

# Selected regional geographical differences of the Czech Republic agriculture, after the transformation processes

## *Vybrané regionálně geografické difference zemědělství České republiky po období transformace*

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**Abstract:** Transformation of Czech agriculture led to significant changes, which were mirrored in the crystallisation of rather large territorial differences. Clear regional disproportions are a fundamental problem for the state as a whole, therefore, it is important to provide aid for the regions that lag behind in economic development by introducing sensible regional policies. This situation is still more complicated in agriculture, as this transformation to free market economy results in the unequal regional development in relation to natural environment, regional traditions and the level of rural settlement in addition to the phenomena such as price liberalisation and the flow of goods, capital and population, among other. At the moment, the principal aims of regional agricultural policies are the preservation of regional productivity, the settlement of problematic and endangered regions and the support of a balanced regional development. The primary goal of this article is to indicate some of the largest regional differentiations in the agriculture of the Czech Republic. The purpose is to give an increased consideration to the restructuring of agricultural production, the environment and the social and general economic milieu in which it is located.

**Key words:** Czech agriculture, transformation, regional differences, agriculture policy, development of the employment in agriculture, changes in cattle number

**Abstrakt:** Transformace českého zemědělství vedla k významným změnám, které se odrazily v krystalizaci značně velkých teritoriálních diferenciací. Regionální disproporce představují základní problém pro stát jako celek, a proto je důležité poskytnout pomoc regionům, které zaostávají v ekonomickém vývoji, především aplikací správné regionální politiky. Tato situace je ještě komplikovanější v zemědělství, jelikož transformace na tržní ekonomiku vyúsťuje v nerovnoměrný regionální rozvoj v závislosti na přírodním prostředí, regionálními tradicím a na úrovni venkovského osídlení, stejně jako na úrovni liberalizaci cen, pohybu zboží, kapitálu a osob. Hlavními cíli současné regionální zemědělské politiky jsou zachování produktivity regionů, osídlení problematických a ohrožených regionů a podpora vyváženého regionálního rozvoje. Hlavním cílem tohoto příspěvku je analýza vybraných nejrozsáhlejších a částečně negativních diferenciací zemědělství České republiky. Účelem článku je nastínit úvahy nad restrukturalizací zemědělské produkce, jejího vlivu na životní prostředí a sociální a ekonomické difference v kterých je to umístěno.

**Klíčová slova:** české zemědělství, transformace, regionální difference, zemědělská politika, vývoj zaměstnanosti v zemědělství, změny počtu skotu

## INTRODUCTION

The transition of agriculture and food processing industries from centrally planned directive management to market economy was a very complex process of transformation including qualitative changes in the material and system conceptions, which had to react flexibly the situation and conditions of the developing home and foreign markets. Especially at the time of its transformation to market conditions, Czech economy could not manage without a purposeful and efficient economic policy. In spite of the necessity to solve a number of pressing topical problems, it was also essential to know the fundamental questions of the strategy of the agro-food complex development (Jeníček et al. 1991).

According to Doucha and Sokol (1999), the Czech Republic agriculture has undergone three different stages of development in the period 1990–1998. The first one was a stage of a radical adjustment to the new socio-economic conditions created after 1989. The second can be characterised as a period of stabilisation and a beginning of a turn. The characteristic features of the third period are stagnation and regression of agriculture. It is not possible to mark the boundaries of the stages precisely, since each of them already contains seeds of the next one or an overlap of some elements of the previous one.

The basic features characterising the first stage, lasting roughly from 1991 to 1993, include a sharp decline in gross agricultural output (nearly 23.5 per cent), a drop in livestock numbers (especially in total numbers of cattle

and cows), a significant reduction in the use of fertilisers, reduced yields of most crops, a sharp, almost 50 per cent decrease in the agricultural workforce, a radical deterioration in the profitability of agricultural enterprises, and the development and deepening of the income disparity between agriculture and other industries. This period brought about fundamental changes in the renovation of property rights and in the enterprise structure. Among the main processes, there were restitution of land and agricultural property, transformation of agricultural co-operatives, and privatisation of state farms. New legal forms of natural persons enterprises, such as independently operating farmers (IOF) and various trading companies were created. Basic legislative norms regulating the processes of privatisation, restitution and transformation were adopted. Agricultural co-operatives share in the farmland dropped from 61.4 per cent in 1989 to 49.4 per cent (see the supplement of tables).

In the second period, all the mentioned tendencies of the agriculture development either rapidly slowed down or experienced a turn of the trend, though insignificant. The yearly rate of decline in gross farm output and in cattle numbers slowed down substantially and the consumption of fertilisers increased. Additionally, grain and oil crop yields per hectare stabilised and the rate of the decrease in the workforce declined together with a loss of agricultural enterprises. The reconstruction of property rights continued and the privatisation of state farms was practically completed.

In the third stage lasting from 1996 to 1998, regressive tendencies typical of the first stage reappeared. It was characterised by a decline in gross farm output and in cattle numbers. Agriculture operated at a loss, the workforce declined and income disparities widened. Further changes occurred in the enterprise structure, especially the reinforcement of business companies at the expense of agricultural co-operatives. The enterprises of natural persons occupied 24 per cent of the total farmland area, agricultural co-operatives share declined from 47 to 35 per cent and the business companies share increased from 28 to 41 per cent (Zpráva o stavu... 1999).

