding organization of agriculture in the **region of Bratislava**, the eastern part of the region with a tip of the Danube Lowland (Podunajská ní€ina) and south-eastern slopes of the mountains Malé Karpaty, included in its territory, differs distinctly from the western part, majority of which lies in the southern part of the lowland Záhorská ní€ina. The transformed agricultural cooperatives prevail in the eastern part and other firms of the state or public sector are rare. Low spatial concentration of firms is characteristic for the western part and they are located at greater distances between them. As far as the nature of agricultural firms in relation to rural and urban location is concerned, there are no differences in their relative numbers. Thus, transformed agricultural cooperatives also exist in towns (Pezinok, Modra, AC Stupava, Svätý Jur, Malacky). There are 13 transformed cooperatives in the districts of Bratislava. In some rural settlements can one find special agricultural firms with a comparatively large land property (Sološnica, Veľké Leváre).

Region of Trnava is one of the most varied in terms of organization of agriculture. This varied structure is caused by rather inadequate administrative division of the territory with too differentiated natural conditions. In spite of these specific features, the distribution of the main agricultural firms in the region is regular. To an extent, the mountain chain of Malé Karpaty interrupts this regularity. The main agricultural firms are transformed cooperatives with comparatively extensive land at their disposal. They are located mostly in rural settlements. The state or public agricultural firms prevail in towns. The biggest ones are in Trnava, Veľký Meder, Galanta, Pieš€any, and Holíč. These firms often manage lands in 4–7 cadastrial areas. The number of individual farmers with small land acreage is negligible.

The territory of the **region of Trenčín** lies within several geomorphologic units, which entails a somewhat different organization of agricultural land. While in the southern part of the region (districts of Partizánske, Bánovce nad

Bebravou, Nové Mesto nad Váhom, and Myjava) a regular distribution of agricultural firms prevails, in the remaining part surface relief determines the organization of agriculture. Increased concentration of firms is observed in the valley of Pova€ské podolie and the dale of Hornonitrianska kotlina. Regarding the structure of firms, transformed agricultural cooperatives and not transformed state properties prevail. In some areas (district of Prievidza) state properties dominate. A part of them were transformed into firms of public sector. In submountain areas, an increased share of individual farmers appears who manage on the average the acreage of 60–80 ha of agricultural land.

Agriculture is relatively most homogeneous, as far as the natural conditions are concerned, in the **region of Nitra**. A considerable part of agricultural land lies in the Danube Lowland. The mountain ranges of Tríbeč, Pohronský Inovec and Štiavnické vrchy just reach the north-eastern part of its territory. From this point of view, spatial distribution of agricultural firms is regular and free of barriers. Transformed cooperatives prevail. Many not transformed state properties exist in the southern part of the region, and in the North public sector firms dominate. Specialised state properties and firms of public sector of supra-regional importance prevail in towns. Agricultural firms in the district of Nitra are special, because they were established as a kind of superstructure, following the research, scientific and educational function of this district centre. The number of individual farmers is not high, most of them in the north-eastern part of the region. The agricultural firms manage land in 3–4 cadastral territories.

Agricultural land in the **region of Žilina** is mostly situated within the bottoms of cool to moderately cool basins. This is the reason why the agricultural firms concentrate in these localities. This concentration often means that one firm manages land in 10–15 cadastral territories. In spatial terms two areas with specific organization can be distinguished. Regular distribution of agricultural firms is observed in the northern part of the region (districts of Čadca, Kysucké Nové Mesto, €ilina, Námestovo, Tvrdošín, and Dolný Kubín), and an increased concentration exists in its southern part (districts of €ilina, Bytča, Ru€omberok, and Liptovský Mikuláš). Transformed agricultural cooperatives prevail, in the South – firms of the state sector dominate. The majority of them are located in towns (Liptovský Mikuláš, Martin, Bytča). The land they manage is considerably dispersed. Specialised agricultural firms are located in some towns (for instance in Turčianske Teplice). The private sector is comparatively well developed in the North (average acreage of a farm being 60–100 hectares).

Organizational structure of agriculture in the **region of Banská Bystrica** is like in all submountain and mountain settings affected by natural factors, above all relief. While in the southern part of the region (districts of Veľký Krtíš, Lučenec, Rimavská Sobota, Poltár, and Revúca) the distribution of agricultural firms is regular, in the basins (Zvolenská kotlina, €iarska kotlina, and Horehronské podolie) increased concentration of firms within the bottom of

these basins prevails. The ratio of the transformed cooperatives and other firms is balanced. Individual farmers are no exception, with average acreage of farms in the range of 50–100 hectares. Firms of public sector and those with regional competence have their seats in towns. There is quite a number of firms specialised in the existing natural conditions. In rural settlements cooperatives prevail. Not transformed state properties administer a comparatively large land (5–8 thousand hectares of agricultural land), distributed in several cadastral territories. There are also rural settlements where there is no agricultural firm.

Although conditions for agriculture in the **region of Prešov** are not good, a relatively compact structure of agricultural firms developed there. Distribution of firms is also regular. Increased concentration exists in the western part – the area of the basin Popradská kotlina (districts of Poprad and Ke€marok) and in the eastern part – the mountains of Laborecká vrchovina and Bukovské vrchy (districts of Snina and Humenné). Cooperatives prevail only in some districts (Svidník, Poprad, Snina), firms of public sector generally dominate. Only a small share of firms operates in a single cadastre. In towns, firms of the public sector and not transformed state properties prevail. Their scope of competence is often supra regional. In rural settlements cooperatives prevail and they manage land in two or three cadastral territories.

Agriculture of the **region of Košice**, as well as its organization, are determined to a great extent by the fact that there is, apart from the warm basin of Košická kotlina, one of our two most important lowlands – Východoslovenská ní€ina. Cooperatives slightly prevail in these areas. As regards other firms, specialised firms of the public and state sector are represented here (such as firms of the state forest sector, seed-producing firms, and land improvement firms). In the western part of the region, the foothills of Slovenské rudohorie mountains (districts of Spišská Nová Ves, Gelnica, and Ro€ňava), a relatively high concentration of firms is observed. The firms are located within the bottoms of basins (such as Hornádska kotlina, Ro€ňavská kotlina). Although the area is not big, specialisation of its firms is varied. In districts of Spišská Nová Ves and Gelnica there exist firms of the public and state sector and in the district of Ro€ňava the firms of cooperative sector prevail. Special firms of the state sector prevail in towns, along with an important share of the public sector, which manages extensive areas in different cadastral territories. Cooperatives dominate in rural settlements. The number of individual farmers, with small land acreages, is negligible.

CONCLUSIONS

The present situation is important for the future development of the relationship between agriculture and rural areas. In the past, the development of produc-

tive forces in Slovakia led to concentration of population into larger settlements, above all towns, what strengthened the industrial and worker character of rural settlements. This process was accompanied by concentration of rural settlements, meaning centralization of administration.

Population in the post-productive age gradually concentrated in small rural settlements. This socio-demographic group poses special claims as to health care and social service. Incomplete households with widowed women are frequent, as well. Availability of dwellings decreases. In 1991, there were 12.7% and 8.6% of permanently uninhabited houses and flats, respectively. Application of market principles as economic policy, without socially justified state intervention, can even deepen these negative aspects.

Agriculture in the form of crop production is evenly distributed all over the country, while animal production is rather concentrated in points, with a relatively large portions of available land. It means that the agricultural properties have to be dispersed and finally that agriculture needs a higher density of settlements.

Importance of the rural space as a factor of the environment is being increasingly emphasized. In this stage of "green revolution", agriculture faces the necessity of ecologization. Ecologization of agriculture will not only concern the productive structures but also the agricultural hinterland and this trend must lean on quality and sound agricultural produce.

Impaired ecological balance in the country has led to a loss of a huge biological potential, through, *inter alia*, erosion. The considerable fatigue of land caused by heavy mechanisms changed the physical properties of arable land, where the microbial life has almost disappeared.

High spatial dispersion of productive means in agriculture, transformation and privatisation, increased share of private sector, privatisation of services – all that will lead to a certain revitalization of the rural settlements. The settlements until now considered not functional and without prospects will probably also assume the agricultural function. Further development of agriculture heads rather towards the preservation of a dense and dispersed structure of rural settlements. It is expected that the concentration trend will be also limited in the industrial sphere – small firms seem to be more dynamic and efficient than the big ones and probably will also have to make use of rural areas.

Regarding the character of agriculture, the analysis of land cover by the CORINE land cover (CLC) databases for the years 1990 (CLC90) and 2000 (CLC2000) confirmed the important changes in the agricultural land use in Slovakia (Feranec et al., 2005). The areas of complex cultivation pattern enlarged. Diminished areas of meadows are the results of less intensive cultivation and subsequent overgrowing by shrub formations. The shrinking of the heterogeneous agricultural areas, which diminished in favour of woodland and scrub formations, constitutes another landscape change. The above-mentioned

changes are very differentiated at the national scale and will be a part of regional and settlement developments in Slovakia. In this sense, certain diversification of new forms of entrepreneurship of agricultural firms is desirable. Agrarian policy in the market environment has also to fulfil certain social functions. Agriculture will have to use land rationally even in marginal conditions and must prevent social and ecological devastation of such regions.

Agriculture will gradually lose its productive function in some regions and its stabilizing function will be ever more important. Territorial bodies of self-administration will play an important role in this sense. With certain simplification, it can be stated that the local self-administration will be responsible for the interior of the communes and the agricultural entities will respond for the area outside of the communes.

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Bálint CSATÁRI, Jenő Zsolt FARKAS
Centre for Regional Studies, Hungarian Academy of Sciences
H-6000 Kecskemét P.O. Box 261, Hungary
csatbal@rkk.hu; farkasj@rkk.hu

AGRARIAN AND RURAL DEVELOPMENT IN HUNGARY, 1990–2005

Abstract: In this paper the authors describe the trends of the Hungarian agricultural production and transformation of rural Hungary after 1990. By their conclusions, the intricate and unsuccessful transformation of ownership and production structure of agriculture has played a key role in rural changes in Hungary. Agriculture, though a key sector so far, will be unable to find all the necessary fundings for economic viability of the countryside in the post socialist era.
During the enhancement process of rural regions in order to provide a livelihood, certain things are indispensable, such as infrastructural convergence, improvement in accessibility, development of SMEs and so on. They conclude: if rural regions in Hungary would like to reach the development level of European counterparts, they need to get through a development process, which must consists of at least four key elements: (1) a successful agriculture, (2) good accessibility, (3) a well-kept countryside along with (4) nationwide acceptance and support.

Keywords: agriculture, agricultural development, rural areas, Hungary

INTRODUCTION

Agrarian development and rural development have become close-knit concepts, but in post-socialist societies they are rarely well thought-out and often have conflicting content. They are frequently used as synonyms or even as part of an adjectival noun phrase as if there existed such a thing as ‘rural development of an agrarian type’. It is therefore appropriate to use the term ‘agrarian development’ to refer to developments in ‘agribusiness’, i.e. agriculture and the sectors that provide support and supplies for it and process its products. By con-

trast, rural development is a broader term. Naturally, agrarian development is part of rural development, but the former is only a 'necessary, but not sufficient condition' for the latter.

It was Act CXIV of 1997 that first tackled the issue of the development of the agrarian economy in Hungary. Representing the most elevated form of legal instruments, the act identified as its main goals an improvement in the competitiveness of Hungary's agrarian production, the provision of equal opportunities for agribusiness relative to the other sectors of the national economy and the striving for a more proportionate capital and wage income for those employed in agriculture. The improvement of the ability of the rural areas to provide a livelihood for those living there, landscape production better suited to the natural and ecological conditions, the development of human resources that serves the interest of rural societies and support for agrarian innovation, were first used in this framework of legislation.

In contrast, the term 'rural development' mainly cropped up in technical literature (Csatári, 1996) and other area and regional development as well as in public administration documents, primarily in the form of proposals for the development of rural areas defined on the basis of various indicators.

In our opinion, the reason why these two concepts are interlinked is that the primary sector was the chief employer in small towns and villages in both Western and East Central Europe before the 1960s. As a consequence, the development of and support for agriculture had a profound impact on rural societies as a whole. From the 1970s onwards, the economies of rural areas underwent a transformation first in Western Europe, and then 10 to 20 years later, in Eastern Europe. The main reason for the transformation was the fact that agriculture had lost its leading role in rural economies and also as a major source of employment. This is indeed why it was necessary to work out an integrated approach to development that covered an increasingly large number of sectors and policies. The main objective of this approach was "an overall improvement in welfare of rural residents" (Hodge, 1986), embedded in several fields of spatial planning – e.g. regional, employment, education, health care and agricultural policies, and generally it was identified as rural development.

Geography, our narrower discipline, also underwent similar changes. The fact that agricultural production then started to take an increasingly lower profile also raised questions about the importance of the role of agricultural geography. In marked contrast, rural geography experienced a rapid growth in the 1980s (Evans and Morris, 2004). Ten years later, East Central Europe witnessed a very similar process; from the 1990s, researchers in Poland – and in Hungary – began to take an increasing interest in rural geography, while traditional agricultural geography lost ground to an increasing extent (Bański, 2002).

Studies on integrated rural development generally identified nature protection, the important social issues of local identity and the moral (legal and equal-

ity), social (community and self-esteem) and material (water, food, protection and security) aspects of development philosophies as key issues of rural geography (WCED 1987; Mayer, 2000).

A BRIEF HISTORICAL OUTLINE OF CHANGES IN HUNGARIAN AGRICULTURE (1945–1989)

The starting point of the series of transformations of Hungary's agriculture was the land redistribution of 1945 immediately after the end of World War II. The first wave of what came to be known as the Soviet type of collectivisation lasted from 1948 to 1953, and was, for the most part, unsuccessful because of resistance by the peasantry. A tough scheme of food rationing and food confiscation was put in place in order that supplies for the urban population and those working on large-scale construction in socialist large industry could be provided. A precarious political situation between 1953 and 1958 and the 1956 revolution ruled out any attempt at the repeat collectivisation of agriculture. It was not until 1961 that the political leadership of state socialism was able to do so. As a result, approximately 1,182,000 persons joined collective farms. It is important to note that as early as 1966 – two years before the introduction of what came to be known in the Eastern bloc as the 'new Hungarian Economic Mechanism' – the command economy approach was eased somewhat in agriculture (Takács, 2005). Profit-oriented large-scale farming was introduced. 85% of land (in the hands of state farms and agricultural co-operatives) was under large-scale cultivation; the remaining 15% of agricultural land was household plots[1] cultivated by private farmers.

Developments in agriculture gathered significant momentum from the 1970s. Powered by state aid, growth lasted well into the early 1980s and resulted in the evolvement of agriculture on an industrial scale. Obsolete equipment was replaced and, with the involvement of the management of large co-operatives, production systems made the vertical integration of agricultural production, processing and selling sides work (Enyedi, 1988).

Long-term contracts concluded between the individual COMECON countries guaranteed a close to insatiable market for Hungarian agricultural products. Agricultural exports played a key role in the national economy, as they were instrumental in improving the balance of foreign trade. In this period the country had the same indicators as those of the most advanced agrarian exporter countries in terms of grain, pork, poultry and egg production per capita, with 25% of agricultural and food industry products exported on a regular basis (Juhász,

[1] Household plots were small-scale farms run by families of peasant ancestry. The land that they cultivated and, in some cases, even the livestock raised, was provided by large-scale farms.

2001). It was the first time in Hungary's history that the bulk of the country's agricultural exports were aimed at Eastern European markets. As there was practically no limit to market absorption, allotment farming also flourished and proved to be a major source of income supplementation for the rural-village population.

Agricultural co-operatives and state farms – due to the seasonality of labour demand in agricultural production and in order to keep labour in the countryside – established ancillary enterprises within the framework of co-operatives. They included sewing workshops, many moved into the manufacture of machinery, were engaged in industrial activities (repairs, assembly and construction and so on) or provided various services, which significantly diversified the rural economy of the time even if they were hardly or not at all separated from agriculture statistically. They played an important role in housing and infrastructural construction in the country, and frequently offset or papered over loss-making direct agricultural production.

By the mid-1980s, the reserves for this kind of state socialism had become depleted. The political regime, which had been made mellow by financial and economic hardships, introduced small reforms in several sectors. One of the most important components of these small reforms was a resolution passed by the Hungarian Parliament in 1985 on the long-term tasks of area and settlement development, which sought to redress the bias of an earlier policy of settlement network development towards cities.

It was at this time that personal income tax and other special settlement development contribution were introduced, but farming on household plots then enjoyed preferential tax treatment. The settlement development contribution was a sort of 'optional' tax, levied by settlement communities, which enabled small towns and villages to significantly mitigate their infrastructural disadvantages. This type of tax, which has since been abolished, can be regarded as the forerunner of the integrated (rural) development approach.

By the end of this era, agriculture had entered a phase of stagnation, leaving behind a stage of dynamic development. The characteristics of the new phase were as follows: the Western technologies of the 1970s, which were cutting-edge technologies at the time, had become obsolete and been amortised. However, there were no funds available to replace or upgrade them. Capital losses were significant and there was an almost permanent shortage of capital. Against a backdrop of rocketing energy prices, the efficiency of production remained low, which in turn led to a marked deterioration in the profitability of agriculture (Tamás, 2001). Due to the industrial nature of the technology used in agriculture, habitat characteristics were rarely taken into consideration. The agricultural landscape became almost homogeneous. A higher and higher energy input was required to achieve high crop averages. At the same time, an unnecessarily large amount of superfluous material got into the ecosystem.

THE SYSTEM CHANGE AND ITS IMPLICATIONS IN THE AGRICULTURE

In the wake of the political changeover in 1989, the socio-economic context of agricultural production in Hungary changed fundamentally. The loss of markets, aggravated by the capital losses referred to above, resulted in a deep and permanent crisis of the sector. Economic downturn affected not only agriculture, but also the economy as a whole in Hungary and other former Eastern-bloc countries. Domestic demand slumped in the transition era as well. Agriculture's share of the GDP shrank from 13.7% in 1989 to 5.2% in 1997 and 2.9% in 2003 (see Figure 1).

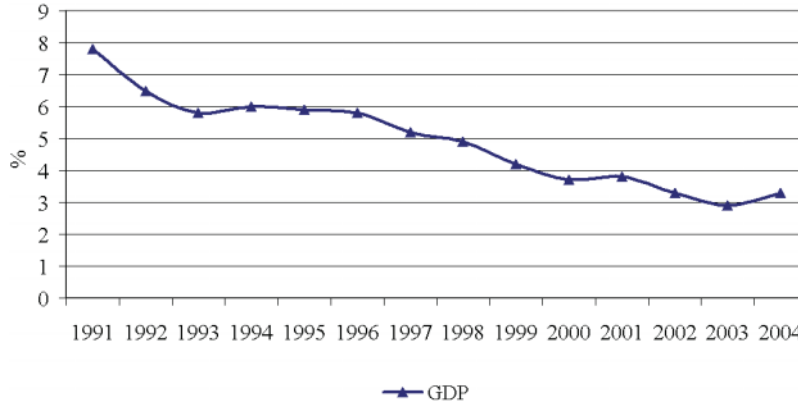

Figure 1. Contribution of agriculture to the GDP 1991–2004
Source: CSO's Statistical Yearbooks.

The contribution of agriculture to export revenues was 22.8% in 1989. It dropped to 13% in 1997 and to 6% in 2004. Simultaneously, the numbers employed in agriculture also fell markedly, from 837,500 persons in 1989 to 287,800 in 1997 to 215,200 in 2003. As the statistics suggest, the changes were quite dramatic.

TRANSFORMATION OF THE OWNERSHIP STRUCTURE

The new political élite – after the first democratic elections and giving in to pressure from the Smallholders' Party, which formed part of the coalition government in 1990 – gave high priority to the restitution of private property and the land issue, the latter of which was closely related to the former. After passing the first compensation act, which was later declared unconstitutional, the Hungarian Parliament passed another five compensation acts between 1991 and

1997. The main purpose of these acts then was to provide support for the establishment of private farms and the 'launch' of a land market. One-third of arable land and forests designated for restitution was purchased by owners of the so-called compensation coupons[2], i.e. mostly peasants whose land had been appropriated. Another one-third remained in the ownership of members of agricultural co-operatives, while the remaining one-third was distributed among members of agricultural co-operatives who did not use to have any land at all (Burger, 2001).

Act I of 1992 on Co-operatives and the related Delivery of Land Act also had an impact on changes in ownership. The essence of the acts was to designate 'each piece of land' as personal property and distribute assets that used to be in the shared ownership of members of co-operatives, virtually in analogy with joint-stock companies.

These statutory regulations led to the emergence of 2.5 million new landowners and highly fragmented land ownership. The Small Holders' Party achieved it main objectives, as in 1988, private (family, household) farms cultivated 14% of agricultural areas (others put it at 7%[3]). In 2002, the corresponding figure was 60% (Takács, 2005; Kovács, 2004).

CHANGES IN THE NUMBER OF FARMS

The majority of the new 2.5 million landowners who 'emerged' at the time of the political changeover did not cultivate land themselves, as they were now town dwellers. Rather, they leased their land to the co-operatives that had survived or to newly established economic organisations. The number of private farms engaged mostly in small-scale production[4] fell from 1,435,000 in 1989 to 958,000 in 2000 and to 766,000 in 2003. This decline was due, mainly, to small producers cultivating land under one hectare. By contrast, the number of private farms cultivating land over 50 hectares gradually increased.

[2] One-time landowners lodging claims for restitution of land provided evidence of their title to their former land property by means of title deeds kept in family, land registry office or state archives (or in the absence of such through the involvement of witnesses); based on this, they were granted compensation coupons needed for the repurchasing of their land. Compensation coupons were later also listed on the stock exchange. The State Restitution Office established specifically for the purposes of land restitution arranged for land auctions in thousands of settlements, where one-time landowners used the compensation coupons that they held to buy back their former land.

[3] The marked difference can probably be attributed to the fact that some authors also include the land that forms part of household plots or the land that is leased out under long-term lease agreement for the purposes of share cropping.

[4] According to official Hungarian agrarian statistics, 'private farm' means either households with a minimal size of agricultural land and livestock, no matter how minimal that size is, or private (agricultural) enterprises with tax numbers denoting an independent tax status.

Contrary to what happened in the case of private farms, the number of surviving agricultural co-operatives and newly established agricultural companies rose from 1691 in 1989 to 10,765 in 1999 then fell sharply prior to Hungary's accession to the European Union. The last official statistics reveal that their number dropped to 7800. Many either went bankrupt or refused to be subjected to a stringent European record-keeping and control system.

