Economic results of agricultural enterprises in 2003

Výsledky hospodaření zemědělských podniků v roce 2003

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Abstract: The study was elaborated on the basis of the results of economic development monitored in selected agricultural enterprises in the Czech Republic. The enterprises included in this sample were classified – according to their external economic conditions – either as production or marginal, and divided into particular groups according to their elevation. In this sample, the authors observed various economic indicators, mainly the pre-tax economic result. This indicator is interrelated with other factors such as the required profit rate, economic result structure and the influence of subsidies on the economic result. The other observed indicators are revenue structure, productivity of labour, efficiency of funds and agricultural production intensity. All these indicators are compared both temporally (with regard to the development in recent years) and spatially (comparison of production and marginal areas). The conclusion includes overall evaluation of recent development.

Key words: production areas, marginal areas, pre-tax economic result, efficiency of funds, labour productivity, agricultural production intensity

Abstrakt: Příspěvek je zpracován na základě výsledků výzkumu ekonomického vývoje vybraného vzorku zemědělských podniků hospodařících na území ČR. Výběrový soubor podniků je rozdělen podle vnějších podmínek hospodaření na produkční a marginální a do skupin podle nadmořské výšky. V takto rozděleném souboru jsou sledovány různé ekonomické ukazatele, především hospodářský výsledek před zdaněním. Z něho se potom odvíjejí i další ukazatele, jako např. požadovaná míra zisku, skladba hospodářského výsledku a vliv dotací na hospodářský výsledek. Dalšími sledovanými ukazateli jsou struktura výnosů, produktivita práce, fondová účinnost a intenzita zemědělské výroby. Všechny tyto ukazatele jsou porovnávány jak v čase (vzhledem k vývoji za několik posledních let), tak i v prostoru (vzájemně mezi produkčními a marginálními oblastmi). Na závěr je provedeno celkové zhodnocení dosavadního vývoje.

Klíčová slova: produkční oblasti, marginální oblasti, hospodářský výsledek před zdaněním, fondová účinnost, produktivita práce, intenzita zemědělské výroby

The economy of enterprises in production and marginal areas has been surveyed in cooperation with the Agrarian Chamber of the Czech Republic since 1996, this task being pursued in the framework of MSM 1222 00001 grant. Agricultural enterprises conducting double-entry bookkeeping are divided into two groups – the enterprises occupying production areas up to the elevation of 450 m above sea-level (a.s.l.), and the enterprises founded in marginal areas, i.e. those located at elevations higher than 450 m a.s.l. The economic indicators of the enterprises in marginal areas are observed with a view to the concrete elevation.

In the period 1999–2000, on the average 190 agricultural enterprises were monitored; 125 enterprises of the total number were located in marginal areas. In 2001, data concerning 146 enterprises were processed (88 of this number in marginal areas). In 2002 we processed the data concerning 129 agricultural enterprises; 78 of them existed under the conditions of marginal areas. For the year 2003 the results of 149 enterprises are presented; out of this 68 enterprises are run in production areas and 81 in marginal areas.

CHARACTERIZATION OF THE SAMPLE OF MONITORED AGRICULTURAL ENTERPRISES

Relative representation of different legal forms of enterprises did not seem significant in the course of

The study was carried out within the project MSM 1222 00001.

the last four years. Considering the production areas, there has been a moderate increase in the number of joint-stock companies. In 2003, the representation of this form of enterprise in the sample was 51.5%. On the other hand, the numbers of limited liability companies and agricultural cooperatives have slightly decreased. In 2003 there were 7.35% of limited liability companies and 39.7% of agricultural cooperatives.

In marginal areas, joint stock companies represent 25.9%, and recently their number has been increasing as compared to cooperatives (51.9%) and limited liability companies (19.8%). Physical entities represent only about 2% in the relevant sample. Comparing production and marginal areas, a higher percentage of agricultural cooperatives was found in marginal areas whereas the representation of joint stock companies is considerably lower in this group.

The observed sample of agricultural enterprises is divided into two groups according to their elevation expressed in metres above the sea level. Within the studied sample, there were 45.7% of enterprises in production area (up to 450 m a.s.l.) in 2003; the rest of the enterprises, i.e. 54.3%, belonged to marginal area (above 450 m a.s.l.). Besides that, the enterprises in marginal area are divided into elevation zones measuring 50 m each. In these zones, the percentage of enterprises representation is from 11% to 15 %, with the exception of enterprises located at 650 m a.s.l. – they represent only 4% of the sample, and therefore the information capacity of the data is rather inconclusive.

In 2003, the average price of land in production area enterprises was 6.25 CZK per m^2 and in marginal areas it was 2.70 CZK per m^2. The development of land prices since 1995 refers to the fact that the average price in marginal areas remains approximately the same (index $_{(03/95)}$ = 1.001) but in production areas there is a steady increase in land price; compared with the year 1995, it amounts to 47.6%.