In accordance with the new policy statement of the government, a new conception of agrarian policy for the period 1999–2003 (the year of the Czech Republic supposed accession into the EU) came into effect after 1998. It proposed two basic stages: Revitalisation and Adaptation. The first one, lasting from 1999 to roughly 2001, was directed, above all, towards the recovery and stabilisation of Czech agrarian sector and towards the institutional preparation for the Czech Republic's entry into the EU. The main goal of this stage consists in the solution of some internal problems of the Czech agrarian sector's development, in the elimination of the most serious obstacles created during the existing course of reform, and in an overall stabilisation of the sector before its adaptation to the EU conditions. The second stage has begun in 2002 and ends with the Czech Republic entry into the EU. Its conception aims at the fastest overall adaptation of the Czech agrarian sector to the conditions of the EU

Common Agricultural Policy in all its areas (structural, regional, environmental and country policy of the EU) (Koncepce agrární ... 1999).

The price scissors show very similar tendencies to other characterised parameters. They represent a different development of the prices of agricultural producers and the prices of the inputs into agriculture to the disadvantage of agricultural producers. They opened dramatically in the first stage of the period in question. From 1989 to 1993, the prices of the inputs into agriculture rose by 141.5 per cent while the prices of agricultural producers only by 20.6 per cent. This resulted in a revision of the price levels of agricultural inputs and outputs, in the ratio of two to one (in comparison to the initial year of 1989) to the disadvantage of agricultural producers (Zpráva o stavu ... 1993–1998). Three characteristic stages, which are similar to those of other parameters of the development of agriculture, can be distinguished in the development of price scissors. Their quantitative changes correspond to a great extent with the quantitative changes of the economic results of the summary of agricultural enterprises.

The transformation of agriculture of the Czech Republic concerned mainly changes of property rights, which, from 1991, proceeded on the basis of a new legislation concerning restitution, land, privatisation, and transformation. Within the transformation, it is possible to distinguish a period of primary transformation concerning restitution in 1991/1992, transformation of agricultural enterprises in 1992/1993 and privatisation of state property in 1994/1995 (Věžník 1995). After these basic property changes, the processes of secondary transformation have been under way. They are directed towards the concentration of production or property, or towards the change in the legal basis of enterprises.

The stages of the transformation of agricultural policy between 1989 and 1998 to a great extent reflect or react to the real development of agriculture, the agrarian market and national economy. Each period is characterised by several key factors: a certain repertoire of institutions and instruments that influence the development of agriculture, the level of assistance roughly expressed by the index of production subsidies equivalent (PSE) and the structure of these subsidies, reflecting the relative importance of the employed institutions and instruments. It is possible to distinguish the following stages of the agricultural policy:

- stage 1: launching (1989–1991)
- stage 2: liberal (1992–1994)
- stage 3: development and social stabilisation (1995–1998)
- stage 4: pre-accession (after 1998)

Subsidy levels (PSE) are illustrated in Figure 1. The first stage, lasting from 1989 approximately to 1991, was characterised by the use of institutions and instruments of the pre-reform period, e.g. direct payments per hectare in combination with the agricultural tax. It was also the period of culmination of the restitution processes that the state had been supporting with direct capital subsidies, especially for the foundation of small family farms. The

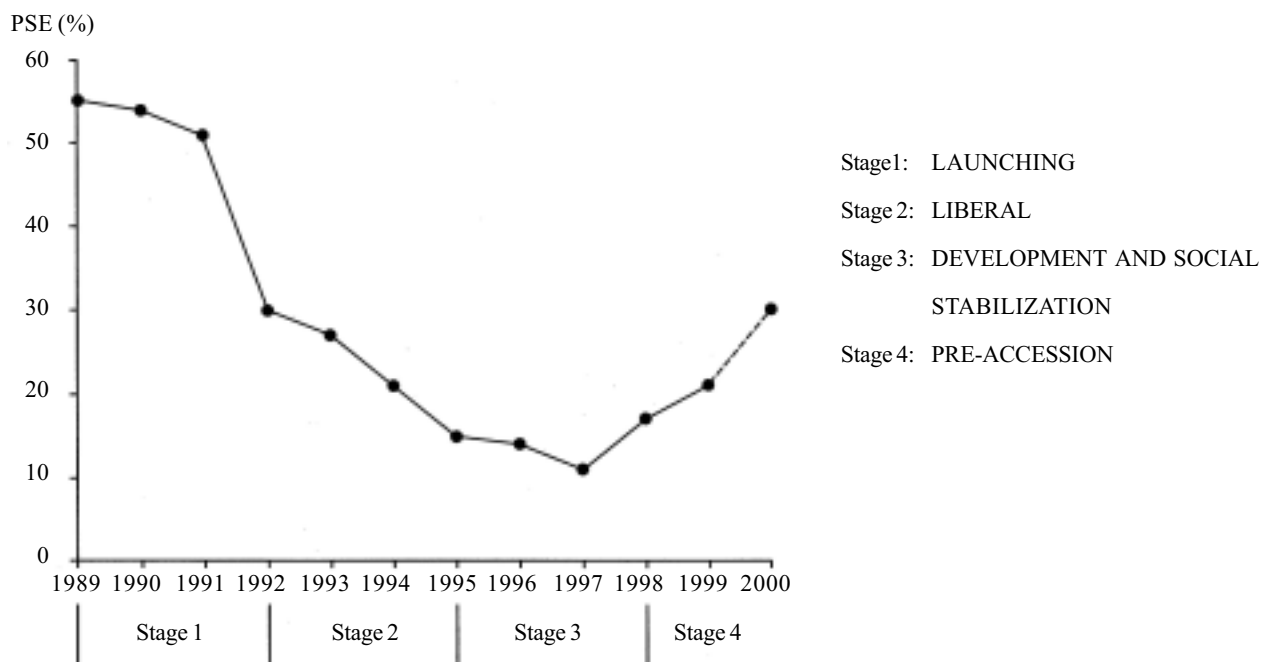


Figure 1. The stages of agricultural Policy's development

level of assistance equalled to about 50 per cent of PSE, which was approximately the same as in the pre-reform period.