Of the 766,000 farms engaged in some agricultural production and of the 7800 private agricultural enterprises and partnerships, only a total of 210,000 were formally recorded in the national agrarian register[5] in 2003.

Incidentally, of the 766,000 farms, only 89,000, or 11.6%, were engaged in actual commodity production. A further 221,000, or 28.9%, only operated as ancillary farms, which in effect meant production providing occasional supplies for local or regional markets. The remaining 456,000 farms, representing 59.5% of all farms, could be included in the category of household plots, which produce food almost exclusively for self-use.

THE TRANSFORMATION OF LAND PROPERTY

An analysis of the statistics on land property size revealed that even as late as 2003 some 72% of all private farms cultivated land under one hectare in size. Only 5.9% of them cultivated land over 10 hectares in size. From a land size perspective, it is important to stress that the above close to 6%, or approximately 45,000 farmers, cultivated 72% of all arable land.

The agrarian activity of co-operatives and economic associations was drastically curtailed by the Act of 1994 on Land, which prohibited them from acquiring land. This created an artificial obstacle to the concentration of land and was intended to protect the interests of private farms.

Despite such an intention of the law, in 2003 the average size of arable land cultivated by private farms was rarely over 3 hectares, compared with the over 500 hectares in the case of economic associations. Based on the above statistics, the existence of dual land structure and the strongly dual nature of Hungary's agriculture can hardly be called into question (Kovács, 2004) Thus, the use of land at an uneconomical size has come to characterise private farms in Hungary, especially in the north-eastern part of the country (Kovács, 2003). Today, besides capital shortage and low profitability, this is a fundamental obstacle to the real and further modernisation of the Hungarian agrarian economy.

A further major implication of statutory regulation was the separation of land ownership and production. This means that one-time landowners or their descendants, now living in towns and cities, no longer have any ties to the land or the countryside apart from the conclusion of lease contracts and the collection of the annual lease fee for land use (see Figure 2).

[5] Inclusion in this register is a precondition for access to national and EU subsidies.

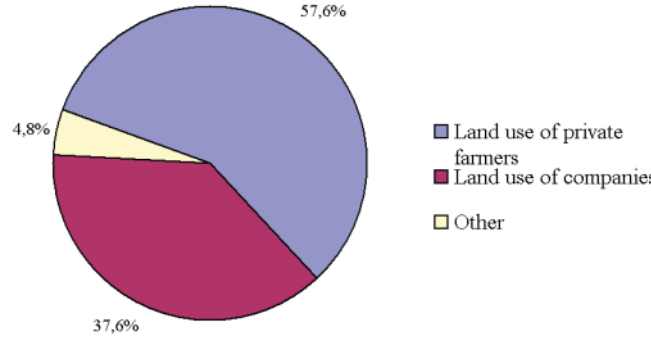

Figure 2. Structure of land ownership and land use
Source: CSO.

The fact that only a few make an actual living off agriculture in an formalised manner is properly illustrated by the example of Bács-Kiskun County with long-standing agricultural traditions. 65,000 primary producers[6] were registered in the county; of them, just 40,972 were also included in the EU farmers' registry. Then only 26,500 submitted applications for land size-based subsidy. The special rule of trisection also applies to this area.

Despite considerable changes in ownership over the past 15 years, there has not evolved a properly functioning market of land in Hungary. Nor has a fair market price for land. Problems arising from land re-parcelling and ownership have affected the future of agriculture and the countryside considerably.

PRODUCTION

In 1993, actual agricultural output fell to 67.7% of what it was in 1990. In a sectoral breakdown, crop farming and animal husbandry experienced a decline of similar proportions. After 1993, the two sectors followed separate paths of transformation. Crop farming grew steadily and in 2001 approached and then in 2004 exceeded the 1990 production figures by 20%. In contrast, animal husbandry was unable to recover from the shock of the transformation. Production volumes stabilised at 63%–68% of the levels of the 1990s (see Figure 3). Sheep excluded, livestock numbers have continued to diminish. One of the main underlying reasons for this was that the stock farms of former large-scale co-operatives available for privatisation were left without arable land to fall back on. Furthermore, agricultural co-operatives that used to serve as integrators

[6] 'Primary producer' means a person holding a business licence and having a special tax status. Smaller former peasant farms and household plots with annual sales revenues up to EUR 6100 are tax exempt.

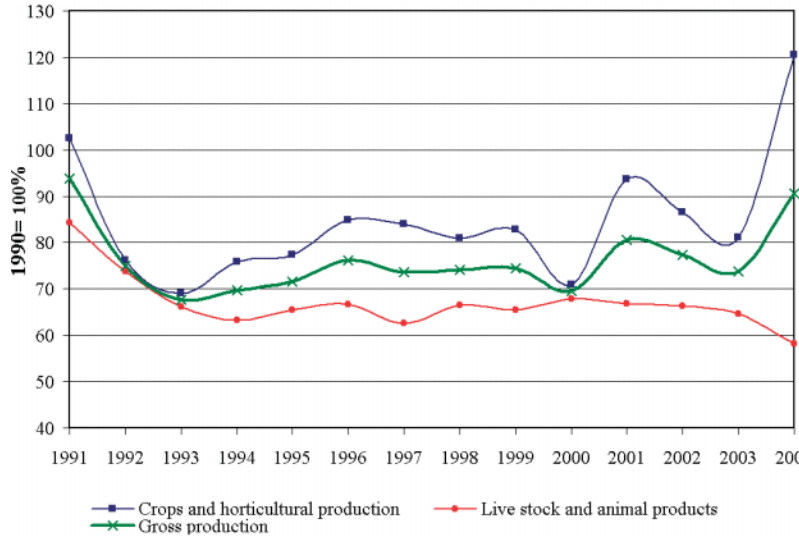

Figure 3. Change of Volume in Agricultural Production 1991–2004
Source: CSO's Statistical Yearbooks.

of stock farming on household plots also ceased to exist. A further reason had to do with subsidy policies, which were mainly intended for owners of arable land.

POLICY OF SUBSIDIES

After the 1990s, official government policies, explicitly or implicitly, with cause or out of necessity, supported the evolvement of family farms. However, these farms lacked the sufficient amounts of capital and expertise and were hit adversely by the loss of shared assets and Eastern markets. The start of the accession process in the late 1990s leading to Hungary's joining the EU made it crystal clear that the Hungarian state would also have to contribute substantially to the development of the agrarian sector. For the accession process to be successful, the revision of the agrarian development policies and the establishment of various subsidy schemes became inevitable. Act CXIV of 1997 on the Development of Agriculture, which we mentioned earlier, formed the basis for regulation and laid down the principles of the agricultural subsidy schemes in use between 1998 and 2004, when Hungary acceded to the EU. Entitlements to subsidies were included in the annual decrees of the agrarian minister of the day. As regards their main thrust, these entitlements did not change. Adjusted to circumstances specific to Hungary (e.g. area-based subsidies, support for the start-up businesses of young farmers), entitlements in Hungary broadly corresponded to their EU counterparts. A major new component was the introduction of the

notion of 'family economies' in 2001, along with the availability of supplementary land-based and capital investment subsidies for them. Major changes were set into motion by the working out of the subsidy schemes for landscape and eco-management as part of the National Programme for the Protection of the Agrarian Environment.

In the six-year period we surveyed there were as many as 118 (!) entitlements in use in the national subsidy schemes for agriculture. Of them, the most important were area-based subsidies and those granted for supporting the purchase of agricultural machinery and technologies and subsidies for plantations. Interest subsidies on various loans also featured among the entitlements.

Hungarian farmers also benefited from SAPARD funds, the EU's pre-accession funds. However, farmers did not find the intricate system of conditions for EU aid attractive, compared to the national schemes of subsidies that were still in use at the time; nor did they have freely available capital at their disposal.

The table below provides a comprehensive comparative overview of major landmarksin agrarian and rural transformations in Hungary and the European Union.

Table 1. Major changes affecting rural areas in Hungary (A) and the European Union (B)

A. Hungary

1950–1970	1970–1990	1990–2000	After 2000
abolition of private property	industry-like agriculture	loss of COMECON markets	preparation for EU accession
two waves of collectivisation	introduction of production schemes	land restitution: reinstatement of private property	emergence of the concept of rural development
increase in food production	technological development (import of technologies from e.g. the USA)	transformation of co-operatives	SAPARD
evolvement of household farms	unlimited absorption capacity of COMECON markets	general crisis in agriculture	National Agrarian Environment Management Programme
	heyday of household farms	the passing of Act CXIV of 1997 on the Development of Agriculture as a response to the crisis	Hungary's accession to the EU in 2004
		main components of the national schemes of subsidies for agrarian development: plantation, capital investment in machinery, support for young farmers	introduction of MePar area-based subsidy scheme
			LFA aid
			National Rural Development Plan – AVOP
			food safety taking on an increasingly high profile

B. European Union

1950–1970	1970–1990	1990–2000	After 2000
increase in food production; attainment of self-sufficiency	overproduction	the reform of 1992	2003: CAP reform
creation of market stability	excess costs of agrarian subsidies	consolidation of EU budget	food safety taking on an increasingly high profile
development of production efficiency	internal division over agrarian subsidies	environment, sustainability	rural development
increase in the income of farmers		passing of Agenda 2000 in 1999	agrarian environment management
		main components: integrated rural development, competitiveness, necessity of further reforms	introduction of subsidies for farms: 2007

Source: the authors' own compilation.

TRANSFORMATION OF RURAL REGIONS IN HUNGARY

The changing role of agriculture in the era of state socialism and post-socialism in Hungary also strongly affected the countryside as a special geographical space. The major components include:

- natural, environmental and landscape "sensitivity" and the characteristics of the agrarian environment with special regard to national parks and landscape protection districts,
- characteristics of the rural settlement structure, the town and the country relationships, suburbanisation and,
- spatially cumulative problems of the countryside.

THE HUNGARIAN LANDSCAPE

The National Agrarian Environment Protection Programme designated 26 environmentally sensitive areas (ESA) in Hungary, with an overall area of 5717 km^2, occupying just 10% of the total area of rural small regions. This is a rather small area in terms of both its size and proportions. Even if we add the area of national parks (9) and landscape protection districts (37) (a total of 7824 km^2), only 20% of all areas classified as rural are given highly important considerations of development (nature protection, bio- and eco-farming, rural tourism and conformity to the requirements of environmental and landscape sen-

sitivity and compliance with the stringent rules governing landscape protection) under the current legal regulations.

This is attributable in part to the fact that the two main trends in Hungarian agrarian policy – one that is especially in favour of monocultures and large companies, and the other that supports smaller peasant economies – are, for the time being, unable to strike a happy medium between the two major trends of agrarian and rural development, which could to some extent result in the combination of modern agrarian development and integrated environment-friendly rural development. All in all the the land cover changes is strong (Figure 4).

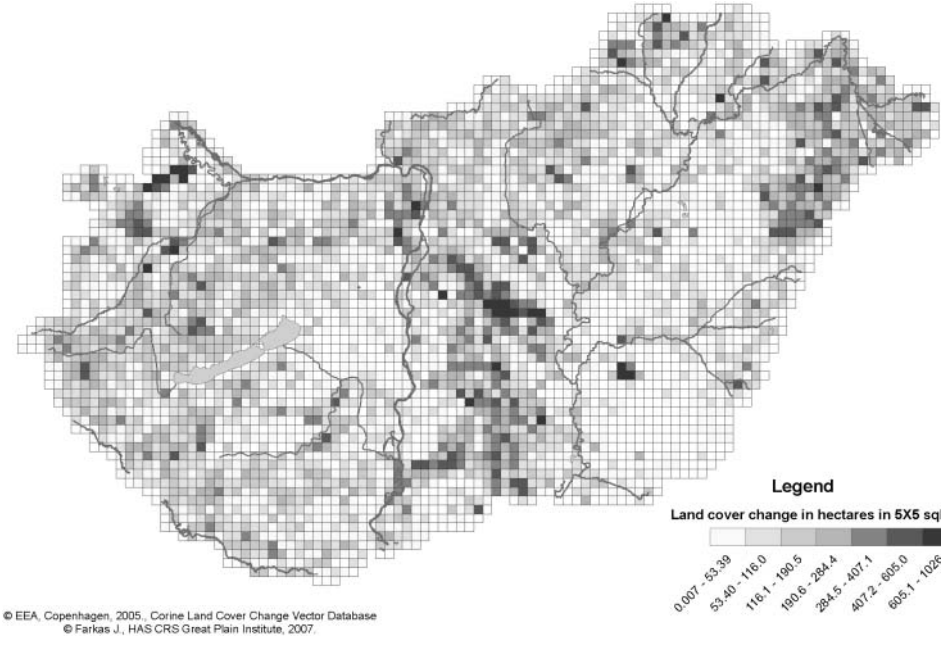

Figure 4. Land cover changes in Hungary, 1990–2000
Source: CORINE National land cover changes dataset, © EEA, Copenhagen, 2005.

As a result, agrarian environment protection programmes can often be introduced in much smaller areas than what would be necessary or could be logically expected. This is an all the more unfavourable development, as closer attention should be paid to those important regions of sustainable rural development, which also require special treatment, and it is also in these regions that traditional farming, extensive animal husbandry as well as steppe and flood area farming, which preserves special landscape heritage, should be encouraged and supported.

An interesting new development is that thousands of West European citizens now have second homes or farmsteads in small villages in an astoundingly pic-

turesque natural setting in Transdanubia or on the vast expanse of the steppe in the Great Hungarian Plain.

RURAL SETTLEMENTS

The second main issue is the characteristics of the rural settlement structure. Today, rural settlements in Hungary are highly diverse and fall into three main typical categories in addition to the category of small towns common across Europe (Figure 5).

The problems facing small villages (i.e. villages with a population below 500) have long been a key issue of public debates, but in the era of transition less attention was paid to and less store was set by them in the spaces designated for area and rural development. Today when it is becoming increasingly obvious that the Act on Public Administration and Local Governments (which was drawn up and passed one and a half decades ago and which vested even the smallest of settlements with powers of fully independent self-governance) is no longer sustainable and needs to be amended, the future of small villages is becoming a major issue of rural policy. One-third of the houses in the small vil-

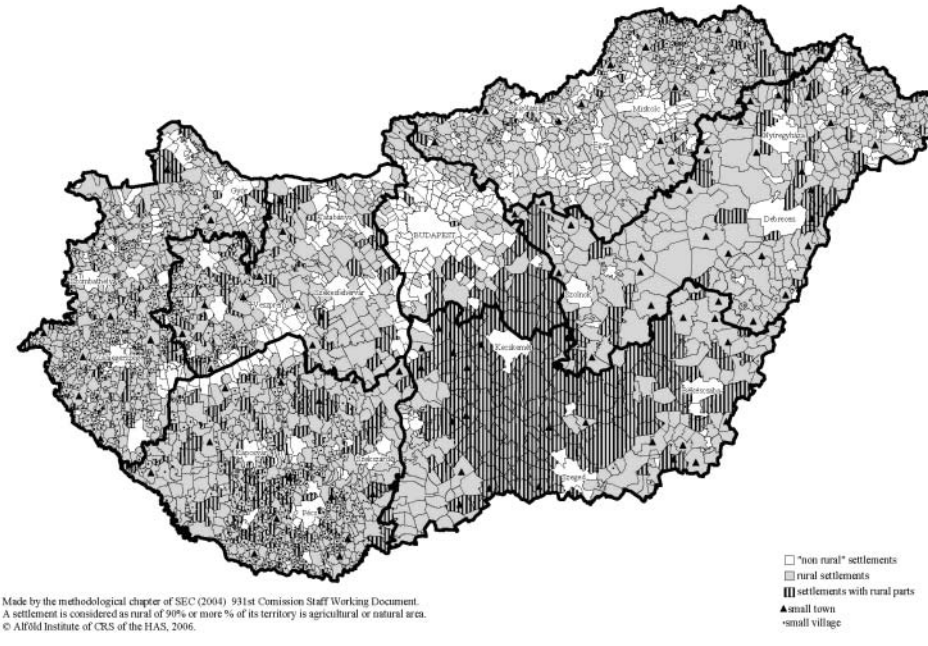

Figure 5. Rural areas in Hungary at LAU spatial level
Source: derived from National CORINE Vector Data, © EEA, Copenhagen, 2005., and CSO's TSTAR database.

lages lying in beautiful Transdanubian areas with easy access are now second homes of West European old-age pensioners. In other small villages, mostly in the ones in Northern Hungary, the majority of the population are Romas. As regards small villages with easy access, especially those in the wider agglomeration of the capital city, they are now undergoing strong suburbanisation.

The second main category comprises scattered settlements, i.e. tanyas. In the Great Hungarian Plain, where they are still common, it was the 'peasant settlers', taking the steppe depopulated during the Ottoman rule in the 17th century into possession and starting to cultivate it, who built tanyas after the river regulations in the 19th century. Today only 25% of the one-time population who lived in outlying areas in the 1950s, i.e. 250,000 people, live on tanyas. However, their role – given the high sensitivity of the natural environment between the Rivers Danube and Tisia, an area with sandy soil – may prove instrumental in the sustainable development of the region.

The third category comprises agricultural market towns in the Great Plain. These settlements lying on areas within large administrative boundaries with an average population of 10,000–50,000 are legally towns; formally and functionally, however, they are settlements with strong rural characteristics, which have been the great losers of the system change. The main pillar of their economy was agriculture for over a quarter of a century, which is no longer able to provide a livelihood for a population of this size. The industries established in them during the socialist era went bankrupt. Access to these towns is difficult. The population has been ageing and shrinking. Over 1 million people live in such agrarian rural areas.

GENERAL AND SPATIALLY CUMULATIVE PROBLEMS OF THE COUNTRYSIDE DURING THE ERA OF TRANSITION

A scheme of dedicated funds, in force for a mere three years, i.e. between 1997 and 2000, in area development (the term 'rural development' has only been in use since 1998) practice in a post-Communist Hungary, allocated, in accordance with a resolution passed by the Hungarian Parliament, development funds to prioritise rural small regions identified on the basis of various spatial classifications (Csatári, 1996; Csatári, 1999). Overall, financial support was rather modest and achieved very little, causing only minor changes in the regions supported.

Trends in the development of infrastructure in small regions were much more even. It was an almost general phenomenon in the Hungary of the transition in the 1990s that municipalities set about overcoming their infrastructural disadvantages with great zeal. Roads were built, piped water supplies and sewerage were provided, landline phone penetration increased in a matter of a year or two

and mobile phones also became commonplace. At the same time, however, these favourable changes were rarely accompanied by the development or convergence of local economies. This was one of the common characteristics of the transition era, and the underlying reason for this was probably that the accessibility of rural areas by state-of-the-art means of transport hardly improved.

The small regional distribution of income unequivocally reflects strong spatial dualism and a gap between high rural agricultural employment and spatial differences in income (see Figure 6).

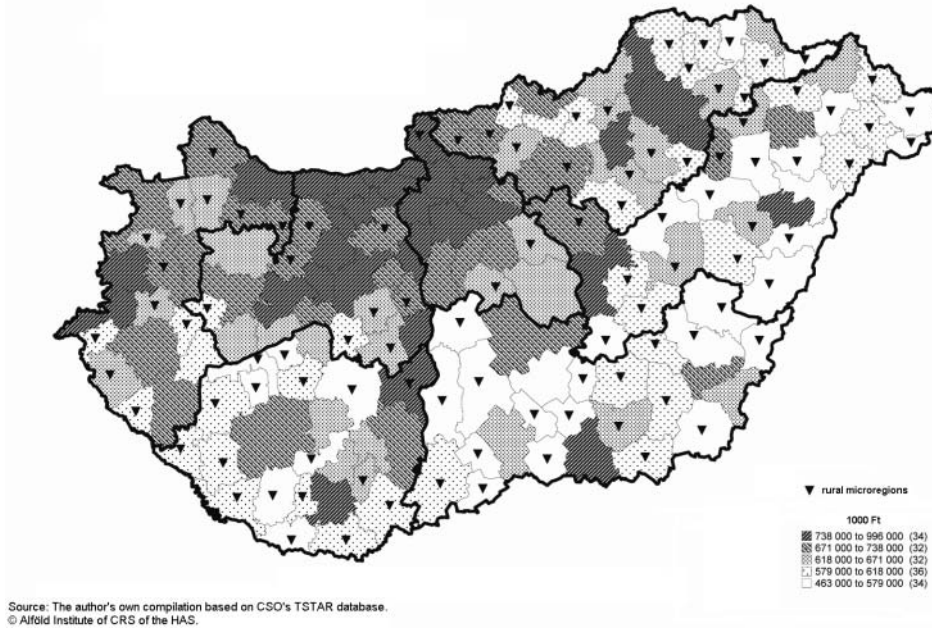

Figure 6. Net annual income per taxpayer, 2001
Source: the author's own compilation based on CSO's TSTAR database.

In addition to Western Transdanubia, fairly well developed rural and urban small regions form a congruous area in Central Transdanubia as well. It is also striking that hardly any new economies worthy of mention, capable of generating an income locally, are based on the relatively favourable infrastructural network in the rural small regions with market towns and tanyas in the Great Plain.

These problems, inherited to a certain degree from the previous regime, were further aggravated by a permanent social and economic crisis in strongly rural and peripheral small regions. During the era of transition this crisis was made worse by the fact that various problems, e.g. poverty, crime and the inability of disrupted village societies that had lost their local intelligentsia to act, became known to the public in the new democratic system.

The social circumstances in the rural small regions discussed above in three regions (Western and Central Transdanubia and Central Hungary) have improved and can now be considered as relatively balanced. By contrast, their peripheral lagging counterparts along the border in Southern Transdanubia and Eastern Hungary form a distinct, contiguous and socially backward periphery.

The typical rural problems usually accumulate each other. Only 3 (!) of the 48 Hungarian small regions with a higher-than-average level of development have rural characteristics.

This also means that in Hungary, for the time being, the concept of rurality is associated, both spatially and conceptually, with backwardness, poverty, inaccessibility and the poor availability of human resources or their complete absence (see Figure 7).