ECONOMIC RESULT OF AN AVERAGE ENTERPRISE FOR AN ACCOUNTING PERIOD

The complex indicator of each enterprise's performance is the income for an accounting period. According to the current methods of completing the income statement (profit and loss account), economic result is specified as follows:

Income from operational performance (before tax)	+
Income from financial operations (before tax)	–
Tax from the income from current activity	=
Income from current activity (after tax)	
Income from current activity (after tax)	+
Extraordinary income (after tax)	+ (–)
Transfer of a share from the income to partners	=
Income for an accounting period	

With regard to the analysis itself and in order to keep the data comparable, we monitored the income before tax and without remuneration for the partners (Table 1). In this form, the economic result

Table 1. Economic result structure before tax in an average agricultural enterprise

Income (in thousands of CZK)	Production areas							
	1996	1997	1998	1999	2000	2001	2002	2003
Operational income	492	–302	1 450	–24	3 600	2 809	–733	–267
Income from financial operations	–1 148	–1 845	–1 732	–1 876	–1 861	–1 225	–718	–1 157
Extraordinary income	444	940	400	1 124	491	519	401	266
Income before tax	–212	–1 207	118	–774	2 232	2 106	–1 050	–1 157
Income (in thousands of CZK)	Marginal areas							
	1996	1997	1998	1999	2000	2001	2002	2003
Operational income	–817	–166	1 343	348	1 652	594	–913	–1 208
Income from financial operations	–712	–1 066	–822	–656	–532	–505	–551	–526
Extraordinary income	552	658	601	334	634	575	573	55
Income before tax	–977	–574	1 122	26	1 755	666	–891	–1 679

Source: Monitoring agricultural enterprises in the period 1996–2003

expresses both the efficiency and economisation of the production process, and apart from costs, it is considerably influenced also by the conditions of realization.

Pre-tax income flucuates considerably in the course of the period of observation. In production areas, the enterprises ended at a loss in five years out of eight. There was profit only in three years. The best results were performed in 2000, on the average 2.3 million CZK per enterprise, and in 2001, when the profit was 2.1 million CZK per an average enterprise. The decrease in 2002 is represented by a loss of 1.05 million

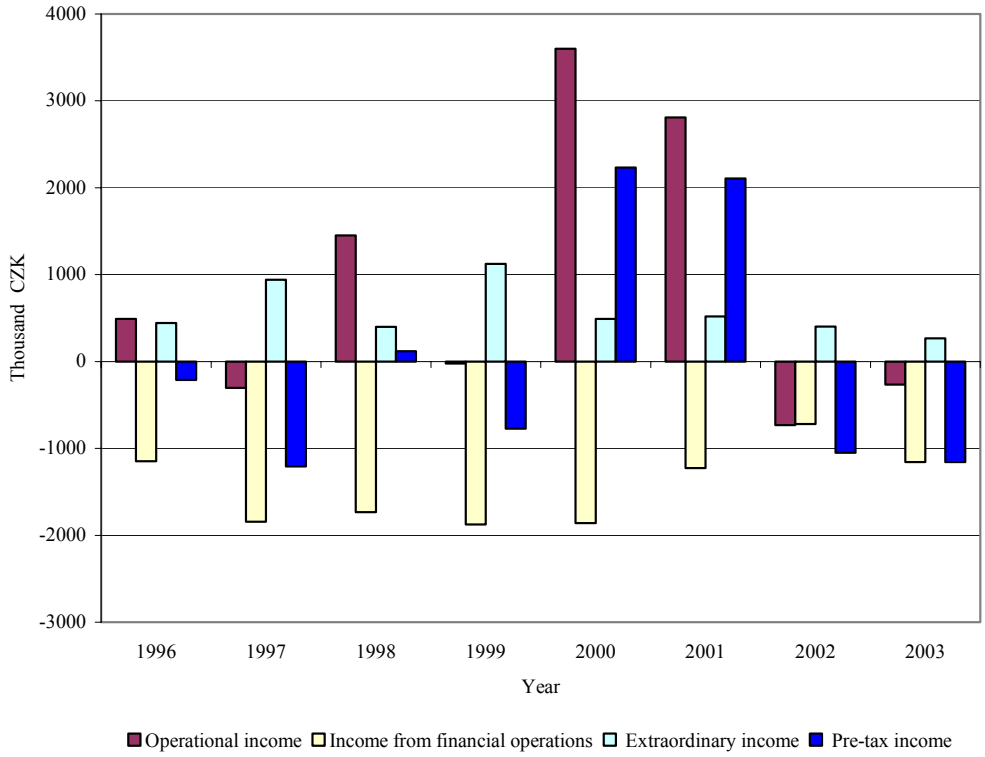

Figure 1. Composition of the economic result of an average agricultural enterprise in production area