The second stage was characterised by a full operation of the liberalising steps founded in the previous stage, by a radical abolition of all direct subsidies, and by the concentration on the liquidation of extremely large surpluses of agricultural production. The liquidation was carried out especially by the means of the Market Regulation Fund, founded in 1991. Agricultural co-operatives underwent a primary transformation during this stage. The level of assistance declined by half (25–30 per cent of PSE) in comparison with the first stage as a complex consequence of the impact of several factors, e.g. the abolishment of subsidies, the establishment of a new scale of customs tariffs in 1992 and the establishment of a new system of taxation in 1993.

The third stage was characterised mainly by an increasing sensitivity to the growing economic problems of enterprises, by at least partial elimination of the negative impacts of the reform on the social position of farmers, and by the modernisation of enterprises. The importance of state interference with the market and price support was decreasing as a result of: the achievement of a certain balance of supply and demand on the agrarian market, the decrease of the protection rate when implementing the commitments of the Czech Republic in the world trade (WTO, Association Agreement with the EU etc), and a more significant price increase in world markets. The support of modernisation and, to a certain extent, also of re-structuralisation was almost exclusively realised through the Support and Guarantee Farm and Forestry Fund (SGFFF) established in 1993. To the social

and economic problems of agriculture, especially to those in the regions with relatively poor natural resources, the policy reacted with payments for keeping the landscape in a cultural state. Privatisation of agricultural property (excluding land) was taking place during this stage as well. Despite a substantially higher stress on development and social questions, the overall level of assistance dropped to half, compared to the previous stage (11–15 per cent of PSE).

The fourth, pre-accession stage was initiated after 1998, its main goal being a solution of some internal problems in the development of Czech agriculture and in the stabilisation of the agrarian sector before its adjustment to the EU conditions. In this stage, the Conception expects an institutional development of the sector in accordance with the National Program for Accession “acquis communautaire” in the agriculture sector. The implementation of this stage is based on four basic pillars of agricultural policy: market regulation and subsidies, environmental measures, modernisation and transformation of enterprises, and general services and the preparation for the EU accession.

The important measures in the area of market regulation and income-support included the foundation of the State Agricultural Intervention Fund (on 1<sup>st</sup> January 2001) and the introduction of the “green diesel”. In the area of environmental measures, the program is directed towards the support of non-production areas of agriculture, towards landscape conservation, and towards the support of Less Favourable Areas (LFA). In the area of modernisation and transformation of the enterprises, the main goal is the rise of competitiveness of the enterprises through their modernisation and restructuralization. In

the area of general services and the preparation for the EU accession, the main goal seeks the administration of basic services from the part of the state in the areas of education, research, informatics, genetics, counselling and propagation.

Throughout the whole period, the agricultural transformation policy was characterised by several permanent features that, for the most part, unfavourably influenced the enterprises economic situation, their restructuring and long-term orientation. Among those features were:

- the relative financial economy of the policy resulting from restricted budgetary possibilities and farmers' weak position in negotiations
- the instability of the policy
- the centralised implementation of the policy with an insignificant employment of regional approaches
- the predominant conception of the policy instruments based almost exclusively on assistance, granting of which was not conditioned, e.g. by a fulfilment of environmental requirements
- the policy orientation towards producers and traders, less towards consumers.

#### THE MOST SIGNIFICANT REGIONAL DIFFERENTIATION OF CZECH AGRICULTURE

The development of transformation of the relations referring to property rights in agriculture and the changes in land cultivation connected with this development and carried out according to legal norms for enterprising subjects are the most important type of regional differentiation that occurred after 1990. The UACs and state farms had been the dominant form of farming up to 1990.

Socialist forms of farming, including centrally directed enterprises, occupied a major part of the farmland under cultivation (95 per cent). In the era before 1989, independent farmers cultivated only 3.9 per cent of the farmland. Most of them operated in the hilly parts of the Beskydy mountains, i.e. in the places where the independently operating farmers were influenced by the agricultural policy from Poland (Jančák and Götz 1997). After 1990, the changes of relations affecting property rights were influenced especially by the processes of restitution and privatisation of the farmland and also by a transformation of agricultural co-operatives. According to the 1995 Agrocensus, agricultural co-operatives held the largest share of the farmland in that year (47 per cent), various business companies cultivated the share of 28 per cent and independently operating farmers the share of 21.7 per cent (see Table 1).

The maximum share of the farmland was recorded by the co-operatives in the Plzeň-jih District (80.8 per cent). Several districts where this number was higher than 70 per cent include Rokycany, Příbram, Písek, Strakonice, Hradec Králové and Uherské Hradiště. At the other end of the scale, there were Most, Ústí nad Labem, Prahměsto and Karviná Districts with zero percentage. A very low share of agricultural co-operatives was recorded above all in the districts where state farms dominated before 1990. These were especially the districts in border regions (extending from the Tachov District to the Liberec District) and Český Krumlov and Bruntál Districts. The second most widespread form of land tenure (business companies) did not show any significant regional dependency in 1995. It was usually spread in one to three districts in all regions. This form was usual with the transformation of former common agricultural enterprises or with the privatisation of some state farms. De-