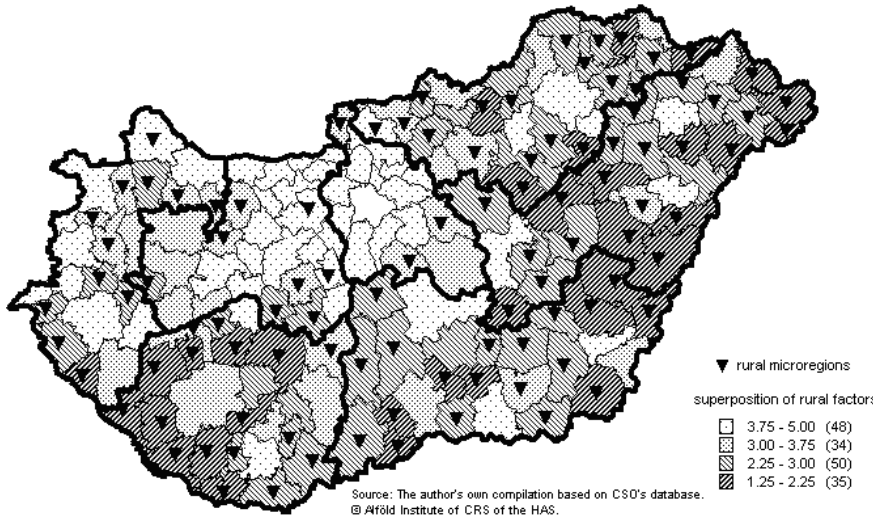

Figure 7[7]. Aggregate data on the rurality characteristics of micro-regions, 2001
Source: the author's own compilation based on CSO's TSTAR database.

CONCLUSIONS

The intricate and unsuccessful transformation of the ownership and production structure of agriculture has played a key role in rural changes in Hungary.

The overwhelming majority of rural small areas in Hungary are at a medium level of development or else are underdeveloped from an economic, infrastructural or social point of view.

[7] Microregions are qualified as rural where 50% of population lives in settlements where the density of population is below 120 person/sqkms.

The conflicts that accompanied transition from socialism to a market economy hit, without a doubt, rural settlements and societies the hardest not only in Hungary, but also in the remaining countries of the former Soviet bloc.

Large-scale, mainly macro-economic, crises often diverted attention from major conflicts in the countryside. Now, a decade and a half after the political regime change, efforts should be made to find efficient and successful solutions to the problems of rural areas that make up two-thirds of the country.

As regards the economic viability of the countryside, agriculture, though a key sector, will be unable to find all the necessary funding.

In order to enhance the ability of the rural regions to provide a livelihood, certain things are indispensable. These are infrastructural convergence, a marked improvement in accessibility, the development of SMEs in a manner that it is organically linked to the economic and production systems of urban centres and the resuscitation of traditional rural industries.

This warrants and justifies an independent rural development policy (planning and scheduling), one that is better planned and more focused on rural regions. Only a policy that fits in with the characteristically variegated system of development of the Hungarian regions can be successful and effective. Area development policies should better accommodate differences in the history and the settlement development of the individual rural regions, their agrarian economic and social attributes as well as special rural innovation.

It is safe to assume that the transition process will continue. The level of development in rural regions in Hungary should approach that of their counterparts in developed European countries only if it can pass through, at an accelerated pace, the necessary stages of development. These stages are, which developed economies have already passed through, (1) a successful agriculture, (2) good accessibility, (3) a well-kept countryside along with (4) nationwide acceptance and support.

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Dan Marius VOICILAS
Institute of Agricultural Economics, Romanian Academy
Calea 13 Septembrie no.13, sector 5, Bucuresti, Romania
mariusv@k.ro

ROMANIAN AGRICULTURE AND RURAL DEVELOPMENT AT THE START OF INTEGRATION IN THE EUROPEAN UNION

Abstract: The transition period was difficult for all Central and Eastern European Countries, in all sectors of the economy. Probably the most difficult conditions occurred in agriculture.
Romania is one of the countries with an important agricultural sector, due to the physical size, population involved in agriculture, production and share of agriculture in entire economy. At the same time, Romanian rural areas have a distinct complexity and require a special attention due to their specific features and transformations.
The study shows the state of the Romanian agriculture and rural development before the accession to the European Union (EU). Some general characteristics and recommendations are given with respect to the main directions of action for implementing the decisions necessary in the next years after the accession.

Keywords: Romania, agriculture, rural development, transition, integration

ROMANIA AT A GLANCE

Romania has a good natural resource base for agriculture, with fertile soils in the South, East and West. The climate is mild continental, and summer crops require irrigation.

Romania extends over the area of 238,400 sq. km, featuring a diverse topography, which is represented by mountains, Sub-Carpathian hills and plains, each of them accounting for 1/3 of total surface. Most of Romania's land is agricultural. About 64% of the country's total area, that is, about 14.9 million hectares, is agricultural, with permanent grasslands representing 33%, and vineyards and orchards 3% of the agricultural land. Arable land represents about 63% of the

agricultural land, while permanent crops – 30%. Some 28% of Romania's land is forested.

AGRICULTURE IN ROMANIAN ECONOMY – GENERAL CHARACTERISTICS

The study is focused on the economic dimension of rural development. The importance of the aspect considered is evident if we take into consideration that agriculture and rural development were among the most important issues of the Romanian EU negotiations and will represent a very sensitive chapter in the future. The approach here presented starts from the idea that rural development needs to connect the national characteristics with EU requirements.

Starting from 1990, the trends in Romanian agriculture began to differ significantly from the long-term trends that had prevailed under central planning.

Agricultural growth in Romania can be measured in several ways. One measure is based on the system of national accounts; the agricultural product index is usually calculated from the estimated percentage share of agriculture in GDP (or gross value added – GVA – in agriculture). An alternative measure of agricultural growth is based on Gross Agricultural Output (GAO), which reflects total agricultural production, including intermediate consumption by producers (GAO is derived from the system of agricultural accounts). The corresponding index is usually different than the one obtained from the system of national accounts (Table 1).

Agricultural output (as measured by GAO) has remained roughly constant since 1989.

During the first ten years of the transition, agricultural output (measured as GVA in agriculture) declined less than industrial output. Since 2000, the industrial sector has enjoyed continuous growth, while the agricultural sector has experienced significant fluctuations due to its sensitivity to droughts.

The share of agriculture in GDP has declined since 1990, stabilizing at about 11–13% after 1999. This decline is a normal trend in developing economies, but it is usually accompanied by a decrease in the share of agricultural employment as labor migrates to other growing sectors. Summing up the contribution of the agriculture and food industry to the total GVA we can say that both sectors had not more than 30% of the total in the first decade of transition and not more than 20% in the last years.

Until 1989, the total labor force in Romania was increasing, while the agricultural labor force was decreasing. After 1990, the trends reversed, with the total labor force shrinking and the agricultural labor force increasing fairly rapidly until 2000, when it reached 117% of the 1989 level. Data for 2003–2004 show a measurable decline in the share of the agriculture in the total labor force (down to 35%) for the first time since 1996.

Table 1. Economic and agricultural dynamics in Romania, 1989–2004 (1990=100)

Year	Total GDP	Total GVA	GVA in industry	GVA in agriculture	Gross agricultural output
1989	105.9	102.6	120.1	103.3	103.0
1990	100.0	100.0	100.0	100.0	100.0
1991	87.1	88.2	87.2	88.1	100.8
1992	79.4	80.3	75.2	76.5	87.4
1993	80.6	83.0	76.0	87.4	96.3
1994	83.8	86.5	78.6	89.9	96.5
1995	89.8	92.4	83.0	94.2	100.8
1996	93.4	96.0	88.7	90.2	102.1
1997	87.7	89.0	81.6	89.1	105.6
1998	83.5	84.2	77.3	79.6	97.7
1999	82.5	83.8	76.1	82.2	101.6
2000	84.3	85.6	80.6	66.5	86.6
2001	89.2	91.4	84.2	84.1	106.2
2002	93.6	95.9	89.2	79.7	102.9
2003	98.9	100.6	93.3	82.1	106.0
2004	102.1	103.8	97.2	87.2	108.1

Source: Processing of data from National Institute of Statistic (INS); Csaki and Kray, 2005, Romanian Food and Agriculture from a European Perspective, ECSSD-Environmentally and Socially Sustainable Development, Working Paper No. 39, WB, Bucuresti, Romania.

Before 2001, the statistical database shows that almost 3.6 million people worked in Romanian agriculture, that is – about 54% of the number of people working in agriculture in EU-15 countries (Csaki, Kray, 2005). It is remarkable that the agricultural labor force in Romania and Poland is 6.3 million, which is close to the total number of people employed in agriculture in the EU-15 (6.7 million). Even if the 3.6 million agricultural workers in Romania were compared with a broader EU statistic, the "total number of persons working on agricultural holdings" in the EU-15, the number of Romanian agricultural workers would still be equivalent to 27% of total agriculture-related labor in the EU-15. Given the huge size of the agriculture labor force in Romania, it is remarkable that the sector contributed just about 12% to GDP in the last years.

ROMANIAN AGRICULTURE – THE STRUCTURES

In the last years, the evolution of agriculture followed the general lines established by the Rural and Agricultural Strategy for EU Accession, elaborated in accordance with EU rules and recommendations.

FARM STRUCTURE, ORGANIZATION, LAND RESTITUTION AND PRIVATIZATION

The reform process in the Romanian agriculture started in 1991 with the Law 18/1991 (restitution of land ownership rights). It was continued by the Law 1/2000, which extended the restitution of the ownership rights and now, the reform process of the Romanian agricultural land is almost over.

Implementation of the land laws in Romania was difficult and the reform process was very slow, in comparison with other Central and Eastern European Countries. In 2005 (January), the process was almost at the end, 98.8% of the ownership titles were issued, corresponding to 96% of the area, which must be reconstituted (Table 2).

Table 2. Land laws' applying (18/1991 and 1/2000), 1999–2005

Indicator	November 1999	June 2000	March 2001	September 2003	January 2005
Total area to be reconstituted (thou. ha)	9.367	9.419	9.426	10.122	10.194
Land reconstituted to date (thou. ha)	7.998	8.114	8.245	9.231	9.782
Number of claimants	4,696,280	4,716,062	4,716,498	4,797,114	n.a.
Number of satisfied claims	3,847,118	3,918,159	3,965,209	4,163,152	n.a.
Ownership titles to be issued	4,329,973	4,340,507	4,341,493	4,345,500	4,350,553
Ownership titles issued to date	3,349,273	3,413,299	3,469,944	4,077,552	4,298,153
Percentage of area reconstituted to date	85.4	86.1	87.5	91.2	96.0
Percentage of satisfied claims	81.9	83.1	84.1	86.8	n.a.
Percentage of ownership titles issued to date	77.4	78.6	79.9	93.8	98.8

Note: n.a. = Not available

Source: Processing of data from Ministry of Agriculture, Forestry and Rural Development (MAPDR); Csaki and Kray, 2005, Romanian Food and Agriculture from a European Perspective, ECSSD-Environmentally and Socially Sustainable Development, Working Paper No. 39, WB, Bucuresti, Romania.

The privatization process of the former state enterprises was slow, as well. The state-owned land that remained after having satisfied the restitution claims, falls into two legally distinct categories – public state domain and private state domain. Lands in the public state domain are of special "public interest and use". They cannot be sold or exchanged, but they can be leased out, given in concession, and so forth. Land in the private state domain is the residual land that belongs to the state but is not classified as public domain land. This state owned land could be sold (through privatization), leased out, given in concession, exchanged, and so forth. Parts of this private state land belong to villages, towns, municipalities, and counties, where they are earmarked for local needs and uses. Parts are under the central administration of the State Domain Agency (SDA) and given on concession to private farmers.

When the State Domain Agency was created, it had 739 enterprises in its portfolio. This number was substantially greater than the number of state-owned farms in 1989 (411), because the original state-owned farms sometimes split into several units in the initial process of legal reorganization into (state-controlled) commercial companies (FIAS). At present (March 2004), 281 (38%) of the 739 FIAS had been privatized. There are yet 8 (1%) that remain to be privatized, and the other ones, 450 (61%), have been liquidated, either through bankruptcy or by administrative liquidation (Csaki, Kray, 2005).

SDA's initial portfolio in January 2000 included 1.1 million hectares of agricultural land (by 950,000 hectares less than the original state farm holdings in 1989). The difference presumably represents the areas restituted between 1991 and 2000 and a reserve for future restitution. Of this initial portfolio, some 160,000 hectares were restituted to individuals up till mid-2002, so that SDA was left with an endowment of 977,000 hectares of state land (from the "private state domain"). As of mid-2002, 49% of SDA holdings had been transferred to private operators, 36% in conjunction with privatization and 13% granted to private lessees. More than 50% of land, or 500,000 hectares, was available for concession. Of this amount, nearly 360,000 hectares were in use by FIAS that had not yet been privatized. The total area managed by SDA decreased to only 550,000 hectares, all of which was transferred to private operators through concession contracts.

The land use pattern changed dramatically during the transition. The individual private sector increased its holdings from 15% of agricultural land in 1989 to about 55% in 2002, of which an estimated 5% is cultivated by individuals in joint cultivation in various informal family associations without legal status. The cooperative sector disappeared completely: cooperatives (and some state-owned farms) were transformed into various legal entities (including privately owned companies and what remains of the former state sector) that today control about 45% of agricultural land.

Data provided by the Agricultural Census (2002) show that two organizational types of farms characterize Romanian agriculture (Table 3).

The first, the dual or the household sector, consists of 4.5 million farms of the average area of 1.73 hectare, controlling nearly 55% of agricultural land. Of these, about 185,000 holdings exclusively produce animals and do not farm any agricultural land. A subcomponent of private agriculture consists of the so-called family associations or informal associations. Due to the informal character of these associations, statistics for this category are not explicitly outlined in the 2002 census but are, instead, included in the category of individual holdings. These family associations, of which there are about 6500, are spontaneously created voluntary associations of individual farmers that are not registered as legal entities and have no separate legal status. They are much smaller than the legal

Table 3. Agricultural holdings and utilized agricultural areas, by legal status, 2002

Legal status of holdings	Number of agricultural holdings	Utilized agricultural area (hectares)	Agricultural area per holding (hectares)
Individual agricultural holdings	4,462,221	7,708,757	sty-73
Legal entities, of which:	22.672	6,221,952	274.43
– Farm associations	2261	975,564	431.47
– Commercial companies	6138	2,168,792	353.34
– Public administration units	5698	2,867,368	503.22
– Other (cooperatives)	8575 (0)	210,227 (0)	24.52 (0)
Total agricultural holdings	4,484,893	13,930,710	3.11

Source: INS Database, Agricultural Census 2002; Rusu, 2005, Dimensiuni ale dezvoltarii rurale durabile: Romania in tranzitie, Institute of Agricultural Economics (IEA), Romanian Academy, Bucuresti, Romania.

associations, averaging about 120 hectares and estimated to cultivate 5% of agricultural land.

The second component of Romania's agriculture is constituted by agricultural holdings classified as legal entities. This category includes farm associations, commercial companies (27% of the total), public administration units (the biggest average size), and other types of holdings (NGOs, religious estates, cooperative units).

For a clear picture, we also represent the evolution of the farm structure (Table 4).

Table 4. The structure of the private farms, 1993–2004

Year	Individual holdings				Commercial companies				Farm associations			
	No. (thou)	Thou. ha	Aver-age	% From total	No.	Thou. ha	Aver-age	% From total	No.	Thou. ha	Aver-age	% From total
1993	3419	7333	2.14	66.6	4265	1910	448	17.4	13,772	1763	128	16.0
1994	3578	7905	2.21	70.5	3970	1771	446	15.8	13,741	1537	112	13.7
1996	3625	8348	2.30	72.3	3759	1752	466	15.2	15,107	1440	95	12.5
1998	3946	9182	2.33	78.6	3578	1558	435	13.3	7175	950	132	8.1
2000	4259	10,054	2.36	81.8	3724	1592	427	12.9	6836	648	95	5.3
2002	4462	7709	1.73	71.0	6138	2169	353	20.0	2261	976	431	9.0
2004	4480	7810	1.74	70.3	6200	2320	374	20.9	2182	980	449	8.8

Source: Processing of data from MAPDR; Dumitru et al., 2004, Rural Development and the Reform of Romanian Agriculture, Collection "Studii IER" no. 10–11, European Institute in Romania, Bucuresti, Romania.

Romanian farms vary greatly in size (Table 5). Most individual private farms are small (about 60% of these farms are smaller than five hectares). Some spon-

Table 5. Distribution of individual farms, commercial companies and farm association, by size, 2002

Farm size (ha)	No. of holdings	% in total no.	Utilized area (ha)	% in total area
Individual farms				
Less than 0.1	539,325	12.6	23,871	0.3
0.1–0.3	580,255	13.5	103,515	1.3
0.3–0.5	322,825	7.5	124,510	1.6
0.5–1	723,600	16.9	505,830	6.5
1–2	896,603	20.9	1,270,922	16.4
2–5	949,521	22.2	2,898,616	37.6
5–10	215,714	5.0	1,421,180	18.4
10–20	35,953	0.8	453,214	5.8
20–30	5081	0.1	120,916	1.5
30–50	3450	0.0	130,434	1.6
50–100	2759	0.0	180,933	2.3
More than 100	2229	0.0	474,810	6.1
Total	**4,277,315**	**100.0**	**7,708,757**	**100.0**
Commercial companies and farm association				
Less than 0.1	133	1.68	6,2	0.00
0.1–0.3	286	3.61	50	0.00
0.3–0.5	156	1.97	60	0.00
0.5–1	221	2.79	148	0.00
1–2	245	3.09	318	0.01
2–5	300	3.78	932	0.03
5–10	259	3.27	1818	0.06
10–20	309	3.90	4363	0.14
20–30	235	2.96	5667	0.18
30–50	309	3.90	11,803	0.38
50–100	796	10.04	55,908	1.78
More than 100	4681	59.03	3,063,275	97.42
Total	**7930**	**100.00**	**3,144,348**	**100.00**

Source: Processing of data from INS – Agricultural Census 2002; Csaki and Kray, 2005, Romanian Food and Agriculture from a European Perspective, ECSSD-Environmentally and Socially Sustainable Development, Working Paper No. 39, WB, Bucuresti, Romania.

taneous consolidation has been occurring, as evidenced by the increase in the proportion of relatively large individual farms. At the same time, there are signs of increasing fragmentation. Romania is thus experiencing a certain polarization of farm sizes in the individual small farm sector, as the number of both the

smallest and the largest among the generally small family farms grows while the number of mid-sized farms is shrinking. This process is not unique to Romania: similar trends are apparent in other Central and Eastern European countries. There is a diversity of holding sizes among the corporate farms (commercial companies and farm associations), as well. Almost 60% of these entities are larger than 100 hectares (the average size is 655 hectares). More than 97% of the agricultural land belongs to this farm category.

POPULATION AND LABOR FORCE

Since 1990, Romanian population has decreased by about 1.5 million (from 23.2 million to 21.7 million in 2004). This tendency has a direct influence upon the labor force and the negative effects come out stronger if, at the same time, we consider the increasing trend of pensioners in total population.

Romania has 45.1% of rural population (2004). Agriculture, hunting and silviculture involve 12% of the total population, 63% of the rural population, 26% of the active population, 29% of the employed population, 32% of the civil employed population.

The evolution of the agricultural population and employment is represented in Table 6.

Table 6. Population and labor force in agriculture, 1990–2004 (thous. persons)

Specification	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Population in agriculture*	3144	3205	3443	3614	3647	3265	3320	3384	3349	3466	3570	3498	3001	2884	2634
Employees in agriculture*	655	609	561	560	484	420	364	352	311	240	196	189	159	152	143

Note: Inclusive hunting and sylviculture
Source: INS Database.

The tendencies manifested during the analyzed period are:

- The occupational ratio is higher than the national average because the members of the rural population prolong their active life up to old age;
- The share of the active population in agriculture increased and one of the explanations is that a part of them came from industry; during the transition period, the changes in the structures of the Romanian economy (unfavorable for industry) have had a direct influence on the rural and agricultural population; migration was one of the consequences of these transformations;
- A very important part of the population active in agriculture exert their main activity in their own households: self-employed (2/3 of them are older than 50 years, of whom, then, 1/3 are over 65) or family members without salary;

- Hidden unemployment; the real level of the unemployment in the rural areas is different than the statistics because some of the rural population, without remunerated activity, do not register themselves at the labor offices and are not in the state statistics; in fact, they are in a latent unemployment because their activity in agriculture does not require more than one hundred days per year;
- The effective working hours decreased; in rural areas, the population with full time employment represents about 65% of the employed population; the indicator decreased after 1990 and becomes a major danger for rural areas, together with hidden unemployment; the main cause is the structure of the Romanian agriculture, with small parcels, fragmented land, which do not permit the active population to have a full time job or conduct different activities than agriculture.

PRODUCTION

In agriculture, the structure of production (products and services) was split between crop and animal production, which represented the main activities with the most important share in total value (agricultural services had a minor role and they were introduced in statistical calculations starting with 1999). In the last years, the balance between crop and animal production changed to the advantage of crops, from 50–50% to 70–30% (Table 7).

Table 7. Agriculture products' and services' evolution, 1990–2004*

Indicator	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Structure (%)															
Crops	53.0	65.9	58.0	62.9	60.8	59.6	59.8	62.9	53.9	64.0	61.7	62.8	57.3	64.2	68.9
Animals	47.0	34.1	42.0	37.1	39.2	40.4	40.2	37.1	46.1	34.5	37.1	36.1	41.6	34.9	30.4
Agr.serv.	–	–	–	–	–	–	–	–	–	1.5	1.2	1.1	1.1	0.9	0.7
Indices (previous year = 100)															
Total	100.0	100.8	87.4	96.3	96.5	100.8	102.1	105.6	97.7	104.0	85.2	122.7	96.5	107.5	118.1
Crops	100.0	104.3	88.9	101.8	102.2	107.7	109.6	120.5	107.1	117.7	79.2	135.3	88.7	110.0	126.8
Animals	100.0	96.2	86.0	89.7	89.6	92.3	92.8	87.0	85.9	95.4	96.7	102.1	110.2	104.6	102.9
Agr.serv.	–	–	–	–	–	–	–	–	–	80.3	73.6	114.0	91.1	84.7	86.4

Note: * = According to the Eurostat Methodology on "Economic Accounts for Agriculture", for the period 1999–2004; Starting with 1999 were calculated indices and structure for agricultural services, as well.
Source: INS Database.

The evolution of production indices shows the main characteristics of Romanian agriculture, a sinusoidal trend with a large variation from year to year, demonstrating that agriculture is a weak sector, very strongly dependent upon

weather, without specific instruments, capacity of development and modern investments (Tables 8–10). Romanian rural areas and their development are still under the direct influence of the agriculture and the activities close to agriculture.

We shall analyze the Romanian agriculture considering the evolution of the main crops and the changes taking place in their structure (from the point of view of the area cultivated and production), mainly sunflower, sugar beets, potatoes, vegetables and fruits.