Table 1. Enterprise structure in Czech agriculture in 1995 and 2000

Entrepreneur form	Agrocensus 1995				Agrocensus 2000			
	no. of subjects	area of agricultural land		mean area (ha a.l.)	no. of subjects	area of agricultural land		mean area (ha a.l.)
		(1000 ha)	(%)			(1000 ha)	(%)	
Natural person enterprises	24 183	826	23.3	34	53 460 <sup>x</sup>	962	26.4	18
– out of which IOF	22 443	768	21.7	34	31 721 <sup>x</sup>	864	23.7	27
Business companies total	1 465	996	28.0	680	2 107	1 579	43.3	749
– Ltd.companies	1 132	714	20.1	631	1 441	784	21.5	544
– joint-stock companies	298	269	7.6	902	621	780	21.4	1 256
Co-operatives	1 151	1 666	47.0	1 447	746	1 059	29.1	1 420
State farms	80	53	1.5	660	–	–	–	–
Other subjects	25	7	0.2	287	174 <sup>y</sup>	42	1.2	244
Entrepreneurial subjects total	26 904	3 548	100.0	132	56 487 <sup>x</sup>	3 643	100.0	65

<sup>x</sup>The growth of the registered subjects numbers was brought about by the change of the fixed norms, in the year 1995 over 3 ha, in the year 2000 over 1 ha agriculture land

<sup>y</sup>The residual state farms were already classified into others subjects

Source: Agrocensus 1995, Agrocensus 2000

spite a relatively large restitution, the farmland belonging to independent farmers formed only 21.7 per cent of the total. The highest percentage of those wishing to cultivate the land of their fathers was concentrated either in the fertile regions of central Bohemia (the surroundings of Prague, the Kladno District and the Ohře-side) or to the regions of former state farms where privatisation projects of state farms transformation gave to the farmers a better opportunity to use their initiative.

In the second half of the 1990s, another important change in relations affecting property rights occurred. Under the influence of the second transformation, the number of agricultural co-operatives declined to the advantage of business companies (see Table 1). A tiny increase was recorded by the Natural Person Enterprises (NPE) – from 23.3 per cent to 26.4 per cent, while the share of the Legal Entity Enterprises (LEE) has fallen from 76.7 to 73.6 per cent). Taking into consideration the NPE to LEE ratio, it is possible to see an important regional differentiation (see Figure 2). The NPE share in the farmland area in the majority of districts (47) approximately equalled to, or was slightly higher than the national average (26.4) (see the first two intervals in Figure 2). This area represents a more or less homogeneous region stretching from the territory South of Plzeň across the Bohemian-Moravian Highlands to Moravia and North-Western Bohemia. These districts can also be classified as typically interior districts, for which a higher proportion of agricultural co-operatives was characteristic before 1990. The lowest number was reached in Plzeň-jih District (10.8 per cent), though on the whole the lowest numbers were represented more in the Southern and central Moravia (in the Blansko, Hodonín, Uherské Hradiště Districts etc) than in Bohemia. In the Jihomoravský and Olomoucký Regions, this number was on the average lower than 20 per cent.

On the other hand, the highest NPE share of the district farmland in 2000 was recorded in the Prague hinterland (Kladno, Praha-západ, Praha-východ and Mělník Districts) and in the Western Bohemian borderland (the districts extending from Tachov to Liberec). In most cases, these are the districts where state farms dominated before 1990. By far the highest values were reached in the districts whose complex natural conditions and a different historical development had not been suitable for large-scale agricultural production (Ústí nad Labem, Sokolov and Jablonec nad Nisou). Low values generally prevail in Moravia except for the Bruntál District (state farm), Vsetín District (natural conditions and tradition) and Ostrava District (a kind of analogy to Prague).

In conclusion, it is possible to state that relations affecting property rights in the districts are only temporary and that a final type of management is still prevented by the settlements of restitution, some of which still depend on a judicial decision, and on the fact that the sale of more than 500 000 hectares of state land is now only starting. Furthermore, it is necessary to realise that the ability of individual enterprises to succeed in competition with others when producing agricultural commodities and food-

stuff in market conditions will be the main criterion of their success. A variety of management of enterprise subjects will result from this process.

## EMPLOYMENT IN AGRICULTURE

The development of the employment in agriculture represents another important regional differentiation that occurred after 1990. Agriculture has continued to be the most important industry in the country. It has been going through significant changes as a result of ownership and management transformations connected with the changes of production orientation and with a drop in the number of jobs. The development of employment in rural primary production has been influenced mainly by the elimination of “social employment” as agricultural enterprises have had to show an effort to increase their productivity and by an increasing decline of the volume of industrial production which manifested itself by a lack of interest in sub-deliveries and services provided by agricultural enterprises, especially within the sphere of associated production.

For the above reasons, the rural sector has recorded a permanent decline in the number of workers since 1990. In December 1989, the number of agricultural workers amounted to 533 000; by the end of 1992 it dropped to 311 000; in 1995 238 000 people were employed in agriculture (Agrocensus 1995); by the end of 2000, their number has fallen to only 151 000 (Agrocensus 2000). It is important to realise that in most cases the decline occurred in the districts where both unfavourable natural conditions and complex production conditions often led nearly to a collapse of agriculture in the whole regions.

To compare the regional differences that have been emerging in the territory of the Czech Republic, we can use the index of productivity expressed by the number of permanent agricultural workers per 100 hectares of agricultural land. As early as 1995, this index revealed important regional differences (see also Jančák and Götz 1997). Only in some cities and towns (Praha, Brno, Plzeň, Ostrava and Karviná) and in the Zlín District did this rate reach more than ten workers per 100 hectares. A high employment in agriculture generally prevailed in Moravia (7–10), both in lowlands (the highest in the lowland of Dolnomoravský úval) and in foothills (Bohemian-Moravian Highland). In Bohemia, only the Domažlice and Hradec Králové Districts reached the rate of more than 7 workers per 100 hectares. A minimal employment in agriculture occurred in the North-Western border regions, stretching from the Cheb District across north Bohemian lignite field to Liberec District, and in central Bohemian Labe-side, especially in the Mělník, Nymburk and Kolín Districts.

These important regional variations deepened in the second half of the 1990s (see Agrocensus 2000) when in some regions the number of agricultural workers contracted to a really critical level (see Figure 3). The national average dropped from 6.8 persons to 4.2 persons during this period. In as many as 60 districts, this index is

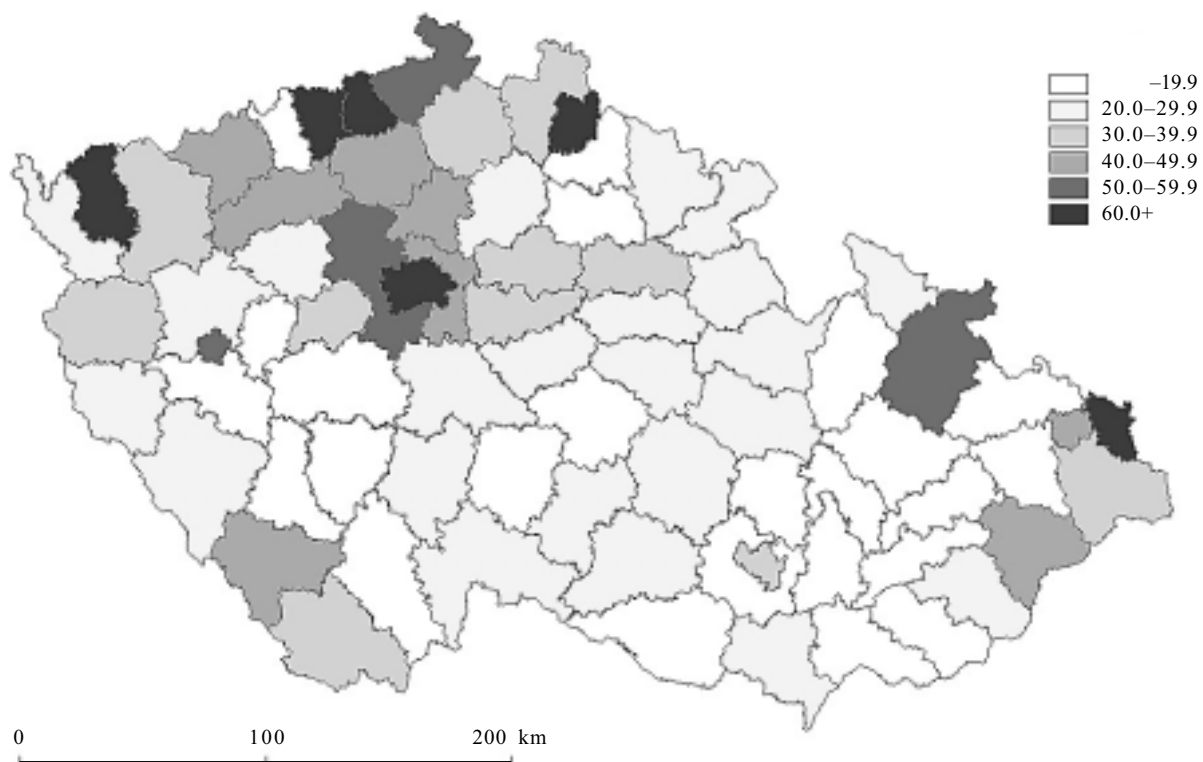


Figure 2. ENP's share of the district's farmland area, 2000

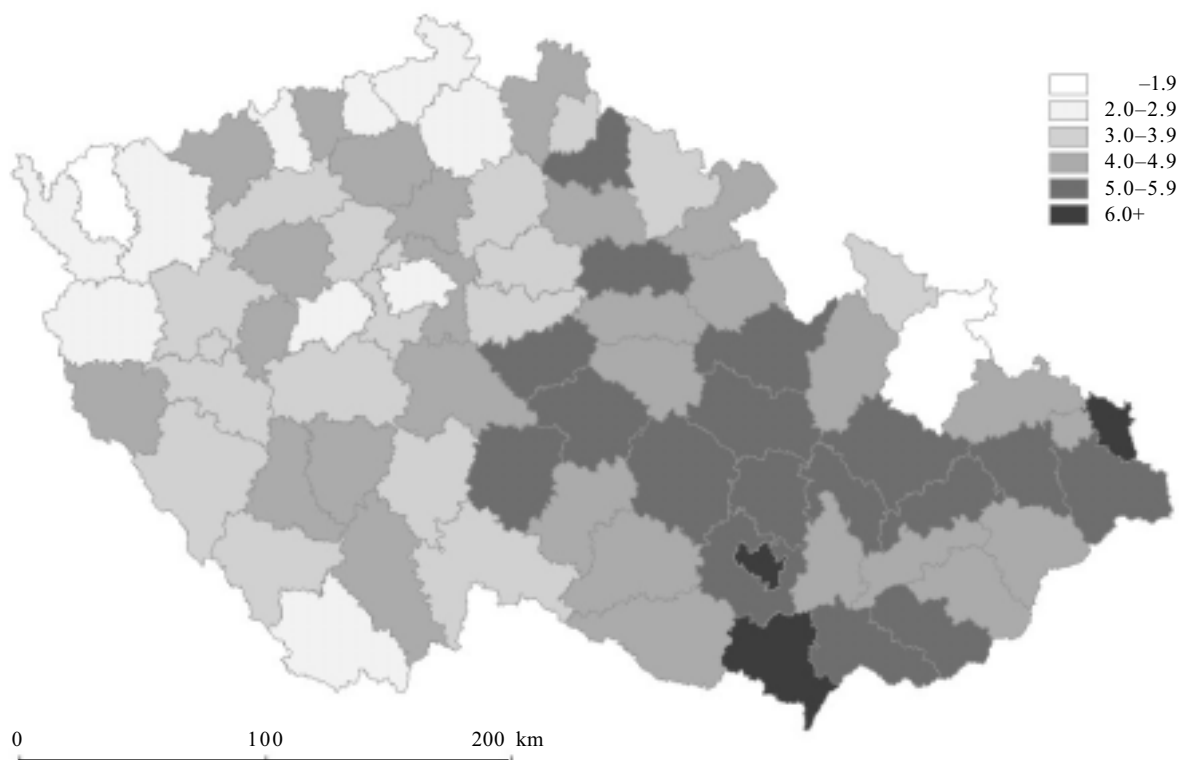


Figure 3. The number of agricultural workers per 100 hectares of farmland, 2000

below 6.0 and in 14 of them it is below 4.0 (in 1995 only four districts belonged to this category). The most critical situation is in the Bruntál and Sokolov Districts where less than two persons per 100 hectares of agricultural land are employed in agriculture. Quite low levels of less than 3.0 are reached also in the Districts of Beroun, Kolín, Český Krumlov, Tachov, Cheb, Karlovy Vary, Děčín, Most, Ústí nad Labem, Česká Lípa and a bit surprisingly also in Prague and Plzeň District where as late as 1995 the employment was, on the contrary, the highest. A high level of employment continues in Moravia, apart from the Bruntál, Jeseník and Vsetín Districts and in the region of Bohemian-Moravian Highland and in North-Eastern Bohemia. The districts with the highest numbers are situated in this part (Semily, Hradec Králové, Svitavy and Ústí nad Orlicí, all reaching more than 5.0 agricultural workers per 100 hectares). Apart from this region, only the Kutná Hora District exceeds the number of 5.0. In Moravia, there are several districts reaching beyond this level. Besides two extreme numbers in urban districts of Brno-město and Karviná, these include Břeclav (the highest number – 6.2), Žďár nad Sázavou, Blansko, Brno-venkov, Hodonín, Olomouc, Prostějov, Přerov, Uherské Hradiště and Nový Jičín. Similarly to 1995, both lowland and foothills districts are therefore represented in the highest category.

Generally, the above stated findings can be summed up in the following way:

- The lowest employment in agriculture continues to occur in the South-West border regions stretching from the Cheb District to Liberec District, apart from the Teplice and Chomutov Districts. In some districts of this regions (Sokolov, Karlovy Vary, Cheb, Most and Ústí nad Labem), the employment has already reached threshold values. The fact that these are all densely populated districts that need to be supplied daily with agricultural products can be perceived as the most critical one.
- Low employment continues to occur in the Prague hinterland and generally in the central Bohemian Labe-side (especially the Districts of Beroun, Kladno, Kolín and Mladá Boleslav). It is possible to judge this situation as critical because this fertile region should be cultivated properly and also because of the proximity of Prague.
- Generally, the employment in Moravia tends to be higher than in Bohemia, above all in most of the lowland districts (Břeclav, Hodonín, Brno-venkov, Uherské Hradiště, Olomouc etc).