The plant production structure is strongly extensive and is based on crops (about 65% of the arable land). The main crops cultivated in Romania are: wheat, rye, corn and sorghum (Table 8 and Figure 1).

Table 8. Area and production by main cereals, 1990–2004

Year	Total crops	Total cereals		Wheat & rye		Corn & sorghum	
	Area (thou.ha)	Area (thou.ha)	Production (thou.tons)	Area (thou.ha)	Production (thou.tons)	Area (thou.ha)	Production (thou.tons)
1990	9402.1	5704.0	17,173.5	2297.7	7379.0	2471.9	6813.1
1991	9197.3	6049.0	19,306.6	2217.1	5558.9	2578.8	10,503.3
1992	8909.1	5773.9	12,288.5	1475.4	3227.6	3344.1	6832.8
1993	9166.1	6395.0	15,493.1	2307.4	5354.5	3071.3	7993.0
1994	9220.0	6557.6	18,183.8	2440.9	6186.5	2991.0	9350.3
1995	9224.6	6444.8	19,882.8	2501.4	7709.3	3115.0	9927.5
1996	8878.8	5842.8	14,199.7	1797.7	3164.1	3284.3	9612.2
1997	9059.8	6319.8	22,107.3	2424.4	7185.6	3043.0	12,691.5
1998	8972.6	5920.6	15,452.7	2033.4	5207.9	3136.1	8634.8
1999	8493.9	5370.7	17,037.3	1686.9	4682.5	3015.1	10937.3
2000	8499.8	5655.2	10,477.5	1954.3	4456.2	3051.0	4899.1
2001	8905.0	6294.9	18,870.9	2558.6	7763.8	2980.2	9124.8
2002	9001.6	6038.1	14,356.5	2309.8	4441.1	2897.3	8402.4
2003	8880.6	5541.8	12,964.4	1748.0	2496.4	3206.5	9582.0
2004	8527.8	6265.4	24,403.0	2317.8	7867.4	3282.8	14570.0

Source: INS Database

Changes in area, in case of all crops, were within the limit of one million hectares in the last fifteen years, with a decreasing trend, especially in the second part of the period. A large part of land (up to one million hectares) was taken out from the agricultural system and became unused land. Some land was destroyed due to the lack of investments and natural degradation, some was unused and abandoned by the owners because of their incapacity of adapting to the market economy, limited financial capacity and outdated technologies.

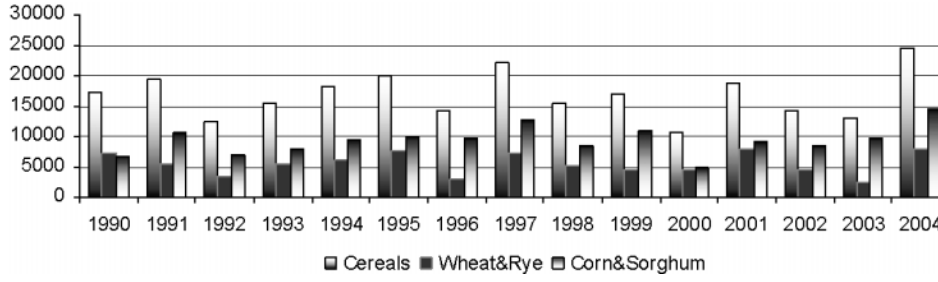

Figure 1. Production of main cereals, 1990–2004 (in thousand tons)
Source: figures 1–10 – National Institute of Statistic Database.

In case of cereals, the general characteristic is a large variation of the area cultivated from year to year, which show us a lack of consistency in Romanian agricultural policy. Analyzed separately, cereals have the same characteristics in terms of area cultivated.

The dynamics of production was very closely connected to the weather changes and the results are well shown in Table 8 and Figure 1. One explanation of these results is the lack of irrigation, small quantity of pesticides used in Romanian agriculture and, additionally, lack of investments in mechanization and modern technologies, as well as land fragmentation.

Generally, Romania cultivated and produced more of corn and sorghum than of wheat and rye (see Table 9, as well). Both accounted for more than 50% of the total crop area in every year of transition (only corn and sorghum reached almost 40% in 2004; all of them together reached over 65% in 2004). This is characteristic for the Romanian agriculture in the transition period, which became mostly the "cereal country", the same situation having existed before the World War II.

Table 9. The share of the main crops in total area, 1990–2004 (%)

Crop	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Wheat&rye	24.44	24.11	16.56	25.17	26.47	27.12	20.25	26.76	22.66	19.86	22.99	28.73	25.66	19.68	27.18
Corn& sorghum	26.29	28.04	37.54	33.51	32.44	33.77	36.99	33.59	34.95	35.50	35.89	33.47	32.19	36.11	38.50
Sunflower	4.20	5.18	6.84	6.42	6.31	7.75	10.33	8.62	10.72	12.28	10.32	10.97	13.20	10.20	9.38
Potatoes	3.08	2.55	2.45	2.72	2.70	2.65	2.89	2.81	2.91	3.22	3.33	3.11	3.15	3.18	3.12

Source: Processing of data from INS.

At the same time, we can observe that, especially in case of corn and sorghum, on almost the same area cultivated there was variation of production by close to 100% in different years, only through the contribution of weather conditions. In Figure 2, we represent the average production for the main cereals cul-

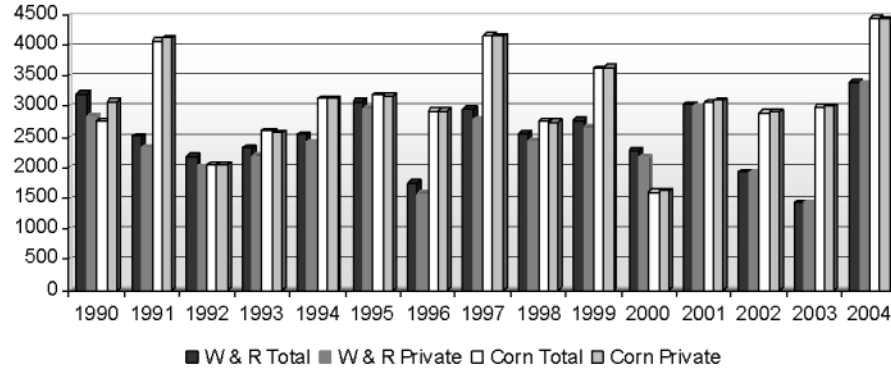

Figure 2. Average production per hectare for cereals, 1990–2004 (Kg)

tivated in Romania, with separate representation for the average production in Romanian agriculture and in its private segment. The conclusion is that, in case of wheat and rye the private segment had lower production than the state system and in case of corn the values were almost the same.

Sunflower farming is a good example for a successful transformation in a specific branch of agriculture. This is one of a few branches in the Romanian agri-food sector, which recovered very fast from the shock of the transition period. The reasons were that the demand on the domestic market was high and the businesses processing sunflower oil organized themselves in a very competitive way. They had firm contracts with sunflower producers and even helped them with financing, machinery and pesticides. In addition, the demand for the Romanian sunflower oil on the foreign market increased. In the last years, the majority of the sunflower area was cultivated in private farms and as a consequence, the majority of production was based on private work and high level of competitiveness.

The sunflower planted area increased year by year (Figure 3). In the last years, the area cultivated was twice as big as at the beginning of the 1990s (even more in some years). In total crop area, sunflower has had an important position with more than 10% (Table 9). The same trend was observed in production where the volume tripled.

In opposition to sunflower production, the sugar beet and sugar industry constitute the most eloquent example of the decline of a branch of the agriculture and food industry. Sugar beet as a crop cultivated in Romania has gone through a lot of transformations in the recent years of the transition period. As a general trend, one can notice the decreasing trend in the areas under sugar beet, as well as of average yields per hectare. As this crop requires special technologies, weather conditions, and also a special care on the part of producers, sugar beet should be cultivated on the basis of a special national strategy, with financial

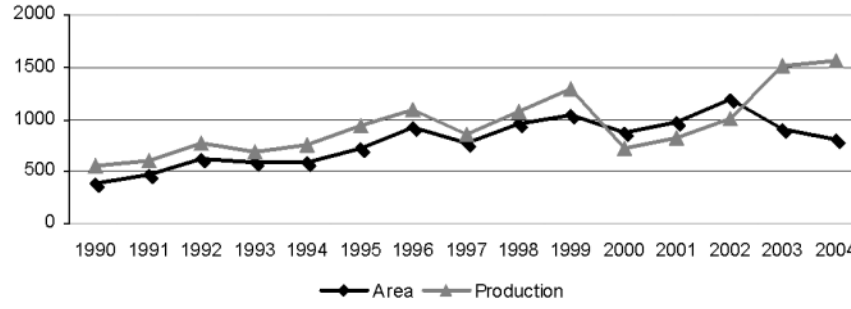

Figure 3. Sunflower cultivation area and production, 1990–2004 (in thousand hectares and thousand tons)

support from the state. It is a very expensive activity, with high risks, needing investments and support. Otherwise, the private farmers would generally not be interested in cultivating it, which is the case in Romania at present.

For example, the area that was previously used for sugar beet cultivation (Figure 4) is used for other crops that are more reliable and present lower costs to producers.

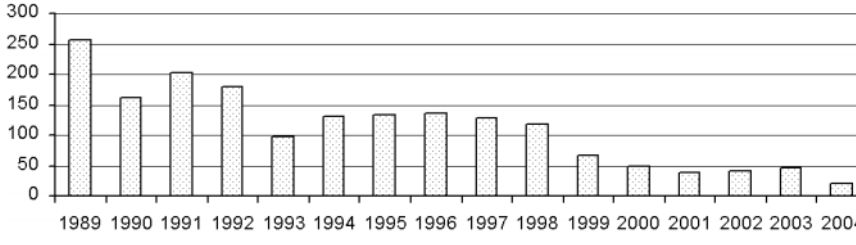

Figure 4. Sugar beet cultivation area, 1989–2004 (in thousand hectares)

The average yields per hectare do not significantly vary from one zone to another; however, there are significant differences as regards productivity between different farm cropping structures and between Romania and other countries (about 20 t/ha in Romania; Table 10).

The potatoes are one of the surviving crops. Their evolution did not encounter major difficulties except for the year 1991 (Figure 5) when, despite the large area under this crop, production was less than expected because of bad weather conditions and lack of pesticides. Almost the entire area cultivated with potatoes is privately farmed. The same is in case of production.

In case of vegetables and fruits (Figure 6), the evolutions of the area cultivated and of production have been under the influence of the barriers of the transition period like other crops (except for the year 2004 in case of vegetables). Viniculture and fruit growing have an important place in Romanian crop pro-

Table 10. Sugar beet average yields and total productions by ownership forms, 1989–2004

Year	Average yield (kg/ha)			Total production (thou. tons)		
	Private sect.	State sect.	Total	Private sect.	State sect.	Total
1989	26,207	25,297	26,465	5710.4	960.7	6671.1
1990	20,248	19,244	20,149	2954.2	323.5	3277.7
1991	23,467	22,357	23,330	4147.3	555.4	4702.7
1992	15,622	19,685	16,098	2477.4	419.3	2896.7
1993	17,314	22,784	18,276	1386.8	389.5	1776.3
1994	20,491	23,872	21,264	2054.3	709.5	2763.8
1995	19,138	24,138	19,928	2147.3	507.3	2654.6
1996	20,072	25,712	20,960	2298.3	549.9	2848.2
1997	20,995	24,012	21,166	2372.0	353.5	2725.5
1998	19,354	20,290	20,045	2016.8	344.6	2361.8
1999	21,608	23,390	22,608	1273.8	141.2	1414.9
2000	13,819	16,980	13,787	629.4	36.1	666.9
2001	22,100	n.d	22,432	835.2	n.d	875,5
2002	22,862	n.d.	22,930	926.3	n.d.	954.6
2003	16,806	n.d.	16,916	741.9	n.d.	764,5
2004	32,428	n.d.	32,290	658.2	n.d.	672.7

Note: n.d. = No data
Source: Processing of data from MAPDR and INS.

duction because of the respective big natural potential. Despite this potential, the domestic performance is weak. In viniculture, the main confrontation was against quality because of the expansion of the hybrids and soil degradation. The same situation occurred in fruit growing. Lack of new investments and fertilizers had an important impact on productivity. In the same time, a big horticultural surface was destroyed because of the cutting (Figure 6). For these reasons, Romania became an importer of vegetables and fruits.

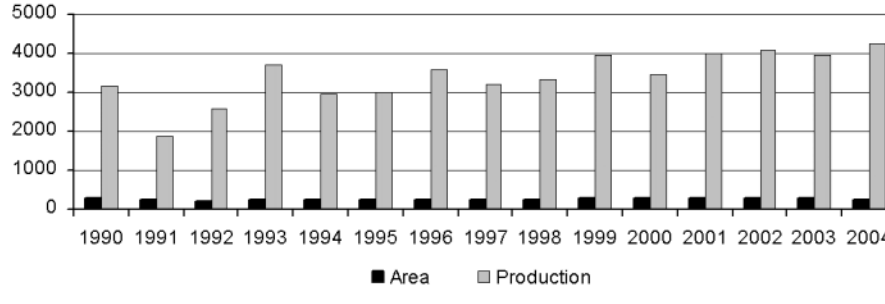

Figure 5. Potato cultivation area and production, 1990–2004 (in thousand hectares and thousand tons)

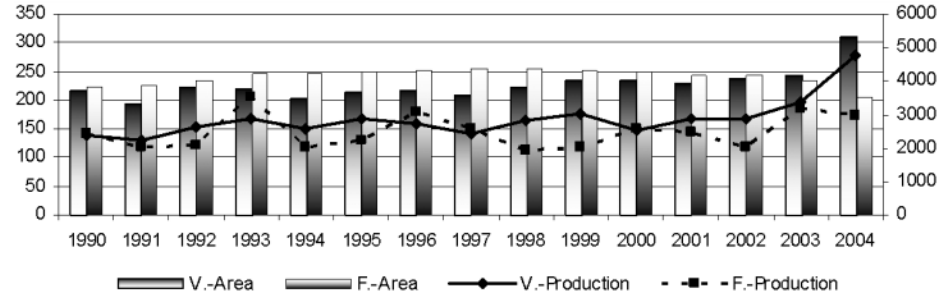

Figure 6. Vegetable and fruit cultivation area and production, 1990–2004 (in thousand hectares and thousand tons)

The average production per inhabitant, for the main crops grown in Romania (Table 11), is lower than in other Central and Eastern European countries and it is like a mirror of the Romanian long transition, with negative effects on the commercial balance, the balance of payments and, not the last, the quality of food and life. The difference between production and consumption is covered by imports, not always at the best quality level.

Table 11. Average production of the main products per capita, 1990–2004 (Kg)

Product	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Cereals	738.3	832.7	540.2	680.9	800.0	876.6	628.1	980.2	686.7	758.6	467.0	842.1	658.7	596.5	1125.9
W&R	317.2	239.8	141.9	235.3	272.2	339.9	140.0	318.7	231.4	208.5	198.6	346.5	203.8	114.9	363.0
Corn	292.7	452.8	300.2	351.0	411.0	437.5	425.0	562.4	383.2	486.9	218.3	407.0	385.4	440.7	670.9
Sunflower	23.9	26.4	34.0	30.6	33.6	41.1	48.5	38.0	47.7	57.9	32.5	36.8	46.0	69.3	71.9
Sugar beet	140.9	202.8	127.3	78.1	121.6	117.0	126.0	120.9	104.9	63.0	29.7	39.1	43.8	35.2	31.0
Potatoes	137.0	80.8	114.4	163.0	129.6	133.1	158.9	142.2	147.5	176.2	154.7	178.4	187.1	181.6	195.2
Vegetables	101.3	95.5	115.7	126.2	113.0	126.6	120.6	107.6	125.3	135.8	112.7	128.4	131.4	154.5	220.3
Fruits	62.5	50.2	51.3	95.9	43.1	40.4	72.2	62.8	46.1	41.7	58.0	60.4	43.7	96.1	80.5

Source: INS Database.

For many years, **livestock production** has been in a grave and critical situation. After 1989, the number of animals decreased dramatically for all species. At present, Romania has less animals than many other countries with a smaller area or little natural potential. This is reflected in production. Nowadays, Romania does not have the capacity to cover internal demand from domestic production and recurs to imports.

In Figure 7 we present the evolution of livestock. In all cases, the number of the animals decreased (by even more than half for cattle, pigs, sheep and goats). The private property became the majority owner, covering almost hundred percent.

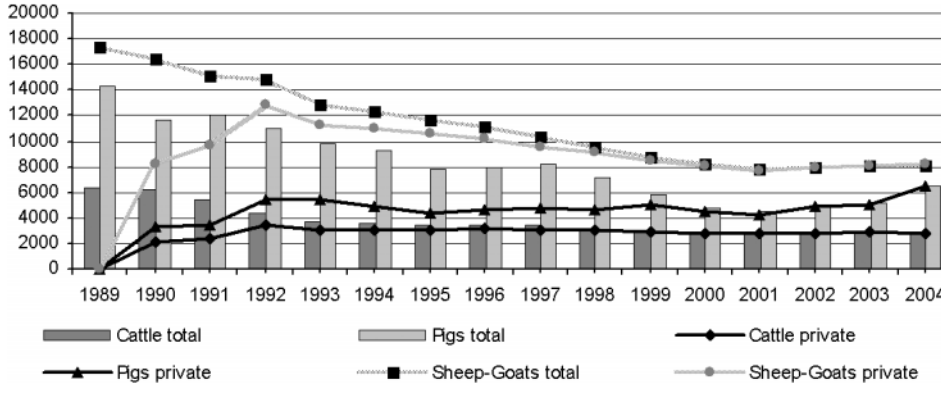

Figure 7. Livestock number, 1989–2004 (in thousand)

The respective production decreased, as well (case of meat, Figure 8). The tendency was not so dramatic as in the livestock case. In the transition period, the only positive evolution was observed for milk and eggs (Figures 9, 10). Milk

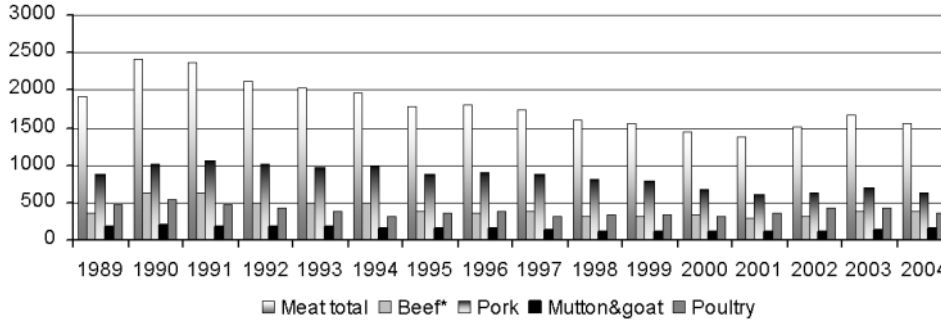

Figure 8. Animal production, 1989–2004 (in thousand tons)

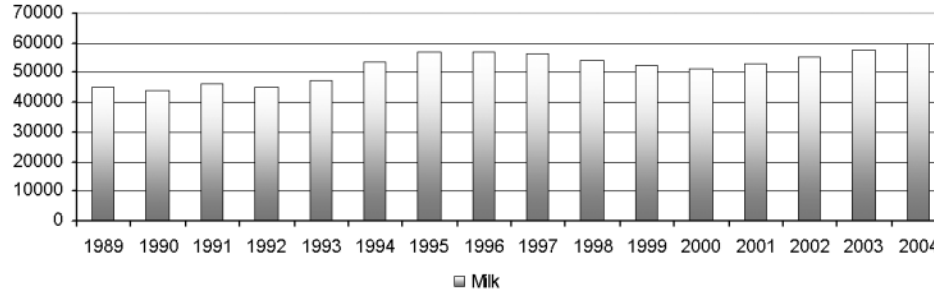

Figure 9. Milk production, 1989–2004 (in 10^5 liters)

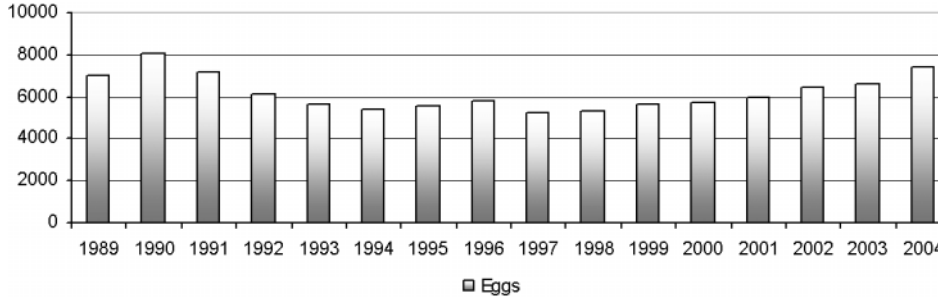

Figure 10. Egg production, 1989–2004 (in million)

production increased by 32% and egg production by 5% (between 1992 and 2003 the level of production was lower than in 1989 but the downward trend was slight).

The decline of the sector can be explained by the following factors:

- the former state enterprises were too big and inefficient;
- weak competitiveness/productivity compared with the products from import due to the high domestic production costs;
- the enterprises were kept in the state portfolio for too many years, the privatization and the transfer of the property to private owners were done too late;
- the lack of financial capacity and inadequate conditions of maintenance for a bigger number of animals, in case of the private owners;
- aggressive policy against the state enterprises (aiming at their destruction) from the side of the former managers, without a concrete strategy, good intentions and plan of restructuring;
- no clear state policy for this sector and lack of interest in its recovery;
- nack of protection against products from abroad (tax reduction for imported products).

AGRI-FOOD TRADE

Food and agricultural products have traditionally played an important role in Romania's foreign trade. These products were particularly important during the early transition period, and they have increased in importance in recent years.

Romania has been a net importer of agri-food products since 1990. In the last years, agriculture contributed only about 3.2% to total exports, while agricultural products represented 7.2% of imports.

Romania's major trading partners for agri-food products were the members of the European Union (EU-15) and the Central European Free Trade Area (CEFTA). The European Union (EU-15) is by far the most important destination

for exports (50–60%), followed by the CEFTA countries (nearly 15%). The EU-15 provides about one-third of Romania's agri-food imports, while about one-quarter of total agri-food imports originate from CEFTA countries, including Hungary, the largest single supplier of food and agricultural products (over 15%).

In recent years, the main Romanian food and agricultural products exported were live animals, oilseeds, vegetables, milk and dairy products, honey, fruit, wine, oils, canned fruit and vegetables, bakery products, and cereals. The major imports were cereals, meat, tobacco, sugar, fruit, citrus, and coffee. This composition of traded products reflects the inadequate international competitiveness of the Romanian food and agricultural sector, especially food processing. The share of processed products in exports slowly increases, but it still remains below the levels achieved by other Central and Eastern European countries. Romanian food processing shows little competitiveness even within the domestic market. This lack of competitiveness contributes greatly to the fact that the food and agriculture trade balance has constantly remained negative (Table 12).

Table 12. Agri-food trade balance, 1989–2004 (Mill. EUR)

	1989*	**1990***	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Export FOB	527	82	213	222	279	334	409	562	527	387	455	368	484	461	498	588
Import CIF	367	1165	640	766	823	556	689	692	616	901	746	1015	1351	1245	1535	1714
Balance	160	–1083	–427	–544	–544	–222	–280	–130	–89	–514	–291	–647	–867	–784	–1037	–1126

Note: * = Mill. USD

TECHNOLOGIES AND MECHANIZATION

In the last years, the Romanian Parliament and Romanian Government tried to improve the level of technology in agriculture, by special laws, having in view the increase of the number of tractors and other agricultural machines. The effects were not significant, even though the number of tractors, ploughs, cultivators and seeders increased.

Another characteristic of Romanian agriculture is the utilization of old and worn out machines. The availability of farm machinery has not declined significantly since 1989 (Table 13). The numbers of tractors, mechanical ploughs, and cultivators were even greater in 2004 than they were in 1989 and in the crisis years of 1990 and 1991, but they were too old for good use. Tractor availability improved as the ratio of arable land to the number of tractors decreased, from 62 hectares per tractor in 1989 to 55 in 2004. Only the number of grain combines

Table 13. Stock of agricultural machinery in Romania, 1989–2004 (thous.)

Year	Tractors	Ploughs	Cultivators	Seeders	Grain combines	Arable area/tractor (ha)
1989	152	83	35	44	62	62
1990	127	73	27	36	41	74
1991	133	73	24	35	38	71
1992	147	81	23	37	37	64
1993	158	96	24	44	37	59
1994	161	104	23	48	38	58
1995	163	107	23	50	38	57
1996	165	114	24	52	38	57
1997	163	115	28	54	36	57
1998	165	122	28	56	33	57
1999	164	123	28	56	31	57
2000	160	123	26	58	28	59
2001	164	127	26	60	26	57
2002	169	131	27	62	25	56
2003	169	132	27	63	25	55
2004	172	136	29	65	25	55

Source: INS Database

decreased sharply, despite the continued dominance of grain in Romanian agriculture (in 2004 it stood at 40% of the number of grain combines in 1989).

In the last years, another preoccupation of the decision makers in Romanian agriculture was irrigation and the increase of area under irrigation. After 1989, the irrigation systems were destroyed and unused. This explains the weak performance in Romanian agriculture, in the case of these crops, which depend on irrigation. Generally, production was lower in the regions with low humidity and lack of irrigation, like in Southeast or Northeast, where the agriculture and the rural population are dominant. Unfortunately, the process of rebuilding of the irrigation systems is slow and requires important financial inputs.

INPUT CONSUMPTION

Fuel consumption, especially diesel oil consumption, increased, even though it is still at a low level, lower than the necessary consumption for the agricultural processes all over the year.

In contrast, application of fertilizers and herbicides collapsed after 1989, when total volume used decreased by 70% (Table 14). The sharpest decrease

was recorded for potassium fertilizers, which declined by 90% between 1990 and 2004. The main reasons were the price levels and the lack of interest in using them, especially from the side of the small private farmers.

Table 14. Use of mineral and organic fertilizers in Romania, 1989–2004 (Fertilizers used – thous. tons of active substance)

Year	Total NPK	Nitrogenous	Phosphate	Potassium	Organic fertilizers (manure – mill. tons)
1989	1159	666	329	164	41.6
1990	1103	656	313	134	24.8
1991	464	275	145	44	16.9
1992	422	258	133	31	15.8
1993	538	346	165	27	17.1
1994	479	313	149	17	16.9
1995	470	306	149	15	17.4
1996	435	268	153	14	17.9
1997	404	262	129	13	16.5
1998	383	254	114	15	15.8
1999	305	230	63	12	16.7
2000	342	239	88	15	15.8
2001	369	268	87	14	15.3
2002	362	239	73	14	15.7
2003	362	252	95	15	17.3
2004	380	270	94	16	17.5

Source: INS Database.

NON-AGRICULTURAL STRUCTURES IN RURAL AREA

The non-agricultural activities in the Romanian rural areas are little developed. The dominating are the activities of the primary sector, like exploitation and processing of raw materials. A few characteristic features, observed in rural areas are:

- The collapse of the industrial activities, services and rural arts; according to the Green Book – 1998, in half of the Romanian communes no industrial activity existed; the intensive activity in services and rural arts, existing before 1989, almost disappeared because of bad organization and lack of interest combined with lack of initiative and knowledge of trade and free market.

- The chances offered by the Romanian natural potential for rural tourism are not used by the entrepreneurs and local authorities; more than half of the Romanian communes have a great tourist potential because of their history, traditions, customs and landscape (Green Book – 1998); agro-tourism could be an excellent chance for rural communities to develop their activities, with a synergetic impact at the social, economic or cultural level; despite some facilitating devices and assistance from the legal entities, this activity is not "the engine" for the rural areas and the causes are: weak infrastructure, lack of information, lack of tradition and initiative in this field, limited sources of financing.
- The SME category in rural area was not a priority for the governments; data provided by the Ministry of Agriculture (2004) show that almost half of the SMEs in rural areas were established in trade sector, 20% in processing and only 0.3% in the primary sector; predominant are the family associations without employees, because in the Romanian peasant mentality there is no room for other forms of collaboration, due to the remnants of the autarchic system.

The pre-accession funds from the EU had a small impact on rural areas. Among them, SAPARD funds seem to be the most important, as helping the local communities in their efforts and as being a good "training" to the attracting the EU structural funds.

Some Romanian researchers and specialist in this field (e.g. Rusu, 2005) have a different opinion from that of the government and suggested that a solution for the rural areas could be constituted by the development of the SMEs through special credit lines, fiscal facilities for exports, different taxation of profit according to the main activity, facilities for the access to land and utilities, a bigger consultancy network, a representative organizational structure with a strong position on the domestic market and power of negotiation on international market.

An important component of the rural development, having great impact on the level of civilization and modernization, is infrastructure. It influences the level of functionality of the local economy and even of the national economy.

The new directions for rural development and modernization, in general, are characterized by free movement of persons, goods and capital, but all of these imply good connections between places and entities, which means the modernization of the infrastructure.

After 1989, the rapid pace of investment making that characterized the whole regions in Romania, slowed down because of the lack of money. Thus, there appeared a big discrepancy of investments between rural and urban areas, rural infrastructure being at present at the level of 1989.

The density of the public roads in communes and generally in the countryside is low (27.3 km roads for 100 km^2 of rural territory). Till 2004, only 10% of the

total length was modernized. At the level of communes, 60% of roads are made of stone and 25% do not have improved surfaces (Green Book, 1998).

When trying to describe the rural infrastructure we cannot omit the level of modernization of the houses and farm buildings. The situation is quite dramatic considering that in 2004 only 40% of households had running water (own or from the network), 7.5% were served by the sewage systems, and only 0.5% had central heating.

A good start to modernization of the rural infrastructure was constituted by the SAPARD Programme. The EU funds were allocated especially to roads, sewers and water supply and it was, of course, observed that the amounts were not sufficient for all Romanian rural needs. The funds for infrastructure from SAPARD were the only one among all measures that had an impact on rural areas, raising high demands and actual applications from the local authorities.

CONCLUSIONS AND RECOMMENDATIONS

Following our analysis there are some domains, in which there is an imperative need for improvement and change: labor, local industries, services and rural arts, tourism, infrastructure and agriculture.

The human factor will be important for rural development in the future. The main activities must be focused on: the professional qualification of the young generations in occupations connected with rural areas, special programmes for young people to implement their ideas in rural areas (agriculture or non-agricultural activities), identification and stimulation of the activities specific for each region and the actors able to start a business, a network of consultancy specialized in rural activities. It is possible to increase the skill levels of the rural population occupied in rural activities by implementing a stimulating system for different areas and activities, and adequate management of the skill transfer from the old to the young.

The identification of the SMEs able to develop their business and to attract local labor and resources is the principal objective for local authorities in the attempt to bring back the local industries lost.

The utilization of the tourist potential is another goal, which must be reached very quickly even if the present conditions are characterized by a big competition on the international market. It is just a matter of time, money and culture.

In regards to infrastructure, there is still much to do. Every rural community must have a direct and fast connection with other localities and the principal cities of the respective regions. A better infrastructure will help in implementation of other measures that are necessary to develop a given area. It will be a key to attracting the investors and to stabilizing the local population, by bringing the rural standard living standards closer to the urban ones, with a complete water

supply network, sewer, telephone, internet etc. This is the main duty of the authorities.

In parallel, the agriculture and agri-food sector must have a special place. Agricultural policy in Romania has traditionally emphasized increase of production. As the country moves towards the EU accession, this approach needs to be replaced with one that emphasizes increasing the sectoral competitiveness. Yields in both crop and livestock production are low in Romania, and the country's agricultural labor productivity is by far the lowest in the region. Efficiency can be increased only by adopting policies facilitating structural reorganization of agriculture, by allowing inefficient farms to close down (through effective early retirement schemes, for example) and removing obstacles to the expansion of the new and more efficient farming units (through removal of the bias against land leasing, for example).

Romania will have to establish institutions capable of meeting the Common Market requirements and of administering the CAP that are compatible with those of the European Union. Without timely implementation of an appropriate institutional framework, Romania will not be able to cope with the immense administrative task of implementing both pillars of the EU CAP, particularly the Single Area Payment System (SAPS) and the Compensatory National Direct Payment (CNDP) system (Csaki, Kray, 2005). As the experiences of the new EU member states indicate, significant delays can create political tension and discredit the advantages of EU membership.

Half of all holdings in Romania are smaller than one hectare. Without closing down of many of these farms, Romanian agriculture will not become competitive. Any attempts to solve the structural problems through the SAPS/CNDP regime will only weaken the structural adjustment of the sector. It is therefore recommended that the government clearly separate rural development and rural social measures from agricultural income support.

The structural adjustment needs of the sector can be addressed by focusing on the measures foreseen under Priority Axis 1 of the new EU rural development policy. The Romanian government will have to allocate at least 15% of the national envelope to Axis 1 (454.5 million EUR in 2007–2009); the maximum allocation (determined by the minimum allocations for the other two axes) is 60% of the national envelope (1818 million EUR in 2007–2009).

Romania has made significant progress toward establishing a private agricultural sector, characterized by a mix of organizational types spanning the entire spectrum of individual and corporate farms. Land reform (in the sense of restoring the ownership and use rights of individuals) has been virtually completed.

One of the original goals of transition was to eliminate the large farm bias built into the Romanian agricultural mentality since 1948. Commercial farming should be supported and encouraged in Romania, but support should be based on measures of commercial activity, not size. The objective should be to help

small farmers increase their level of commercialization, something that cannot be achieved by cutting them off from subsidies because of their size.

Consolidation of small farms should be encouraged, because empirical evidence from farm surveys in Romania and other countries indicates that owning more land is associated with a higher standard of living in rural households. Consolidation will occur naturally if farming is a profitable business: farmers will seek ways to increase their holdings if they can earn enough money from agriculture.

Policymakers face two main tasks in the agro-processing sector: they need to facilitate the consolidation of privatized agro-processing industries, and they need to promote and attract Foreign Direct Investment (FDI) into the sector. The government should study the experience of other European countries (especially Ireland) in encouraging FDI. No special measures are needed to attract foreign investment into the food retail or catering business, but it is imperative to attract FDI for modernizing and upgrading the privatized agro-processing firms.

The government should also develop policies that encourage domestic investment in small and medium-size processing plants in rural areas. Food processing is an ideal complement to the agricultural activities of the rural population, and it can be set up in villages with little effort or investment. In addition to augmenting the income of entrepreneur families, this activity would create local jobs. These policies should be a part of a forward-looking rural development strategy that no longer relies on simply providing subsidies for the purchase of agricultural machinery and equipment.

Most small farms in Romania are subsistence farms that have only marginal contacts with the market. Most of the contacts that do occur are with local markets or in the form of direct sales from the farm. These firms have almost no direct relations with large retailing systems. To benefit from the revolution in retailing, these farms need to be integrated into vertical supply chains. Becoming integrated will require fundamental change on the part of small farmers, many of whom are not willing or able to make these changes. Farms that do not become integrated will either remain as subsistence farms, providing only additional income, or disappear, providing scope for consolidation. Farms that do become integrated will become larger and more commercial, they will adopt improved technologies, as they will meet the challenges of vertical chains.

The financial system needs to be upgraded to meet the requirements of the rural population. Banks and non-bank financial institutions have made modest progress in recent years and rural credit remains inadequate. The existence of SAPARD grants funds and the need for bank financing of SAPARD-approved farm and agro-industrial projects raise the demand for rural bank lending. The rural banking sector needs to be strengthened to meet these needs. Other problems that may require increased attention include the need to strengthen legal institutions, which are now unable to adequately enforce existing collateral

laws; develop non-bank sources of finance, including reduction of tax constraints on equipment leasing firms; support expansion (and regulation) of micro-finance institutions serving rural clients; and support the development of the private sector risk management tools in rural areas.

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Krassimira DIMITROVA KANEVA, Minka DIMITROVA ANASTASOVA-CHOPEVA
Institute of Agricultural Economics
125, Tzarigradsko Shose Blvd, blok 1
1113, Sofia, Bulgaria
k_kaneva@hotmail.com; anastasova_m@yahoo.com

AGRICULTURAL AND RURAL DEVELOPMENT IN BULGARIA

Abstract: The paper discusses the general economic situation in Bulgaria and the place of Bulgarian agriculture in the national economy. Restructuring and utilization of farmland is shown, along with the decrease of the cultivation area of all crops, except for oil products. The volume of the main commercial agricultural products also significantly decreased, affecting unfavorably the quotas negotiated with European Commission in relation with Bulgaria's accession. The newly established production organizations and their special features are described.
Socio-economic development of the rural regions, located in the six Bulgarian Planning Regions is discussed. Main figures, demonstrating an unsatisfactory socio-economic situation in rural regions, are provided.

Keywords: economy, agriculture, land, main agricultural products, households, co-operatives, rural regions, Bulgaria

INTRODUCTION

Since the reforms towards market economy started in 1989, Bulgarian agriculture has undergone significant changes. A large part of the farmland lied idle, the livestock number notably decreased and production fell. Former production co-operatives were liquidated and new organizational structures emerged. Unfortunately, new producer co-operatives bear some disadvantages of the former ones, such as over-employment, decapitalisation and the presence of sunk costs, etc., which lead to inefficient performance. The newly established private, individual and family farms, greatly differ from Western European farms. Most of them function as subsistence holdings, other are huge farming enterprises, based

on hired labour. Some commercial code companies emerged, among which sole proprietors quickly developed.

Rural regions encompass most of the municipalities in Bulgaria. The development of rural regions can be described through negative natural population increase, disadvantageous age structure, high unemployment rate, low income level, etc. These indicators differ among the municipalities and it is important to consider the differences, when analyzing and delineating rural regions.

This study attempts to analyse the process of transformation of agriculture and the development of rural regions at the beginning of Bulgaria's membership in the European Union.

The paper is organised as follows: first, the general situation of the Bulgarian economy is presented. Then, changes in farmland utilization are considered. The next section describes the production of main commercial agricultural products, which is followed by the discussion on the new agricultural production organizations. Then, the development of rural regions is examined and finally, main implications are summarized.

AGRICULTURE AND THE NATIONAL ECONOMY

Bulgarian economy has still not reached its level from the period before the reforms. In 1989 the Gross Domestic Product (GDP) was 22.2 million EURO, while in 2005 it was 21.5 million EURO. The GDP per capita amounted to 2246 EURO in 1989 against 2771 EURO in 2005. Over the last few years a trend of a relatively strong growth of the national economy is observed. In 2005 the GDP volume was higher by 41.2% than in 2001.

Bulgarian agriculture is of significant importance in the national economy. Its share in the Gross Value Added (GVA) until 1989 had been at 11–14% and kept at this level during the transition period (13.4% in 2001). After that, the tendency of a decrease in the agricultural production activity has been observed and the respective share dropped to 9.3% in 2005.

Bulgarian economy is export-oriented and foreign trade balance had been positive until 1989. During the transition period the trade balance fluctuated but has been positive until 1998, regardless of the economic crisis in 1996–1997. Thereafter, the balance has been negative and the negative balance rapidly increased, particularly in 2005, reaching minus 3550 million EURO. The higher rates of import increases in recent years are caused by the growing consumption credit, intended to cover the postponed purchases of households.

In spite of negative macroeconomic conditions, foreign trade in farm commodities ended up with a positive balance. Its absolute value is still lower than in the pre-reform period, but the share in the country's foreign trade is about

7–9%, in contrast to 2–2.5% prior to 1989. The average trade balance of agriculture for 2001–2005 is 206 million EURO but continuously increases each year.

Investments into the fixed assets continuously increased, reaching 9800 million EURO in 2005. The volume of investment in agriculture, however, fluctuates around the average of 251 million EURO. The share of total investments also fluctuates, reaching a peak of 18.8% in 1998, and dwindling down to 3.1% in 2005, with 7.6% annually prior to 1989. This indicates that investment process in agriculture lags behind that taking place in other branches. The reasons are the low rate of savings in Bulgaria and the problems stemming from the small scale of farmland property, hampering change and driving away the investors[1].

The number of employees in the Bulgarian economy continuously decreased during the transition period. In 1989 the total number of the employed was 4.4 million, but it decreased to 3.276 million in 2005. According to the Employment Agency data, unemployment level dropped down from 18.1% in 2001, when the level was the highest during the transition period, due to intensive restructuring and privatization, to 10.1% in 2005.

In contrast to other post-socialist countries, employment in Bulgarian agriculture decreased at a slower rate than in industrial branches. In 1989 agriculture accounted for 789,000 employees or 18% of the total country's employment, while during the reforms, in 1998, the number was at 796,000, or 25.2%. This can be explained by the absorption of the labour force, having lost their jobs in the industry, by the new established, mainly private farms. According to the Agricultural census, in 2005, there were 224,000 full-time employed (among 1,076,000 natural persons employed in agriculture). If we relate this number to the total of 2,276,000 fully employed in the country, the share of the labour force in agriculture turns out to be at about 6.8% of the country's employment, which is a bit higher than on the average in the EU member-states. This relatively low share of the agricultural labour force is due to a quick decrease in the number of persons dealing with agriculture, by 30% as compared to 2001, and mainly affecting those older than 65 and younger than 35 years.

The labour input in Annual Working Units, however, was 626,700 in 2005, demonstrating a still high level of the part- and temporary employment in Bulgarian agriculture.

After the bankruptcy of many Bulgarian banks during the crisis of 1996–1997, the surviving ones were reluctant to provide credits. This situation persisted until 2003, as credit granted to the national economy increased only by 21% on the average in 1998–2003. Since then, the value of credit fast grew by

[1] Data about GDP, GVA, foreign trade balance, investments and employment for 1989–1998 are taken from Statistical Yearbooks, NSI, while the source of data about 2001 2005 derived mainly from the Agrarian Reports, MAF.

52% in 2004 and 41% in 2005, which brought a restriction policy by the National Bank in order to avoid definite problems with some national financial institutions (MAFa, 2001–2006).

Agricultural ***credit*** takes up less than 2% of the total volume of credits to the national economy. The turning point in agricultural crediting was 2003, when the SAPARD Programme started. Banks became well-disposed to provide credit to agriculture, but mainly in the framework of co-financing from the SAPARD measures, guaranteed by the State Fund "Zemedelie". In the last years credit value increased by more than two times in comparison with 2001 (MAFa, 2006; MAFd, 2005).

Direct credit, granted by the State Fund "Zemedelie" is used for investments and implementation of three regional programmes (Rodope, Strandja-Sakar and North-Western Regional Programme), and ***short-time*** credit – for turnover capital. The respective value of the total of bank and government credit is about EURO 684.5 million (Table 1).

Table 1. Credit and Subsidies in Bulgarian Agriculture in Pre-accession period 2001–2005

No.	Types of credits and subsidies	Credit by type of sources, BGN						Total EURO, MILLION
		2001	2002	2003	2004	2005	Total BGN, Million	
1.	Credit from comercial banks	164.5	167.4	263.3	376.2	367.3	1338.7	684.5
2.	Credit from State Fund "Zemedelie"							
2.1	Investments	–	13.5	36.1	27	74	150.6	77
2.2	Regional Programmes				2.6	10	12.6	6.4
2.3	Short-term credit	25.8	24.5	12.2	12.4	24.8	99.7	51
	Total credit	**190.3**	**205.4**	**311.6**	**418.2**	**476.1**	**1601.6**	**818.9**
3.	Subsidies from State Fund "Zemedelie"							
3.1	Target subsidies	18.9	24.6	43.3	61.7	58.9	207.4	106.0
3.2	Investment subsidies			0.7	2	6.3	9	4.6
3.3	SAPARD Programme	1.8	26.5	70.1	135.2	173.4	407	208.1
4.	Subsidies from State Fund "Tobacco"	60	117	121.8	115.4	147.9	562.1	287.4
	Total subsidies	**80.7**	**168.1**	**235.9**	**314.3**	**386.5**	**1185.5**	**606.1**
	Total financing	**271**	**373.5**	**547.5**	**732.5**	**862.6**	**2787.1**	**1425.0**

Source: own calculation based on Agrarian Reports' data, 2001–2006, MAF.

Although credit value rapidly increases, it is still fairly modest in comparison with other Eastern European countries. The average annual credit value in Bul-

garian agriculture for 2001–2005 is about EURO 164 million, that is – 59% of the credit granted to Czech agriculture in the pre-accession period, amounting to EURO 281 million annually (Doucha, 2005).

Subsidies are granted by the State Fund "Zemedelie" and the Fund "Tjutjun" ("Tobacco"). The State Fund "Zemedelie" grants so called "target subsidies", which support farmers in purchasing fertilizers and seeds, and support producers of cotton, sugar beets, milk of high quality, etc.

Investment subsidies constitute 20% of the investment value and are granted mainly to the farmers and entrepreneurs implementing projects in the framework of the three Regional Programmes. The interest on the investment credits is also subsidized.