- Regionally uneven and often unfavourable population outflow can be connected with a territorially differentiated possibility to find a job outside agriculture (e.g. a high employment in the districts of Bohemian-Moravian Highlands, such as Pelhřimov, Havlíčkův Brod, Žďár nad Sázavou, Blansko etc or in some marginal districts, such as Svitavy, Ústí nad Orlicí, Semily, Nový Jičín, Frýdek Místek and Opava).
- An important part will be also played by the allocation of processing industries, above all meat and milk processing, which is indirectly connected with high livestock numbers, especially cattle (see below), i.e. with livestock production industry that requires a high employment on average.

## CHANGES IN CATTLE NUMBERS

Livestock production and crop production form two equivalent elements of gross agricultural output. Therefore, it is advantageous for the two to be in balance. Until 1990, an effort to increase continuously livestock production at the expense of crop production prevailed. It was not beneficial and it caused a tense situation in the fodder base. Since 1990, the livestock production share in gross agricultural output has been contracting. In 1989, it amounted to 58.9 per cent, in 1995 to 56.5 per cent, and in 1999 to only 53.4 per cent. This considerable decline was also influenced by a change in political and economic situation when price liberalisation, the opening of the market to the EU countries and a reduction of our exports to other Eastern European countries caused a considerable surplus in the number of livestock products. The situation led to a sharp decline in cattle numbers.

The parameters of the evolution of cattle raising have been studied by two measures: the intensity of cattle raising (measured by heads per 100 hectares of agricultural land) and the index of the development of cattle numbers in the period 1990–2001. When comparing regional developments, it is possible to conclude that during the past forty years (1961–2001), the intensity of cattle raising has changed markedly. At the beginning of the 1960s, the regions with high intensity were spread above all in the lowland of Eastern Bohemia, in the Beskydy mountains and in the Kutná Hora and Písek Districts. Among the Czech districts, the Jičín District showed by far the highest number (90.5 heads per 100 hectares of agricultural land) (see also Häufner 1984 and Jančák and Götz 1997). The national average then amounted to the level of 61.0.

At present, the situation is completely different (see Figure 4). Now the highest density is found in the foothills of Bohemian-Moravian Highlands (Žďár nad Sázavou, Pelhřimov and Havlíčkův Brod Districts), in South-West Bohemia (Domažlice, Klatovy and Prachatic Districts) and in Eastern Bohemia (the Districts of Semily, Rychnov nad Kněžnou and Ústí nad Labem with the highest number in the Czech Republic: 78.2). On the other hand, it is necessary to draw attention to an excessive and basically unjustifiable decrease in cattle numbers in Moravia and central Bohemia (the Prague surroundings and the fertile Kladno and Mělník Districts). A really alarming development has occurred in some of the Northern Bohemian districts: Louny, Chomutov, Most and Teplice Districts record the index far below the national average (40.5).