The State fund "Zemedelie" was entrusted with holding the SAPARD Programme resources. The share of subsidies granted under SAPARD Programme, including the subsidies from the EU funds, is about 34% of the amount granted by both state funds, "Zemedelie" and "Tobacco" (MAFa,e, 2006).

The annual rate of subsidies for 2001–2005 was EURO 102 million, while in Czech agriculture, for a longer pre-accession period (1995–2003) the average subsidies were EURO 119 million, or, in total, EURO 1.1 billion. In comparison, SAPARD Programme takes less than 1% of the support for Czech agriculture during 1995–2003 (Doucha, 2005). In Hungary, the state support in the pre-accession period was at about EURO 818 million (Popp, 2005).

This shows that both credit and subsidies in Bulgaria lagged behind those of the other Eastern European countries and were not sufficient to ensure a modern agricultural development in the pre-accession period.

According to the Bulgaria's Accession Treaty, the lump sum of European funds destined for Bulgarian agriculture for 2007–2009 is EURO 1552 million. The sum only for direct payments (Single Area Payment Scheme) is EURO 721.1 million, of which, for 2007 – EURO 200.3 million, 2008 – EURO 240.4 million, and 2009 – EURO 281 million. The means earmarked for the market intervention are EURO 388 million, and EURO 733 million is meant for the development of rural regions, of which 20% is transferred to the Single Area Payment Scheme.

Bulgaria is divided into six planning regions (Figure 1). Their contribution to the GDP is quite differentiated and ranges from 5.3% (the North-Western region) to 40.2% for the South-Western region where the Bulgarian capital, Sofia, is situated (Table 2). The North-Western region is the least developed, with the lowest population density and undeveloped industry and services. Because of that, the agriculture of the North-Western region contributes the highest share to the national NVA. The higher level of GDP per capita in this region in comparison with the North-Central and South-Central regions can be explained by the higher rate of population decrease, as discussed later in the paper.

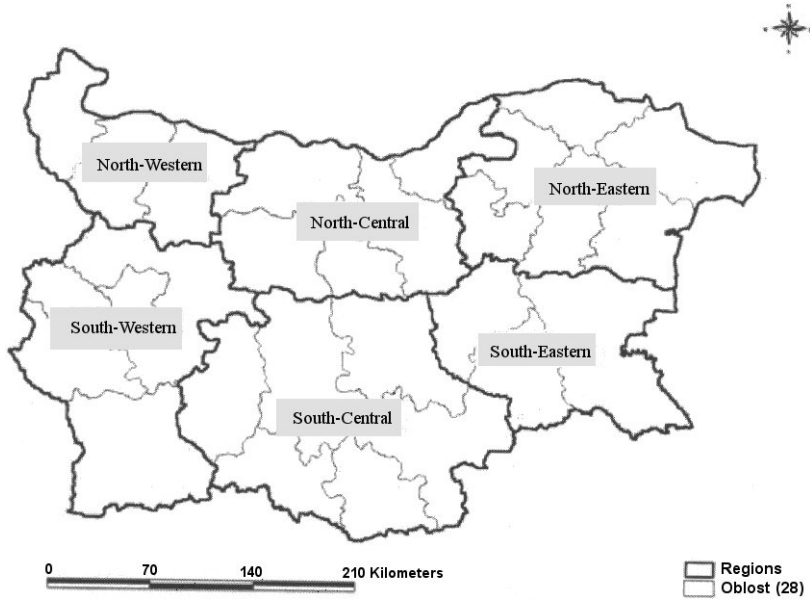

Figure 1. Planning Regions in Bulgaria

Table 2. Contribution of Planning Regions to GDP and GVA in 2004*

Regions	Share of regions in GDP, %	NVA per capita, EURO**	Share of Agriculture in NVA, %
North-Western	5.3	2056	19.3
North-Central	11.8	1989	13.7
North-Eastern	13.9	2116	16.7
South-Eastern	8.5	2142	13.9
South-Central	20.3	2051	15.0
South-Western	40.2	3719	4.1
BULGARIA	100.0	2515	10.8

* last regional data are for 2004.

** Calculated art ha rate 1 EURO = 1.95583 Leva.

Source: Gross Domestic Products by Regions, NSI, 2005.

The South-Eastern region includes two mountain ranges – Strandja and Sakar, which offer favorable conditions for sheep and goat husbandry, but not for crop cultivation. Due to difficult living conditions and low population density, all branches of the national economy are little developed in the region. As pointed out already, special programmes for the socio-economic development of the two regions are being implemented.

LAND RESTRUCTURING AND USE

The land reform, aimed at the restoration of the rights to land ownership, was carried out in two ways – within the former real estate borders, where they had been preserved, and by means of a land division plan for land pooled into Co-operative Farm blocks – large-scaled, land-consolidated parcels on which the former real estate borders had not been preserved and could not be identified).

At the end of 2000 it was declared that land restitution and land reform were completed. Nearly 25% of the recognised ownership rights have been restituted within the real old boundaries, 70% by land division plans, but also within real boundaries. For the remaining 5% of land the bonds were issued.

Due to land restitution significant changes in land utilization are observed. The total agricultural area decreased from 6.2 million hectares in 1989 to 5.5 million in 2005 (Table 3). The land actually in use constitutes 92% of the total agricultural land. Nearly 60% of the utilized land is arable. In contrast to the pre-reform period, when there was no fallow and non-cultivated land, now the idle land covers about 460 thousand hectares. More than one third of agricul-

Table 3. Farm land by types of cultivation

Types of land cultivation	Years				
	1989	**2001**	**2001/1989 %**	**2005**	**2005/2001 %**
1	2	3	4	5	6
1. Fields (Arable land), incl.	3848	3350	87.1	3128	93.4
– Cereals	2273	2193	96.5	1832	83.5
– Industrial Crops	414	527	127.3	758	143.8
– Vegetables	168	88	46.3	81	92.2
– Fodder Crops	918	103	11.2	109	105.8
– Fallow	75	439	585.3	348	79.3
2. Perennial Plants	294*	242*	82.3	185*	76.4
– Family gardens		118	x	45	38.1
3. Permanent grassland and meadows	2026	1786	88.2	1904	106.6
4. Glasshouses	x***	2		2	100.0
Utilized agricultural land	**6168**	**5498**	**89.1**	**5264**	**95.7**
Non cultivated land	x	356	x	462	129.8
Total agricultural land	**6168**	**5854**	**93.8**	**5726**	**97.8**

* Family garden are not included.

** Glasshouses were included in vegetables or flowers area.

Source: Statistical Yearbook, NSI, 1990; Agricultural Report, 2005, MAF.

tural area is constituted by permanent grasslands, predominantly of low productivity. It is observed that in 2005 the area of this little productive land increased by 7% in comparison with 2001.

PRODUCTION OF MAIN AGRICULTURAL PRODUCTS

CROP PRODUCTION

The area under nearly all crop groups, with the exception of industrial crops, decreased in comparison with the pre-reform period. Fodder crop area dropped 8.4 times due to dwindling livestock numbers. Now fodder crops take only 3.5% of arable land. The area of cereals (including fodder maize), which are key products for Bulgaria, decreased by 35%. The area under vegetables decreased by 54%, and under perennial crops (without family gardens) by 37%. Only industrial crops, mainly sunflower, extended their cultivation area by 44%.

The fall in the output of the main commercial agricultural products (Table 4) shows a deep gap and unrecoverable break in agricultural production. The area under wheat was almost preserved, but the average yields and the output dropped by 27%. Grain corn yields rose, which can be explained by the re-launching of irrigation and very favorable weather conditions, but the area under corn decreased by nearly one third.

Sunflower output grew 1.8 times, but this was due to the extended cultivation area, while the average yields dropped by 15%. The reason for this significant growth is the good export position of sunflower.

The output of oriental tobacco, which was a strategic product for Bulgaria, contributing a significant part of the Gross Value Added, drastically fell, and this tendency is expected to continue. Tobacco production in Bulgaria is charged with a "social" function, since for a long time it has been the main source of income for rural families in areas, favorable only for growing it. Tobacco has been and still is subsided by the national budget, despite the loss of considerable markets, stemming from the international policy of reducing the content of oriental tobacco in cigarettes. According to Bulgaria's Treaty of Accession, tobacco production will not be supported under the Common Agricultural Policy (CAP).

Due to unfavorable domestic and international market conditions, vegetable production also shrank. Field tomatoes, which are the main legume produced in Bulgaria, are grown on the area smaller than before by more than half, and the output is at only 31% of the harvests in the pre-reform period. Vegetables are eligible for support through the Single Area Payment Scheme but the plots are quite small and it cannot be expected that many farmers will apply for the support.

Table 4. Production of staple agricultural products over 1986–2005

Products	Areas			Average Yields			Output		
	000 ha			kg/ha			000 tons		
	1986–1990	2001–2005	%, col.3/col.2	1986–1990	2001–2005	%, col.6/col.5	1986–1990	2001–2005	%, col.9/col.8
1	2	3	4	5	6	7	8	9	10
Wheat	1139	1141	100.2	4203	3091	73.5	4787	3529	73.7
Burley	388	309	79.6	3355	2916	86.9	1301	901	69.2
Grain Corn	510	351	68.8	3826	4009	104.8	1950	1406	72.1
Sunflower	256	550	214.8	1657	1402	84.6	424	771	1.8 times
Oriental tobacco	67	31	46.3	1267	1444	114.0	85	45	52.9
Field Tomatoes	28	13	46.4	26,967	18,495	68.6	759	234	30.8
Apple	23	6	26.1	14,349	5857	40.8	332	37	11.4
Grapes	126	100	79.4	5280	3740	70.8	665	373	56.1
	Number of animal (000')			Milk productivity (liters per head)			Production (tons, liters) 000'		
Cows	617.5	372.9	60.4	3382	3369	99.6	2089	1296	61.6
Sheep	558.3	141.6	25.4	52	65	125.0	289	93	32.2

Source: Statistical Yearbooks, 1986–2006, NSI; Agrarian Report, 2001–2006, MAF.

Perennial crops, mainly orchards, are in the worst situation. The eradication of a large part of them during the land restitution and the negligence of the new managers with respect to that was left, brought about the collapse in fruit production. The competition from imported fruits of higher quality causes difficulties to Bulgarian producers. A change in the orchard structure is perceived. Apples and peaches give way to other fruits, proper for processing, such as cherries, raspberries, strawberries, etc.

The grape-vine area has been mostly preserved, as it was reduced only by 20%. In the last years grape production has been recovering due to the interest and financial support from the processing industry. Investment companies set up the enterprises integrating the vineyard and wine production, whereupon a new process of vertical integration is observed.

LIVESTOCK PRODUCTION

A true decimation of the livestock numbers during the reform led to decrease of the cattle stock by 58.6%, including the decrease of the number of milk cows by nearly 40% (Table 4). The number of sheep dwindled to just 1.6 million

(a drop by 82%), including the drop of the number of dairy ewes by 75%. The number of pigs decreased by 77.1%, down to 937,000, while there is now about 19.3 million of poultry in the industrial farms, or by 51% less than in pre-reform period.

Total output of the main products, that is – cow and sheep milk, fell by nearly the same rates, while the average productivity per head has been preserved and even slowly rose for the sheep milk.

This situation affected unfavorably the negotiations concerning Bulgarian agriculture in the framework of the accession to the European Union (EU). There was a low level of livestock production during the reference period (1998–2002) but even though, the European Commission (EC) approved yet lower national ceilings for the supported products than Bulgaria claimed. Milk quota is 979,000 tons (processed and fresh milk), well below the current production. The area of all supported crops, as resulting from negotiations, is 2.62 million hectares, i.e., 50% of the land in use and the average yield is 2.9 tons/hectare. Many of the products, which are supported under the Common Agricultural Policy (CAP), are cultivated over negligible areas (sugar beets, soya, tare, legumes, and cotton). As the EU member, Bulgaria will not use her enormous potential in the field of agriculture.

DEVELOPMENT OF NEW AGRICULTURAL STRUCTURES

The majority of farms in Bulgaria are ***family farms.*** They consist of ***farms belonging to natural persons*** farms meeting formal criteria for agricultural farm or holding)[2], farms of families that possess and cultivate land within the producer co-operatives (the so-called ***"personal use")***, and farms being the personal yards of people ***(subsistence holdings).***

There were about 1.6 million family farms in the pre-reform period, his number leaping up to 1.917 million in the first years of the reform. After that their number continuously decreased, but a great many Bulgarians are still engaged in farming.

[2] An agricultural holding is an independent business manufacturing farm products having an independent management and meeting at least one of the following criteria: it manages 0.5 hectare of utilized agricultural land, or 0.3 hectare of arable land, or 0.2 hectare of natural grassland, or 0.1 hectare of special crops (vegetables, berries, orchards, vineyards, nurseries, tobacco, hops, seed and seedlings, flowers, essential oil crops and medicinal crops, mushrooms, etc.), or 0.05 hectare of crops under glass, or 1 cow, or 1 buffalo-cow, or 2 cattle, or 2 buffalos,or 1 breeding sire (a bull, a stallion, a boar), or 1 sow, or 5 pigs, or 5 ewes, or 2 she-goats, or 2 pulling animals, or 50 laying hens, or 100 chicken for fattening, or 30 of other poultry species (turkeys, geese, ducks, etc.), or 10 female rabbits, or 10 bee families, or 1000 quails or other species (silk--worms, ostriches, angora goats, angora rabbits).

In 2005 there have been about 535,000 agricultural farms of which 520,000 possess land (Table 5). In comparison with 2003 the number of farms decreased by 20%. Agricultural land in use by the farms is 2,729,000 hectares, that is 51% of the total of land used in the country. The area of land in use decreased mainly due to significant structural changes in producer co-operatives.

Table 5. Agricultural Farms with utilized land 2003–2005

Farm Type	Number of farms with utilized land			Utilized land 000' ha			Average size, ha		
	2003	2005	+, –	2003	2005	+, –	2003	2005	+, –
1	2	3	4	5	6	7	8	9	10
Natural persons	648,274	515,300	–20%	879.7	914.7	+4%	1.4	1.8	+28%
Legal persons – Total	6534	5229	–20%	2024.8	1814.7	–10%	310.0	347.0	+12%
Sole traders	2870	2158	–25%	340.9	354.6	+4%	118.8	164.3	+38%
Trade companies	1331	1312	–1%	469.2	522.6	+11%	352.5	398.3	+13%
Producer's co--operatives	1973	1525	–23%	1169.3	890.9	–24%	592.7	584.2	–2%
Other associations	360	234	–35%	45.4	46.6	+3%	126.2	199.2	+58%
Total farms	654,808	520,529	–20%	2904.5	2729.4	–6%	4.4	5.2	+18%

* In 2001 total farms were 763,500, of which 758,200 natural persons and 5300 legal persons including 2900 cooperatives. Land is 3436 th. ha, of which 880.0 th. ha in natural persons, 2556 th. ha in legal forms, incl. 1739 in co-ops.
Source: Census of agricultural holding in Bulgaria 2003-2005, MAF.

There is a dual farm size pattern. On the one hand there are very small family farms, on the other hand there are large-scale commercial corporate farms and co-operatives.

Farms belonging to natural persons account for 99% of the total number of farms. Their number decreased, while the average size grew, but it still is far from the size, which can ensure a rational use of production factors. The relative share of land cultivated by the natural persons is 33.5% of total area of land used, but the average size of a holding is 1.8 hectare.

Other ***legal forms*** include single person companies, commercial code companies, producer co-operatives, and civil associations. These farms account for only 1% of all farms, but they possess 66% of the land in use.

Producer co-operatives, which are successors of the former labour co-operatives, have been mostly established until 1998, when their number reached 3589. By 2005 the number of co-operatives decreased to 1525, and they owned 33% of the land used. Their average size decreased from 710 hectares (2000) to 584 hectares (2005), or by 17.7%, but is still bigger than the size of farms of other legal forms. At least 60% of the land is owned by co-operatives larger than 1000 hectares in size (MAFb, 2006; MAFc, 2005).

The failure of many co-operatives can be explained by the unsatisfactory output, due to mis-management and unadjusted internal relationships among members, workers and land owners. Although the land reform was completed, co-operatives experience instability in the size of the land managed, and shortage of financing. This hinders the investment process and causes de-capitalisation of co-operatives.

It is expected that co-operatives will strengthen with the EU accession of Bulgaria as banks became more favourable to provide credit to co-operatives, and co-operatives will have it easier to finance their activity. Beside, they may accumulate a large part of European subsidies as they possess large areas of the land used. However, the problem with the debt of many cooperatives with respect to the State Fund "Zemedelie" must be resolved.

Single person companies and associations. Contradictory trends could be observed in the development of farms belonging to single owners. Until 2003 the number of farms has been increasing at fast rates, higher than the rates of land absorption in the farms. After that, there was a decrease in such farm numbers, together with extension of the total land area and the average size of the farms. Farms are mainly run by big tenants, their holdings being larger than 100 hectares in size, and they own 94–97% of the land in this group.

Table 6 shows ***distribution of farms by the six planning regions.*** Family farms belonging to natural persons are widespread in South-Central region, where population density is higher and land area per capita is smaller than in other regions. Besides, the soil and weather conditions in this region are favorable for intensive farming (vegetable and wine growing), which does not require vast areas. In contrast, the highest shares of single owners and companies are observed in the North-Eastern region, where big tenants, who are crop producers, are situated.

Table 6. Distribution of agricultural farms in Bulgaria by Planning Regions

Regions	Number of farms	Share of farms by regions, %	Share of farms by legal form, %				
			Natural persons	Sole traders	Co-ops	Traders	Associations and others
North-Western	54,541	10.5	10.5	8.7	7.4	8.6	8.6
North-Central	76,345	14.7	14.6	23.8	19.4	17.3	15.8
North-Eastern	96,968	18.6	18.5	31.1	24.5	31.8	18.0
South-Eastern	55,430	10.6	10.6	15.0	11.7	12.1	15.6
South-Central	153,163	29.4	29.6	16.0	26.0	21.0	20.6
South-Western	84,081	16.2	16.2	5.4	11.0	9.2	21.4
North-Western	520,529	100.0	100.0	100.0	100.0	100.0	100.0

Source: Agricultural Holdings Structure in 2004/2005, MAF, Agrostatistics, Bulletin No 100.

One of the main problems affecting Bulgarian farms is ***over employment and low labour productivity.*** As mentioned, altogether 1 million persons worked in agriculture in 2005. Most of them are unskilled, particularly those in the farms belonging to natural persons, this leading to the high labour input in terms of annual working units (AWU) in agriculture.

The labour input of the full-time and part-time workers is equivalent to 596.6 thousand AWU[3]. Further 28,000 AWU were contributed by seasonal workers, bringing the total to 624,600 AWU. ***Regionally the share of the labour input*** in AWU follows the pattern of the share of farms. The AWU input per farm is 1.2 on the average for Bulgaria, while in particular planning regions it ranges from 1.02 to 1.3 AWU (MAFa, 2006).

Nearly 92% of the labour input takes place on the farms belonging to natural persons. This is associated with intensive farming (stock-breeding, vegetable and a large part of perennial crop growing) and shortage of adequate machinery in these farms.

In 2005 there were altogether 52,069 tractors, of which 70% belonged to the natural persons' farms (MAFb, 2006). Land area per one tractor is 40 hectares on the average in the natural persons' farms and 117 hectares in the other ones. This shows that machinery on the farms of the natural persons cannot be fully used. Moreover, the available tractors are distributed among few farms. Just about 7.1% of the natural persons' farms own tractors while 54% of the sole owners' farms, 89% of producer co-operative farms, 70% of company farms and 72% of farms of other associations. The share of all farms using external services and machinery is significant, due to which Bulgarian agriculture absorbs a lot of manual work.

Regionally, tractors are distributed similarly as the share of farms, but if we take into account the number of tractors per one farm, the situation changes. The lowest levels are noted in the South-Central and South-Western regions, where plots are smallest and intensive crops are grown. Tobacco, which demands a lot of manual labour input, is also grown in those two regions. In the two regions the ratios of tractors per farm are 1.3 and 1.2, respectively (considering only farms owning tractors). The highest number of tractors per farm (1.65) is in the North-Eastern and North-Central regions, where mechanized grain crops are produced (MAFb, 2006).

[3] One AWU (Agricultural Working Unit) equals 232 man-days times 8 hours or 1856 man-hours in a year. The labor put in by 1 individual may not exceed one AWU. In case an individual has put in 1856 man-hours or more annually, then an individual's labor is equivalent to 1 AWU. Where an individual has worked less then 1856 manhours his/her labor is estimated as a fraction of 1 AWU.

DEVELOPMENT OF RURAL REGIONS

According to governmental definition 2003[4] the rural regions in Bulgaria cover around 82% of the country area. The ***permanent depopulation*** is the major problem of these regions. There was a massive migratory wave from villages to towns until the 1960s–1970s of the past century. Industrial development was the main reason for this migration. Consequently, the drastic decrease of rural population and depopulation of villages (particularly in mountain and semi-mountain regions) was observed. Afterwards, the internal migratory processes gradually faded away. But the consequences influenced very negatively the demographic development of the rural regions. Nowadays, rural population accounts for only 30% of the total population in country (Table 7).

Table 7. Population by Regions and Place of Residence

Regions	Total Population, number		Population in Cities, number	%	Population in Villages number	%	Change compared to 2001, %
	2001	2005					
North-Western	531,149	493,708	292,511	59.4	201,197	40.6	–7.05
North-Central	1,194,327	1,140,453	777,684	68.2	362,769	31.8	–4.51
North-Eastern	1,304,344	1,270,018	821,689	64.7	448,329	35.3	–2.63
South-Eastern	793,899	774,538	531,845	68.7	242,693	31.3	–2.44
South-Central	1,969,595	1,921,178	1,264,737	65.8	656,441	34.2	–2.46
South-Western	2,097,781	2,118,855	1,728,098	81.6	390,757	18.4	1
Bulgaria. total	7,891,095	7,718,750	5,416,564	70.2	2,302,186	29.2	–2.18

Source: Population in Bulgaria, NSI, Sofia, 2006.

The population decrease tendency is a characteristic feature for the period 2001–2005. As it can be seen, this is valid for the most Planning Regions. Only the South-Western region is not involved in this group. There are some particularities of this region. An increase of population by 1% during the last four years (from 2001 to 2005) occurred. This is due to the increase of the population in the capital city by 4% in the same period. In other words, there is an inverse process going on in Sofia, impacting on the whole South-Western region. This fact can

[4] Rural regions are identified under the Regulation No14 of the Ministry of Agriculture and Forests and Ministry of Regional Development in Bulgaria since March, 2003. According to this Regulation, rural regions are identified as areas, where there is no settlement with more than 30 thousand inhabitants and the average population density is below 150 persons per 1 km. This definition is applied at the municipality level. At present, 230 municipalities of the total number of 260 have rural status. The municipalities classified in the group of rural municipalities correspond to the criteria of Regulation No14. They are located in all the six Planning Regions: North-Western, North-Central, North-Eastern, South-Eastern, South-Central and South-Western.

be the precondition for the deepening of the disproportion between the capital and other Planning Regions in the future.