From the map of the index of change in cattle numbers in the districts during 1990–2001 (Figure 5), a sharp decline in cattle raising is apparent throughout the whole

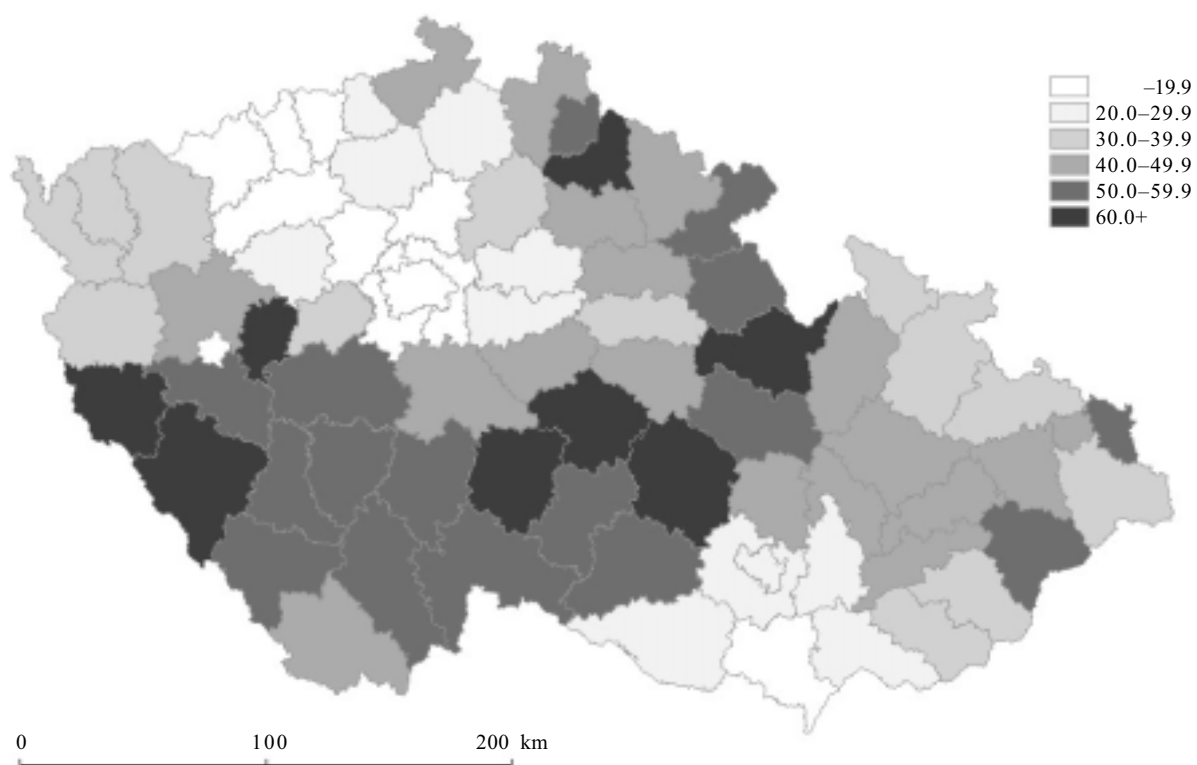


Figure 4. The intensity of cattle raising, 2000 (head per 100 hectares of farmland)

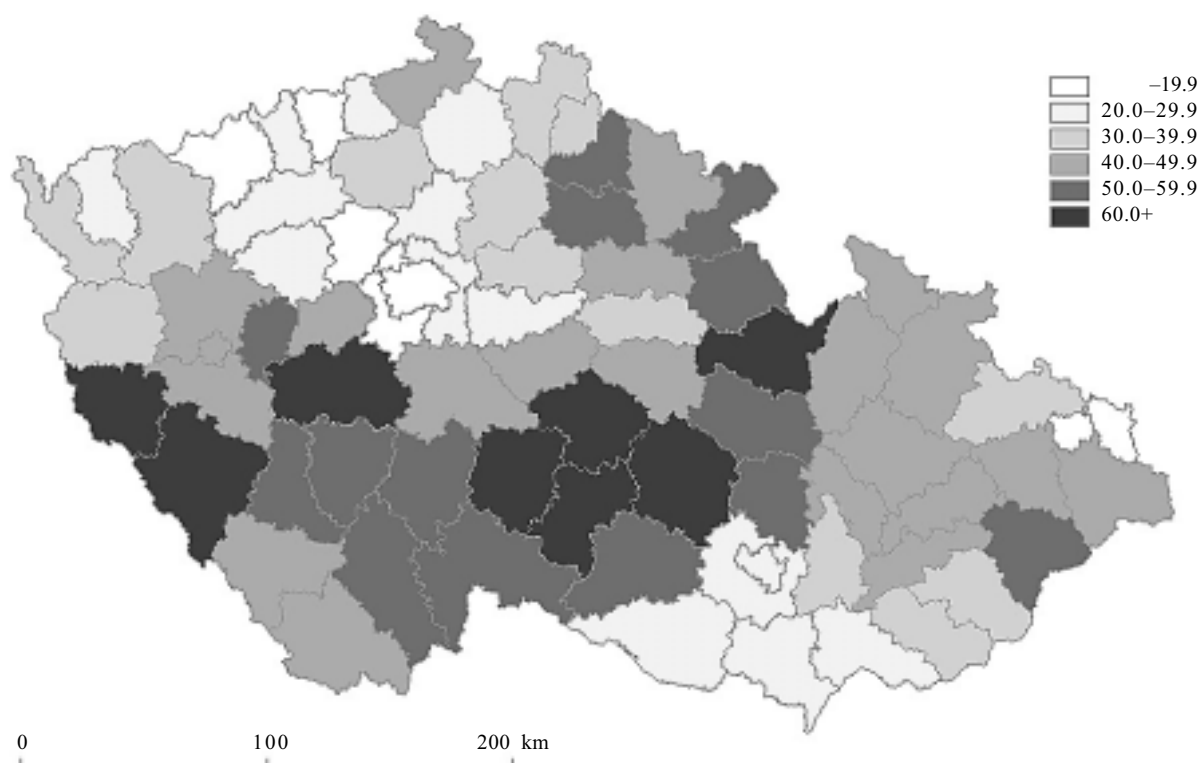


Figure 5. Cattle number, 1990–2001 (index 1990 = 100)



Czech Republic. Cattle numbers decreased to 45.1 per cent of the initial number in the whole territory of the republic during the period in question (Table 2). Some of the regional differences are even much higher. The highest decline in numbers occurred above all in the districts of the North Bohemian lignite field (Teplice District with the index of 5.4 and Chomutov District with 17.1), in Prague surroundings (Capital Prague with 9.7 and Praha-West with 14.2), in Southern Moravia and in the Ostrava hinterland (Karviná with 7.0). A decline in the Labe-side, the most fertile part of central Bohemia, is really alarming. A number of questions arise concerning why it is so in a region that has got some of the best production conditions for agriculture in Bohemia. Moreover, central Bohemian Labe-side could supply the densely populated Prague region and its surroundings with both milk and meat products. Apart from natural conditions, the most important factors influencing the decline in cattle numbers included the position of the region in relation to a big consumer centre, the location of the manufacturing industry, and a low rate of the region's industrialisation. The distribution of cattle raising intensity during the last period is more or less unnatural. As a result of both the possibility to feed the cattle with fodder grains and the need to supply the population with milk and beef, the intensity is supposed to be high in the productive regions of the lowlands. It is therefore almost paradoxical that the lowest cattle raising intensity appears not only in the most densely populated Northern-Bohemian coal field (and the whole Northern Bohemia), but also in central-Bohemian Labe-side.

The decline in cattle numbers displays itself regionally also in the relation lowlands-foothills: lowlands show a higher decrease than foothills. In this sense an average decrease in cattle numbers has been recorded only in Haná. A sharp decline in cattle numbers in Southern and South-Eastern Moravia can be explained by the transition and a higher orientation on pig raising (a suitable fodder base). Away from the foothill regions, the smallest decline in cattle numbers has been recorded in the Bohemian-Moravian Highlands, in the foothills of the Orlické Mountains and in the Domažlice, Klatovy and Příbram Districts. Elsewhere in the foothills, the results are contradictory. The results of the identified long-term tendencies can be summed up in the following points:

- In accordance with the pre-accession conception of agrarian policy, an increase or at least a prevention of a decrease in some regions will be desirable. These regions include: the area to the North-West of Prague (Mělník, Kladno, Louny Districts etc) as far as the state border and the southernmost districts of Moravia (Břeclav, Hodonín and Znojmo).
- The Beskydy mountains (too sharp decline) and the Jeseníky Mountains (a difference in the development of the Western and Eastern part of the range) continue to be contradictory regions.
- It would be advisable to keep the present numbers in other regions, especially in connection to the location of manufacturing industry, particularly dairies and meat processing factories.

## CONCLUSION

During the period of the transformation of Czech agriculture, significant changes have occurred which are regionally differentiated. More pronounced regional disproportions mean a serious problem for the state as a whole. It is necessary to concentrate on the use of an effective regional policy to help the regions with backward economic development.

The situation in agriculture is complicated because the accompanying phenomena connected with the transition to market economy (price liberalisation, flows of goods and capital, migration etc) are joined by an uneven territorial development in regards to natural resources, traditions of the individual regions, and the level of the country settlement. The main goal of the present regional policy in agriculture is to keep a productive territory and settlement in problematic and endangered regions and to support a balanced regional development. An objective evaluation of the production-economic and social potential of regions should contribute to an improvement in their use. For agriculture, it means a change of the corresponding production structure (see Table 3).

In the interest of agriculture prosperity, the government had to continue consistently in the reparations of property injustices and in the restoration of private ownership of land and other property. Legislative and economic conditions, which would ensure equality of all

Table 2. The development of livestock numbers in the Czech Republic (thousands of heads)

Animals	1960	1970	1980	1990	1993	1996	2001
Cattle total	2 987	2 940	3 429	3 506	2 512	1 989	1 582
Out of it cows	1 430	1 310	1 319	1 236	932	751	611
Pigs	3 499	3 169	4 797	4 790	4 599	4 016	3 594
Sheep	228	271	290	430	254	134	90
Poultry	18 658	23 763	31 926	31 981	28 220	27 875	32 043
Mean annual milk yield (liters per cow)	1 832	2 477	3 122	3 949	3 823	4 289	5 255

Source: Statistická ročenka ČR. Soupis hospodářských zvířat, ČSÚ, Praha

Table 3. Increase in per hectare yields of chief agricultural crops in the Czech Republic (t/ha)

Crop	1960–1962	1970–1972	1980–1982	1988–1990	1994–1996	1998–2000
Wheat	2.68	3.33	4.28	5.20	4.62	4.37
Potatoes	10.10	16.49	18.21	20.00	18.05	20.72
Sugar beat	29.47	33.67	35.08	34.47	39.02	44.72
Rape	1.48	2.02	2.19	2.98	2.43	2.62

Source: Statistická ročenka ČR. Definitivní údaje o sklizni, ČSÚ, Praha

forms of private enterprise, had to be created and forced. As a result of the landscape-shaping function of agriculture and its connection to ecology, a creation of ecological programs was initiated supporting rational development of the devastated regions of the country and especially of the frontier regions.

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