Additionally, rural regions feature a strongly ***impaired age structure*** of the population. Around 1/3 of the rural population are over 60 years old against 18.6% for the urban population. The average age of the population in the villages is 45 years against 39.3 years in the towns.

The oldest rural population lives in the South-western region. The average age of this oldest population is 49.14 years, and it is followed by the population of villages in the North-Western region – 47.67 years, in the North-Central region – 45.94, the South-Eastern region – 42.31, and the North-Eastern region – 41.19 years. Regarding to the population in the villages, this shows that the South-Western region is heavily handicapped. The previously mentioned slight positive change in the total population of the South-Western region concerns the urban population and particularly the one in the capital city. The rural municipalities in this region have wrong demographic structures, like in the rest of the Planning Regions.

The low proportion of persons in reproductive age is the main reason for the negative natural increase (Table 8). The differences between the Planning Regions are significant. It is the North-Western region that has the worst natural population dynamics. The downward trend rate there is more than twice as big as the average for the country. The tendencies of the natural population development in the remaining regions are similar. A negligible decrease in the negative population dynamics occurred in almost all regions in the years 2001–2005. The negative trend rate increased only in the North-Western region. The negative natural population dynamics among the peasants is many times bigger than among the urban population. It was equal to –11.6 per 10,000 persons in 2005 year as compared to –2.6 in the towns. For the municipalities in the North-Western region the ratio of the natural dynamics between rural and urban population is 6 times, in the South-Eastern and South-Central regions more than three

Table 8. National Population Increase by Planning Regions

Planning Regions	2001		2005	
	Total number	Per 10 th. people	Total number	Per 10 th. people
North-Western	–5860	–110	–5984	–121
North-Central	–10,457	–88	–10,340	–91
North-Eastern	–5434	–42	–5183	–41
South-Eastern	–3024	–38	–2479	–32
South-Central	–8708	–44	–9121	–47
South-Western	–10,205	–49	–9192	–43
Bulgaria-total	–43,688	–55	–42,299	–55

Source: Population in Bulgaria, NSI, Sofia, 2006.

times, in the North-Central and North-Eastern regions more than two times. These results are connected with the age structures of the population in Planning Regions and the place of residence.

The high negative natural population dynamics is not only due to the impaired age structure. The Heath care service in villages is in a crisis, particularly so in the settlements with less than 500 inhabitants. The significant remoteness of the small villages from bigger settlements; the poor road transport connections and the irregular medical visits make it difficult to cater to the needy sick people in time. The diseases of the not too distant past, like tuberculosis are returning. Mortality among the adults increased to 19.4 per 1000 peasants in 2005 against 11.9 in towns. Similarly, infant mortality in the villages is higher than in towns (15.3 and 10.2, respectively). The differences between the regions, regarding the level of medical service is seen from a better state in the South--Western region. The number of physicians and dentists per capita is bigger than the average in the country due to high number of medical staff in the capital. The other regions have approximately the same number of doctors and dentists per capita. In practice, there are very grave problems with medical service in almost all the sparsely populated villages (with the number of inhabitants is below 500). Medical service is concentrated in bigger villages, with more than 1000 inhabitants. The major part of villages (more than 50%) are serviced by medical staff from other settlements.

Migration is one of the significant reasons for the bad demographic state of rural areas. At the present time the tendency to migratory related decreases continues. The smaller and smaller numbers of the rural population and particularly of the young people caused that the migratory flow ”village-town” decreased to 24.3% in 2005 from 34.3% in the period 1976–1985. With the exception of the North-Western region this tendency is observed in all regions. The South-Western region has the smallest share of this migratory direction due to its predominantly urban population (Table 9).

Table 9. Migration of Population by Planning Regions in 2005

Regions	Immigrants	Emigrants	Migration increase
North-Western	9742	13,115	–3373
North-Central	21,878	25,035	–3157
North-Eastern	23,925	26,836	–2911
South-Eastern	15,329	16,148	–819
South-Central	33,852	36,824	–2972
South-Western	45,470	32,238	13,232
Bulgaria, total	150,196	150,196	0

Source: Statistical Yearbook, NSI, Sofia, 2006.

The increased number of persons migrating abroad is another reason. Taking into account the changes of the population, natural population dynamics and internal migration, we can assume that about 33,500 persons left Bulgaria in the years 2001–2004 and did not return.

As is well known from the long-time investigations at the Institute of Agricultural Economics, a significant proportion of persons changed their place of residence in the search for suitable and profitable work. The transformations in the country concern primarily the domain of work. People have an increased motivation to adapt to the new realities by moving from the small settlements to bigger ones. They hope that this is the way to overcome unemployment due the restructuring of economic sectors. There are two main reasons for the migration: the hope for the permanent or temporary work, and aspiration to receive the desired education. This issue is valid especially for the rural population. The reasons connected with the opportunities for well-paid work occupy the first place in the North-Western and North-Central regions. This fact can be explained by the high rate of unemployment, especially in the North-Western region. The motivation of receiving the desired education is second in these two regions. The educational factor is stronger in the North-Western region, where the opportunities of gaining higher education are very limited. Education as a factor of migration occupies the first position also in the South-Eastern and South-Western regions. But this factor entails opposite effects in these two regions. Because of the insufficient educational possibilities in the South-Eastern region the wish to gain an appropriate education leads to a move from this region. This affects negatively the population dynamics.

The situation in the South-Western region is the opposite. A big part of the universities and cultural institutes with long lasting traditions is concentrated here. Hence, population dynamics is positive. The factor concerning job finding takes the second place. Like education, this factor influences negatively the population dynamics in the South-Eastern region and positively in the South-Western region, respectively. The job-finding and educational factors have the same intensity and impact negatively migration behavior of the population in the North-Eastern and South-Central regions. For this reason a negative population dynamics is observed in these regions.

The labour force is another important factor for the development of rural regions (Table 10). The data show that labour force increased by 9% in the period 2002–2004 in spite of the rural population decline. This discrepancy can be explained as follows: all people aged 15 and more are included in the labour force. But the decrease of the rate of the older population in the villages is smaller than the decrease of the population at the age below 15. In addition, more and more often the so called ”young pensioners” and children at the age of about 15 offer their labor force. This situation is typical for agriculture. In accordance with the labor legislation in Bulgaria, young people at the age below 15

were not allowed to do a paid job. Nowadays, the labor code has been changed and young people at this age can participate in the labor market. The worst socio-economic sphere put the necessity of the paid work performed by very young people.

Table 10. Labor Force by Planning Regions

Planning Regions	Labor Force th.		Employment coefficient		Unemployment coefficient	
	2001	2005	2001	2005	2001	2005
North-Western	209.9	176.2	32.6	35.2	25.8	13.6
North-Central	475.4	464.8	37.4	41.4	19.6	10.7
North-Eastern	531.2	554.4	35.5	44.3	25.6	13.3
South-Eastern	312.3	319.8	35.8	44.1	22.9	9.6
South-Central	799.8	803.7	38.4	43.7	19.2	10.0
South-Western	936.2	995.4	44.4	50.0	13.7	7.6
Sofia-city inclusive	558.2	600.6	47.7	51.8	14.4	7.6
Bulgaria, total	3264.7	3314.2	38.7	44.7	12.7	10.1

Source: Employment and Unemployment, NSI, Sofia, 2006.

The increase of occupancy in the rural regions from 29.7% to 33.8% during the period 2002–2004 is a positive feature of the labor market development. At the same time, the rate of unemployment decreased from 20.9% to 13.76%. The biggest reduction of unemployment was registered in the South-Central region (45%), followed by the North-Western (42.6%) and the South-Eastern (41%) regions. This can be explained by the absorption of different European programmes and donor funds. A number of new work places hale been created in the rural regions by these programmes and funds. For example, this applies to SAPARD, LEADER+, the Programme for development of agriculture in North--Western region since 2003, the Programme of Strandja-Sakar development since 2004 in South-Eastern region, etc. In spite of this, the comparison of the unemployment levels in villages and towns shows that the rural unemployment is higher by 2%.

Two other worrying circumstances are still present. First, the rate of the long-term unemployed (3 and more years) in the villages amounts to 40% against 32.8% in the towns. Second, the employment in the rural regions is mainly reduced to the seasonal agricultural work. For this reason only 25% of agricultural workers are full-time employed, according to the farm count of 2003 by Ministry of Agriculture and Forests (MAFa, 2004). All the rest of those formally employed work part-time. This shows the hidden unemployment in agriculture, and hence in the rural regions.

As mentioned, the number of agricultural workers exceeds 1 million. A significant part of them work occasionally in the sector. In fact, real unemployment in rural regions is higher than the official one. So, ensuring permanent employment through starting of an independent agricultural or another, supplementary, activity, as well as improvement of small business environment and encouraging its growth and competitive power, are the main objectives of different programmes for rural development.

Low incomes of the peasants are a very important negative factor, due to which population is not retained in the rural regions. Compared to the urban income per capita, the income in villages was lower by 331 Leva (about 160 Euro) in 2001 and by 408 Leva (about 200 Euro) in 2005. There is a tendency of an increase in the disproportion between towns and villages concerning this indicator. There are some reasons for this situation. Employment in rural regions, as mentioned before, is reduced to agricultural work. However, farms in Bulgaria are small, with low effectiveness and negligible market orientation. It is clear, that the number of available work places outside agriculture is at present insufficient for a fuller employment in rural regions and for increasing peasants' incomes.

The income from an own in-house activity of the rural households amounted to 32.1% in the total income structure against 5% for the urban households in 2005. The shares were 33.3% and 6.4% in 2001, respectively (Table 11). This is explained with the predominantly natural economy in agriculture. First of all, production of the small farmers is intended for self-supply with foodstuffs. Besides, the proportion of pensions in the income of peasants exceeds the one for the urban population. The difference was 1.6% in 2001 and 4.8% in 2005. It

Table 11. Structure of the Total Income by Urban and Rural Households

Sources	2001		2005	
	urban	rural	urban	rural
Wages and salaries	46.8	24.8	52.0	25.1
Outside salary	5.5	4.2	4.6	3.0
Enterprenership	4.6	3.1	4.6	4.4
Unemployement benefits	1.3	0.9	0.4	0.3
Pensions	23.2	24.8	20.7	25.5
Family allowances	0.7	0.6	0.7	0.8
Other social benefits	1.2	1.6	2.0	1.8
Household plots	6.4	33.3	5.0	32.1
Other	10.3	6.7	10.0	7.0
Total	100.0	100.0	100.0	100.0

Source: Household budgets in the Republic of Bulgaria, NSI, Sofia, 2002, 2006.

is well known that the pensions and the social payments are very low in general. Because of this the income level of the peasants is even lower. The differences between the Planning Regions in the total income are negligible. They increased from 13% to 15%. The South-Eastern region features the lowest level of total income per 1 person, while the South-Western region shows the highest one. The last fact can be explained by the population of the capital, with their higher wages, weighing heavily on the South-Western region.

In conclusion, one should remark that the rural regions in Bulgaria have an exquisite land, beautiful nature and clean environment. The encouragement of economic activities, such as rural tourism, handicrafts, processing of agricultural production, and local services can play a key role for the development of rural economy. This will lead to keeping rural inhabitants in the regions and to ensuring their prosperity. Taking into account that European Union helps rural development trough diversification of economic activities, an increase can be expected in the number of jobs outside of agriculture. This will be one of the major priorities of the municipal Policie.

CONCLUSIONS

1. The global changes in the socio-economic system worsened the essential indicators characterizing both the national economy and agriculture. However, over the last few years a trend of a relatively strong growth of the national economy is observed. The GDP volume grew very fast between 2001 and 2005.
2. Bulgarian agriculture still is of significant importance for the national economy, although its relative share in the Gross Value Added (GVA) decreased from 13.4% in 2001 to 9.3% in 2005. The foreign trade balance of agriculture is positive, in contrast to the overall negative balance of foreign trade. The share of agriculture in the national investment value is low (about 2%), as is the share in the total value of credit (less than 2%), hindering the development of the sector.
3. Farmland restructuring gave rise to appearance of the idle land (fallow and permanently non-cultivated land), taking about 16% of total agricultural area. Liquidation of former production organizations led to extraordinary drop of the livestock number and decrease in livestock production. All this affected unfavorably the quotas, negotiated with the EU, and it hampers development of agricultural potential.
4. The newly established farms have a dual size pattern. On the one hand there are very small family farms, on the other hand – large-scale commercial corporate farms and co-operatives. The main problem concerning farms is low

labour productivity, leading to over-employment and low efficiency of farm performance.

5. The permanent depopulation is a major problem of rural regions in Bulgaria. The drastic depopulation of villages influenced negatively economic development of rural regions.
6. The unemployment rate in rural regions is higher than the unemployment rate in towns. The number of new jobs in non-agricultural activities is not sufficient for overcoming the significant unemployment in villages. In these terms, diversification of rural economy will be a good way towards fuller employment and higher standard of life.
7. The income of peasants continues to be lower than the income of urban population. The main reason is predominant work in inefficient agriculture.

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Marina TODOROVIC, Radmila MILETIĆ
Geographical Institute "Jovan Cvijc" of the Serbian Academy of Arts and Sciences,
Đure Jakšića 9/III, Belgrade, Serbia
miomare@eunet.yu

SERBIAN AGRICULTURE – THE PROBLEMS AND CHANGES IN RECENT YEARS

Abstract: The paper describes the fundamental features of the development of agriculture and rural areas in Serbia, and the intense changes happening in the Serbian agriculture and countryside. The first part of the work presents the basic characteristics of the rural development in Serbia in the second half of the 20th century. The second part, accounting for the main characteristics of modern rural development, suggests a strategy for the future rural and regional development in Serbia, and discusses the role and place of Serbian agriculture in integration trends of the South-East Europe.

Keywords: agriculture, rural areas, Serbia, South-East Europe

INTRODUCTION

Being situated in the temperate climate belt, and stretching over a significant part of the Pannonian plain, Serbia has the natural conditions favorable for agriculture. The highest-quality land (first class land) covers approximately one million hectares, that is, about one fifth of the total agricultural land surface. According to some estimates, the agricultural surfaces of Serbia, if the technology used is neither very high nor very low, can supply some 26 million people with food (three times more than now live in Serbia). Therefore, there should be no problems with food security in Serbia. This, however, does not imply that land should be used carelessly or unprofitably. After the World War II there has been a strong trend towards appropriation of agricultural land; on the average, 5800 hectares a year were diverted to other purposes, this being equivalent to 1700 average farm holding (Isaković and Ševarlić, 1996). This trend is continu-

ing today, but, obviously, it must be stopped. If it were to continue, Serbia would have no arable land in 429 years, and some parts, such as Southern Moravski region (around the Southern Morava river) in a much shorter period, as short as 45 years from now, which is within the life-span of the present-day users of the land.

BASIC CHARACTERISTICS OF THE RURAL DEVELOPMENT IN SERBIA IN THE SECOND HALF OF THE 20TH CENTURY

Agriculture has undergone significant changes in the 2nd half of the 20th century; there was rapid industrialization of the country, and this had some positive and some negative effects on agriculture and on Serbian village life generally. An expert in the situation in Serbian villages, Professor Bozhidar Petrovic, usually says: *From a good peasant we made a bad worker*. There is general agreement, between scholars and scientific research dealing with agriculture, that in these five decades the agricultural sector was a black box, from which whatever and whenever was needed was being taken: population, food, money.

Therefore, the years 1950–2000 were the period, when agriculture was pushed to the margins of economic development. Investments into agriculture were much smaller than into the economy generally – industrial investment made 50%, and agricultural investment only 7% of the total investment value (Sipovac, 1997). That was also a period when agricultural investment went mostly into the large collective farms, but very little into the villages and individual farms. As industry was privileged in comparison to agriculture, so were these large state-owned firms privileged in comparison to small farmers. State-owned agricultural firms received 12 times more investment than the private, little farms. The government did not think of the interests of the villages and the rural population; the primary aim was to put cheap food into the hands of the city dwellers and industrial workers.

Still, in that same period there was undoubtedly an increase in farming productivity, and new sorts of crops were introduced. For instance, the farmers now produces four times more grain, and seven times more meat; total production increased three-fold. But, at this time (year 2003) one Serbian farmer can feed himself and five more persons, while in France this number is 35, and in Holland – 52 (Radmanović, 2003).

In the same period, much of the investment went into the mechanization of agriculture. This process began rather late in Serbia, but then proceeded quickly. In the 1960s, 92% of pulling and other mechanical power in Serbian villages was provided by animals (horses, oxen etc.), but in the 1990s the power of the machines in the small private farmers increased as much as 225 times. There are some estimations that over-mechanization has happened in the Serbian agricul-

tural private sector – one tractor per 10.5 ha. Serbia has approximately 400,000 tractors today, and some 96% are privately owned (Todorović, 2002). Such a large number of tractors, placed within a very inadequate technological and ownership structure, reflect, in fact, the non-rational and economically pointless behavior of the Serbian individual farmer at a definite point in time. It is quite common that a single household owns as many as three tractors, but they use them mostly for transportation or as source of spare parts for the better ones.

In the last decade of the 20th century, the rural society in Serbia was functioned in extremely difficult conditions: in the nearby lands there was war, the united market system of the Socialist Federal Republic of Yugoslavia was decomposing and disintegrating, the Security Council of the United Nations imposed sanctions on the remaining parts of Yugoslavia, the monetary system was disrupted by levels of hyperinflation never known before, the government was trying to maintain social peace by extremely low prices of food, and there were other limiting factors, too. The village is now organizationally and institutionally neglected, and yet, used as a buffer, to soften the blows of the general social crisis. Because of this, many things went wrong, and the key question, which remained, was how to transform the Serbian peasant into a Western-type farmer, that is: modern, highly productive, and able to compete on the European and world markets with quality, range, and price of products turned out. Also important were the efforts to move the rural population from the margins into the mainstream of the modern economy, and to alter the general life philosophy of most peasants, which used to be, for centuries, that "really very little is necessary, for life, and that no one knows so well as the peasant knows how little is, in fact, enough for staying alive."

During the entire 20th century, rural society remained a very important segment of the Serbian society, the main actor in the economy, and the State derived most of the income from the villages. Serbia entered the World War I (the first country to be attacked, in 1914) as a predominantly peasant country, the villagers being 86.8% of the total population. However, during the second half of that century, the urban population increased more than nine times over, while the rural population increased only four times (ISIĆ 2000). After the year 1989, Serbian rural society underwent such a rapid and deep structural changes, that it would be hard to find an example of more significant rural changes anywhere in the world; but, actually, similar changes were taking place also in other transition countries of Central and Eastern Europe (Tangermann and Swinnen, 2000; 133).

So, this was a period when a country, once rurally overpopulated, became rurally depopulated; 50% of Serbian farms will not be renewed, because there are no sons and daughters to stay on the land and continue the work; some 17% of the farmers are now older than 60 years, but according to forecast, by the year 2011, increase to more than 50% (thus more than half of the Serbian farmers

will be 60 years old, or older, an age when people in other professions are preparing for retirement or are already retired). Mass migrations from the villages into the cities bring one new paradox – the rural population is dwindling, but the farmholds are not increasing in size, which would be logical. Quite the opposite – the number of farmers decreases, but the farmholds are also being divided into even smaller pieces (Todorović and Miletić, 1999).

Depopulation is the dominant demographic trend in all micro-regions of Serbia except for Kosovo and Metohija. In more than 83% of the villages, the number of inhabitants is gradually decreasing. Depopulation is now proceeding in most of the municipalities in Serbia, but, as a rule, this process of dying-out is faster in the villages, in peripheral parts of municipalities, and in peripheral parts of Serbia.

For many years now, people have been leaving the villages. This rural exodus has many negative consequences. This is not just a matter of the village population becoming smaller and smaller. It is a complex process, connected with devastating consequences for the economic, social, and demographic situation. For instance: those who leave are mostly the young, therefore, the more vital. Population age profile has thus been altered: the vital potential of the village weakens, and those who remain are elderly peasants, who are less educated, and less inclined to change anything. This has caused a general lack of progress in rural municipalities.

Table 1. Urban and rural population in Serbia, as it changed between the years 1953 and 2002

	1953	%	1971	%	1991	%	2002	%
Serbia	6,979,154	100.0	8,446,591	100.0	9,778,991	100.0	7,498,001	100.0
Urban population	1,575,979	17.3	3,429,027	40.6	4,963,189	50.8	4,225,896	56.4
Rural population	5,403,175	82.7	5,017,564	59.4	4,815,802	49.2	3,272,105	43.6

Note: Data for 2002 are based on Central Serbia and Vojvodina, because no data are available for Kosovo and Metohija.

Source: Census 1953, 1971, 1991, 2002 – Documentation, RZS, Belgrade.

According to the results of the 1991 census, Serbia at that moment had, for the first time in its history, more population in the towns than in all of its other inhabited locations (villages etc.). The process of de-ruralization is seen in all parts of Serbia now. Only interval between last two censuses, urban population increased by about five percentage points.

De-agrarization is also one of the most important modern processes in Serbian villages. In the period from 1953 to 2002, agricultural population dropped from 4.7 million (66.7%) to 817,000 (10.9%). Such a reduction took 73 years to happen in Japan, 90 years in USA, and 120 years in Denmark. So, in Serbia this exodus was one of the fastest in economic history. This had many positive and negative consequences for the Serbian village. As a rule, the transfer was selec-

tive, we have already mentioned that those who left were mostly young, but old enough to start looking for a job, and, they were mostly men, not women. This had serious consequences for the overall age-and-gender structure of the village population.

Table 2. Distribution of villages in Serbia according to population number categories, as of the 2002 Census

Size group	Total number of inhabitants	% of the total rural population	Number of villages	% of the number of villages
10	151	0.00	26	0.57
11–100	37,060	1.13	684	15.11
101–500	547,073	16.72	1998	44.13
501–2000	1,413,590	43.21	1484	32.78
2001–10,000	1,150,467	35.16	327	7.22
10,000	123,764	3.78	8	0.18
Total	3,272,105	100.00	4527	100.00

Note: Data for 2002 are based on Central Serbia and Vojvodina, because no data are available for Kosovo and Metohija

Source: Census 2002 – Documentation, RZS, Belgrade.

According to the 2002 Census, about 1/4 (24.6%) of the population of Serbia is concentrated in the settlements, whose population numbers are between 2000 and 5000 inhabitants, and, over 65% of the population live in the medium-sized villages (from 500 to 5000 people). It is indicative that each third village in Serbia has less than 200 inhabitants. The process of dying-out of the villages in Serbia is also reflected by the fact that the inhabitants of 710 smallest villages constitute, altogether, just 1.1% of the entire Serbian rural population. We know that in a large number of villages, as many as 15% of them (i.e., 674 villages) the average age of the inhabitants is over 50, and that in a further 327 villages in Serbia (7.5%) the inhabitants are actually over 60 years old; therefore, we know that one-in-four (26.4%) of all villages in Serbia is populated by peasants who are on the average older than 50. So, we can expect that very soon, by the time of the next census, there will be a radical reduction of the number of villages in Serbia, which will exert a decisive influence on the spatial-demographic image of Serbia. This worrisome situation is further illustrated by the facts that in 700 villages, practically every second inhabitant is more than 60 years old; that in 191 (4.3%) villages there is no one younger than 20, and that in 800 Serbian villages no babies were born, not even one, during the last 30 years. In the last twenty years, nine villages disappeared completely; nobody lives there now.

In Serbia, like in some other parts of Europe, the ageing of the village population begins assuming dramatic proportions. Reports from the terrain indicate that the aged peasants are getting into the always-deeper poverty. The society is

neglecting them, they are becoming socially isolated, and decrepit, physically and psychologically. In many cases, the elderly villagers of today are at the end of their ability to move, they are hungry or half-hungry, abandoned, lonely and ill.

The gender structure, together with the age structure, is an important factor of the vitality of a village and of its economic viability. Processes of strong industrialization and de-agrarization have caused an increase in the number of mixed households (agrarian and non-agrarian under the same roof), which inevitably led to an increased work-load on the village women, because, as a rule, men go and get non-agrarian jobs far from home, while women tend to stay and work the land. Since the 1980s, about half of all who have been actually doing the work in Serbian agriculture have been women. But, these women remain housewives too, cooking, etc., and for this reason they abandon the kind of work that would keep them out in the fields during many days a year, and concentrate on the work that can be organized in the courtyard and immediate vicinity (the garden, tending to the cattle, etc.). Empirical studies confirm the statistical findings, in this respect, as well. Men still do certain key duties on the farm (over the weekend, or during a vacation, or they take a sick-leave from work, for this purpose). What heavy work the men do not have time to do, women must do, and that often means, in practice: most of the work. Plus, they raise the children. This combination of duties makes their position much more difficult than it was in the traditional rural community.

There is another important problem that is clearly visible now: Serbian agriculture is in transition, and the question of the transformation of ownership must be solved. Namely, the average farmhold in Serbia covers 3.6 hectares, split up into 13 separate plots of land; 86% of the farm holdings consist of less than 5 hectares – and let us remind that in the developed world such small surfaces are not counted as agriculture, but rather as an environment *around* agriculture.[1] Very popular is the opinion that land ought to be returned to its former owners, the peasants, but, in fact, they (the previous owners) have mostly died, leaving several inheritors, who live mostly in towns and do not see themselves in any kind of farming involvement.

According to the results of agricultural typology (Todorovic, 2002) Serbia may be divided into two agricultural macro-regions:

1. *Macro-region of traditional* agricultural production,
2. *Macro-region of market-oriented* agriculture – subdivided into several mezo-regions, based on the predominant typological features:

- *Mezo-region of market-oriented* low labour intensity agriculture with high yield and high productivity, with predominant crop farming – where the

[1] Some studies did show that in the EU countries, the farm-holds of less than 20 hectares are dying out, while the number is increasing of those over 50 hectares (Hill and Ray, 1987)

advantageous natural resources make it possible to achieve outstanding production results;
- *Mezo region of mixed market oriented agriculture* with equal or important share of crop farming, fruit growing and cattle breeding, covering bordering areas of the Pannonian Plane, flat areas of Šumadija, Pomoravlje and Kosovo and Metohija – propitious for irrigation, close to urban centers and with developed road network, featuring spatial heterogeneity of all production and structural characteristics; and
- *Mezo region of prospective market-oriented agriculture* found in mountainous regions oriented at agricultural production, with predominant cattle breeding, which needs to be intensified through additional technical and technological efforts (reclamation of natural meadows and pastures, as well as infrastructure development in order to overcome the problem of isolation of these areas).

The period of second part of 20 century can be divided into three separate phases: an indisputable phase of prosperity in the 1970s, a phase of relative but declining prosperity in the 1980s, and a phase of significant crisis in the last decade of the 20th century, the 1990s. Agriculture, it must be stressed, played a very great part in overcoming the troubles that happened to Serbia in the 1990s. In the moments of war in nearby republics, then of the terrible economic sanctions, and finally the NATO intervention, agriculture and the villages carried the heaviest weight.

In fact, in the last decade of the 20th century, the situation of the rural complex in Serbia depended on at least two groups of economic factors, which are not seen in other countries, whose economy is going through the so-called post-socialist transition:

(1) In the peace time, irregular economic conditions such as:
- radical disintegration (1988–1991) of the previously unified economic area of the former SFR Yugoslavia;
- economic recession, characterized in 1993 by one of the largest inflation rates ever recorded in the world economical annals;
- introduction of rigorous sanctions against Serbia and Montenegro by the UN Security Council (1992–1996), and then official and unofficial prolonging of this economic blockade (continued, partly, even today) by the USA and the European Union;
- the need to supply food and provide accommodation for almost a million war refugees exiled from their homes in ex-Yugoslav republics Croatia, and Bosnia and Herzegovina, in the 1990s;
- in the Serbian province Kosovo and Metohija, "special conditions" since 1999, continuing today, and more refugees from there.

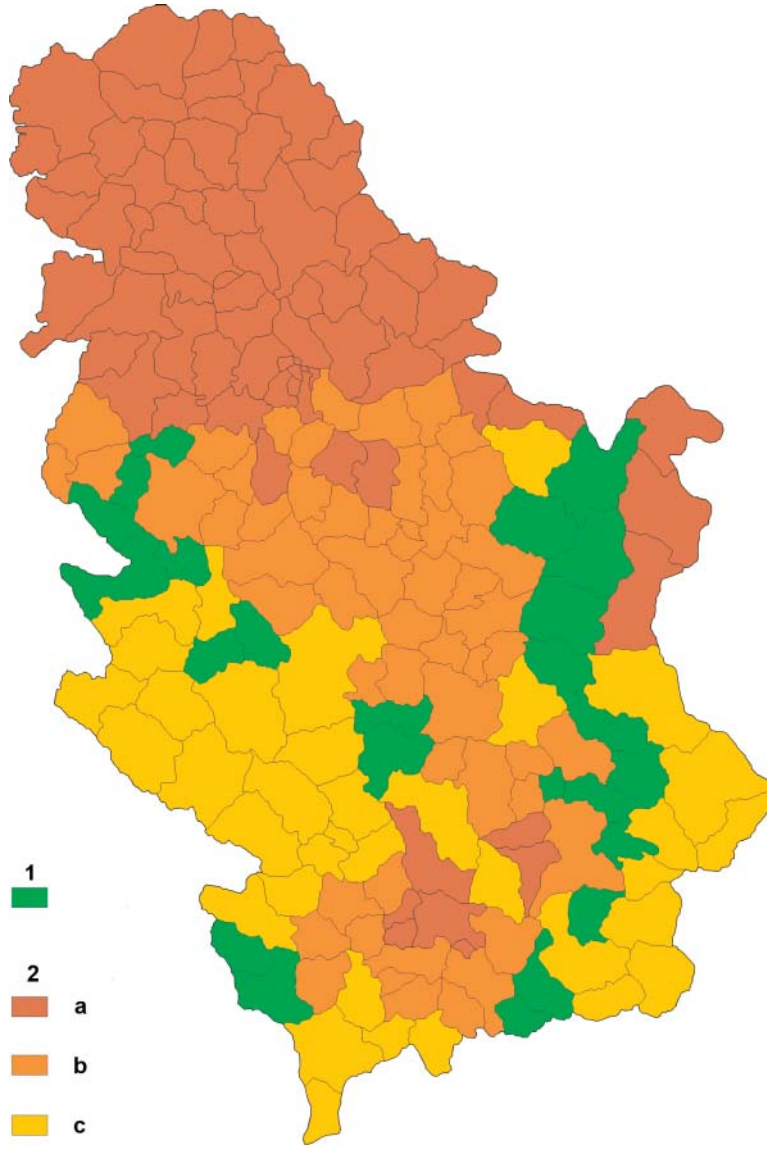

Figure 1. Agricultural regions in Serbia
1 – *Macro-region of traditional* agricultural production; 2 – *Macro-region of market-oriented* agriculture – being subdivided into several mezzo-regions: a – *Macro-region of market-oriented* low work intensity agriculture with high yiedl and high productivity, with predominant crop farming, b – *Macro-region of mixsed market-oriented agriculture* with equal or important share of crop farming, fruit growing and cattle breeding, c – *Macro-region of prospective market-oriented agriculture* with predominant cattle breeding.
Source: Todorovic M., 2002, Osnove tipologije i regionalizacije Srbije, Srpsko geografsko, društvo, Beograd.

(2) In the war-time (from March 24th till June 10th 1999), *78 days of aerial bombardment by the nineteen NATO countries, with consequences such as* (Sevarlic and Vasiljevic, 1999)*:*

- demographic losses – over 2000 dead, over 10,000 wounded and about 500,000 displaced into forced emigration;
- economic losses – over 100 billion US $ direct and indirect material damage;
- ecological devastation – with practically immeasurable direct and indirect consequences for environment, including radioactive and chemical effects on the present and future generations of people on the territory of FR Yugoslavia and even wider effects on the neighboring Balkan countries and other European countries.

The stormy and unfortunate 1990s in some way made Serbia return to the villages and to agriculture, but not because of any attractiveness of the village – rather, because of the bad living conditions in the town.

Now, in the year 2008, agriculture faces new strategic dilemmas: where and how to go from here. Undoubtedly, Serbia can feed itself plentifully. When the SFRY was decomposed, most of the agricultural productive potentials remained in Serbia. However, the potential market was cut in half. In our opinion, considering the global changes in the world, agriculture will remain a comparative advantage of Serbia, especially for exports, and we think that there is no better exporting item than a farming product (for instance, plums, and raspberries). But, not everything can be exported. This is the crucial moment, the cusp, when a new agricultural strategy must be formulated, concerning not only the choice of products, but also the technology. Serbia can not, and should not, compete in farming performances with agriculturally developed countries such as, for instance, Holland; but we in Serbia must think what our comparative advantages are, and how to use them.

PROPOSED FUTURE STRATEGY OF THE RURAL DEVELOPMENT OF SERBIA

It is definitely desirable to overcome and to leave behind certain obsolete and conservative things; and there are, now, many such things in Serbia. What should be lost – let it get lost (e.g., the practice of keeping three tractors, 18 years old on the average, per farm). True modernization of Serbian farming can only happen if we achieve a harmonious union of tradition and innovation.

Thinking about farming and the villages, we must bear in mind that it is much easier to keep the people in the village, in the farming business, then to get them to return from the city, once they have gone there. It is wrong to "return the village to life", as is sometimes said; village should be conceptually so organized

and arranged that people do not leave it. For this reason, the village and farming should be professionalized within a modern market economy, on scientific and technological basis, and the first of all aims should be the approximately equal conditions of life and work in the village and in town.

Advancement in agriculture can be expected when adequate ways and means are found for a transformation of village households into modern market-economy producers, able to compete with others in assortment, quality and price, inside Yugoslavia and in the outside market. This requires that a selection be done, in favor of vital, strong households, those with long tradition and experience in farming but also with young labor force and with enterprising spirit.

The strategy of the future development of agriculture ought to be based on a simplified regionalization of agricultural production, oriented towards programmed regional development:

– *First*, a program, or a zone, of intensive agriculture: Vojvodina and parts of Central Serbia (Pomoravlje, Macva, Stig, Branicevo etc.).

– *Secondly*, a program or a zone of organic or health-food. It is an attractive form of agricultural production, with smaller volume but higher quality (and, finally, higher price) of product. According to some studies, 75% of Serbian arable land is good for health-food production. This is particularly important when we know that 95% of European territory is not fit for that sort of production, while 85% of the consumers in Europe opt for the principles of ecological production. There is no doubt that a part of the market is prepared and willing to pay more for ecologically better products; this trend is spreading through the world. The traditional nature of Serbian agriculture, insufficient industrialization, and even the fact that in the 1990s much of the industry was at a standstill, mean that we can step into the market with less polluted agrarian products: thus one Serbian failing can be easily turned into a comparative advantage. Generally, the hilly and mountainous areas of Serbia fulfill the conditions required for health-food production; also, the production in these areas, today, is traditionally based on the principles of organic agriculture – and the Serbian peasant is not even aware of this.

– *Thirdly*, a zone or a program of production of food with geographically defined origin, meaning that the consumers know that a product comes from one particular country, region or place, that the quality and special characteristics are linked to the geographical ambience, and that this product has a long tradition, for instance – the Shara white cheese, the Sremski, the Sjenicki, the Homoljski white cheeses, the Staroplaninski yellow cheese (kackavalj), the Pirotsko lamb, the Shara lamb, the Uzicki prsut (dried and salted choice meat), Njeguski prsut, etc.

– *Fourth*, zones and programs of production of medicinal, aromatic and spice plants on natural locations, which can also be a Serbian comparative advantage. Various locations in Serbia are the natural habitat of some 500 species of medic-

inal plants, which are, one may say, gold-mines for Serbia, but still used only marginally and without skill. According to some estimates, Serbia can earn more than 10 million dollars a year from the production of medicinal plants.

Tendencies on the world scene, primarily linked with globalization, lead us to conclude that the increasingly fierce competition in the Yugoslav and foreign markets will demand an increasing specialization of the producing countries towards their chosen, comparative-advantage products.

THE SERBIAN AGRICULTURE IN INTEGRATION TRENDS OF SOUTH-EAST EUROPE[2]

In the South-East part of Europe agricultural land covers the area of 38,356,000 hectares or 11.4% of total arable land in Europe. Regional differences in the structure of the use of agricultural land in the region are a result of marked heterogeneity of natural conditions – primarily orographic, paedological and climatic characteristics of individual countries. Of all countries of SE Europe Romania (34.2%) has the largest area of agricultural land, followed by Bulgaria (17.1%) and Serbia (16.0%). (FYR) Macedonia (4.9% of the region) has the smallest area of agricultural land.

The structure of agricultural land in SE Europe is characterized by relatively high share of arable land, meaning the possibility of intensive forms of agricultural production (16.2% of arable land in Europe is located in this part). Almost one half (45.7%) of arable land is in Romania, whereas Bulgaria and Yugoslavia account for one-fourth of land and the remaining countries for a total of 14.8% of arable land in the region. Some 4 million hectares of irrigated arable land of the region represent 15.7% of the total area covered by irrigation in Europe. Romania holds a dominant place regarding the area of irrigated land in the region with 69.6%, followed by Bulgaria with 19.3% of land under irrigation. It is indicative that all states of the former SFR Yugoslavia, taken together, irrigate slightly over 100,000 ha, which represents only 2.8% of the total irrigated area in the region. Serbia irrigates only 57,000 ha (1.6% of the total irrigated area in the region) of arable land. The canal Danube – Tisa – Danube, as a unique hydro system in the world, is underutilized in agricultural production.

Table 3 provides some information about the volume of agricultural output the countries of the region produced in relation to the regional total. The region produced about one-fourth (25.3%) of the total production of corn on the continent, with Romania and Serbia accounting for three-fourths of that production. Countries of SE Europe produce some 17,000,000 tons of wheat, i.e. 8.7% of the total European output. Romania (4,720,000 tons) is the largest producer of

[2] This is a part of a paper: Todorović M., 2007, Elements for determining ... .

Table 3. Share of individual South-Eastern European countries in production of major agricultural crops (averages for 1998–2000)

Country	Corn	Wheat	Potato	Sunflower	Vine	Sugar
Albania	1.2	2.8	2.6	0.2	0.9	0.6
Bosnia and Herzegovina	5.2	2.5	5.4	0.0	0.5	0.0
Bulgaria	7.8	24.5	8.5	26.8	12.3	0.9
Croatia	9.7	7.5	10.0	3.4	16.7	23.8
Macedonia	0.9	2.9	2.7	0.6	9.5	7.7
Romania	47.0	40.1	57.5	55.9	44.8	25.9
Yugoslavia (Serbia and Montenegro)	28.2	19.6	13.4	13.1	15.3	41.1
SE Europe	100.0	100.0	100.0	100.0	100.0	100.0

Source: Production Yearbook, FAO, Rome 2000, 2001, 2002.

wheat in the region, followed by Bulgaria (2,880,000 tons), Yugoslavia (2,310,000 tons), whereas B&H ranks lowest. With the average annual production of 3,639,000 tons of potatoes Romania is the largest producer in the region. Also, together with Bulgaria, Romania accounts for four-fifths of the total production of sunflower in SE Europe. Romania is, likewise, the largest vine producer, followed by Croatia, which accounts for 16.77% of the total vine output. Serbia is the largest producer of sugar[3] (41.1%) and, together with Romania and Croatia, ensures practically the entire output of sugar in the region.

Table 4. Shares of individual SE European countries in the production of major livestock products (averages for 1998–2000)

Country	Beef	Mutton	Pork	Poultry	Milk	Cheese
Albania	8.1	8.3	0.6	0.9	7.6	6.6
Bosnia and Herzegovina	2.9	2.1	1.0	1.5	2.2	6.6
Bulgaria	12.8	31.7	19.6	19.2	14.6	37.1
Croatia	5.7	1.4	4.9	6.0	6.7	11.4
Macedonia	1.7	4.1	0.7	2.3	1.9	1.2
Romania	42.3	35.9	49.3	51.9	47.2	29.3
Yugoslavia (Serbia and Montenegro)	26.6	16.6	23.9	18.2	19.7	7.8
SE Europe	100.0	100.0	100.0	100.0	100.0	100.0

Source: Production Yearbook, FAO, Rome 2000, 2001, 2002

SE Europe produces some 2,351,000 tons of meat, representing 5.2% of the total meat production in Europe. Romania is the largest producer of all types of

[3] According to assessments of Ivanović et al. (2002), the region has a marked deficit in sugar production.

meat, whereas Yugoslavia is second in the production of beef and Bulgaria in the production of mutton. Also, Yugoslavia has the second largest production of pork, and Bulgaria and Yugoslavia of poultry meat. With production of 62,000 tons of cheese Bulgaria is the largest cheese producer in the region, followed by Romania, which covers around one-third of the total output. According to the estimates of Ivanović et al. (2002) there is a deficit in the production of beef and poultry meat in the region, whereas the region is self-sufficient with its production of mutton and pork. Romania is also the largest milk producer in the region with the average annual production of 4.5 million tons of milk. Serbia ranks second covering one-fifth of the overall regional milk production.

Table 5. Assessment of the ranking of countries-producers of individual strategic agricultural products in SE Europe

Country	Corn	Wheat	Tomato	Sunflower	Viní	Sugar	Beef	Mutton	Pork	Milk	Cheese	Total
Albania	2	2	1	2	2	2	4	4	1	4	3	**27**
Bosnia and Herzegovina	3	1	3	1	1	1	2	2	3	2	2	**21**
Bulgaria	4	6	4	6	4	3	5	6	5	5	7	**55**
Croatia	5	4	5	4	6	5	3	1	4	3	5	**45**
Macedonia	1	3	2	3	3	4	1	3	2	1	1	**24**
Romania	7	7	7	7	7	6	7	7	7	7	6	**75**
Yugoslavia (Serbia and Montenegro)	6	5	6	5	5	7	6	5	6	6	4	**61**

Note: Countries scored according to the number of points, inversely proportional to the country ranking according to the share in the production of major agricultural crops in the region.

Source: author's analysis based on the publications "Production Yearbook", FAO, Rome, 2002, 2001, 2002.

Value of production of individual strategic agricultural products is an easy-to-survey indicator of not only the achieved level of development, but also of differences within the region. According to the results of the country ranking Romania has the highest production indicators in the region (75 points). Namely, in out of 11 analyzed types of production there are only two cases (sugar and cheese), in which Romania does not rank first. According to these same results Serbia is second (with 61 points) and in only one case it is the largest producer (sugar). It is second in five cases and third in four cases. Bulgaria comes after Serbia with 55 points, and holds one first place (cheese), three times is second and three times ranks third. Bosnia and Herzegovina had the lowest production indicators in the period under observation (21 points).

The conducted survey has confirmed that the region of SE Europe is characterized by numerous problems and processes. All countries of the region are

faced with similar and very marked structural development agricultural problems, especially including the following:

- determination of new specific characteristics of the regional-geographic position as a result of contemporary political-geographic changes in Europe;
- regional changes in the transitional trends (of demographic, social and, especially, economic nature);
- transition from the socialist-planned (here, in the Serbian case, the self-management and consensus based) economic system to the one based on private ownership of capital and on market relations between economic entities;
- development paradigms not adjusted to the ongoing processes in united Europe (processes of globalization, regional and sub regional linking, sustainable development);
- frequent changes of the competition scene and of the rules of market competition;
- coordination of production programs of individual countries and of the region in general with the production program orientation of the EU member countries.

On the other hand, the study of agricultural resources in the region shows that production potentials are much above the regional needs, which requires significant adjustments and restructuring of production towards intensive, competitive and export-oriented programs. Namely, due to relatively unfavorable relations between inputs and outputs in agriculture, the countries of the region register less efficient agricultural development, which makes them less competitive on the international market (Gajić et al, 2002; 85). In that respect, it is necessary to stimulate integration processes both in the establishment of business alliances in winning foreign markets, as well as in research and education on the importance of strengthening integration within the region. Closer cooperation between these countries in food production and agricultural development (including possible drafting of common agricultural and rural development policies), could undoubtedly contribute to faster development of each individual country, as well as the region as a whole.

Agricultural sector plays a very important part in the economic life of most of the Central- and East-European countries, but the process of preparation for admission into the EU, for those that do not belong, is rather complex, lasts relatively long, and demands significant structural adaptations. European Union will have a positive attitude towards the countries of Central and Eastern Europe if they develop strong economic and other ties, and financial arrangements, with each other. This requires that they, also, overcome their own non-rational practices and difficulties, before they can be admitted into the EU.

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