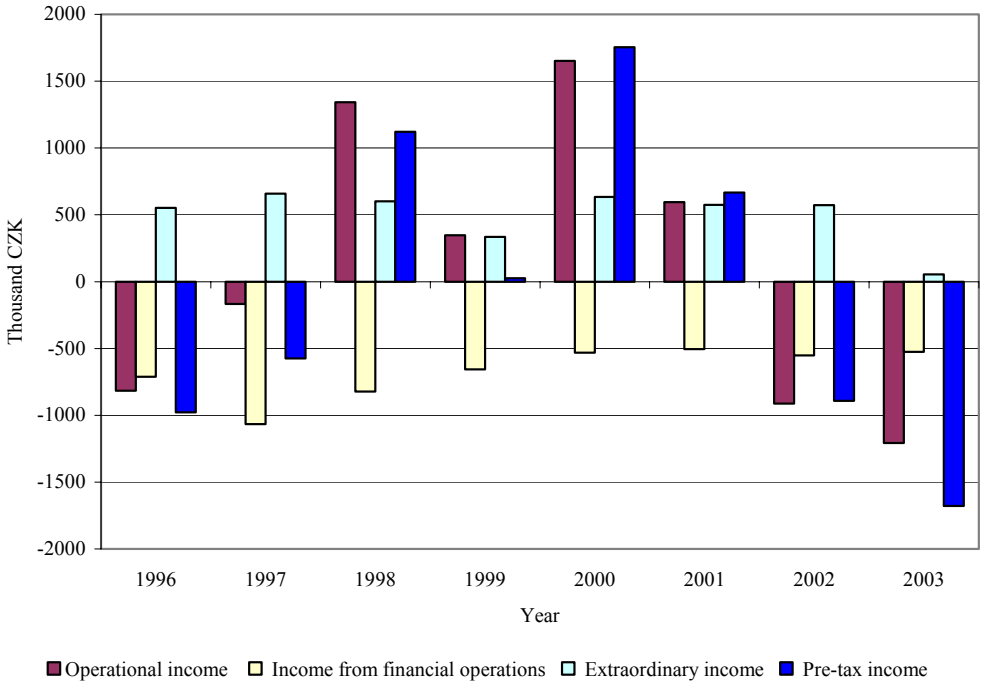

Figure 2. Composition of the economic result of an average agricultural enterprise in marginal area

CZK, which means 149.8% in comparison with the previous year. The income in 2003 is the second worst during the entire period of interest (Figure 1). The loss in an average agricultural enterprise in production area was 1.157 million CZK, which means a decrease by 10% when compared with the previous year.

In marginal areas, four years of the observation period were profitable and four years were characterised by a loss. The idea that the economy of these areas was approaching stability from 1998 was annulled by a loss amounting almost to 1 million CZK per an enterprise in 2002. This unfavourable trend became even stronger in 2003, when the loss in marginal areas was 1.68 million CZK per an average enterprise, which is the worst result during the whole period of interest; compared to the preceding year it means a decline by 88% (Figure 2).

With a view to the small share of non-agricultural production, it is important to express also the economic result before tax per one hectare of farmland. This indicator follows the same development trends as the average economic result. In production areas, the highest profit per 1 ha of farmland was reached in 2000 and it equalled 1 191 CZK per 1 ha; in 2001 it was 1 114 CZK per 1 ha. In 1997 the result reached a loss of 600 CZK per 1 ha and in 2003 the loss was 540 CZK per 1 ha.

In marginal areas, we monitored the biggest profit per 1 ha of farmland in 2000 – it equalled 1 030 CZK per ha; in 1998 it was 600 CZK/ha. The most considerable loss was monitored last year – it amounted to –1 080 CZK/ha.

The economic result is usually measured according to profit rate, i.e. the ratio of the income to the total volume of assets. Considering the enterprise development, only positive values expressing profit rate are important. Negative values (red figures) are always undesirable.

In production areas, positive values of profit rate were obtained only in three particular years – in 1998 (0.12%), in 2000 (2.16%) and in 2001 (1.92%). In marginal areas, the highest profit rate was reached in 2000 (1.99%) and in 2001 (0.78%). However, even in these "best" years the profit rate was still insufficient. If we assume that the generally acceptable profit rate is 4 or 6%, then in 2003 the supposed figures in production areas should be 2 281 and 3 422 CZK/ha respectively. Under the same conditions, in marginal areas the profit rate should be 2 086 and 3 129 CZK/ha respectively (Table 2).

The development of profit volume per 1 ha for the whole period of monitoring does not fulfil the requirements for profit rate, and frequent losses only deepen the unfavourable economic situation of agricultural enterprises.

Table 2. Rate of profit and economic result before tax

	Production areas							
	1996	1997	1998	1999	2000	2001	2002	2003
Total assets (in thousands CZK)	86 420	100 340	101 690	111 690	103 370	109650	113 298	122 577
Farmland area (in ha)	1 626	2 004	1 641	1 937	1 873	1890	1 975	2 149
Profit rate (in %)	–0.25	–1.20	0.12	–0.69	2.16	1.92	–0.93	–0.94
Profit* per 1 ha (in thousand CZK)	–0.13	–0.60	0.07	–0.40	1.19	1.11	–0.53	–0.54
Profit required* at 4% of profit rate	3 457	4 014	4 068	4 468	4 135	4386	4 532	4 903
Profit required* at 6% of profit rate	5 185	6 020	6 101	6 701	6 202	6579	6 798	7 355
	Marginal areas							
	1996	1997	1998	1999	2000	2001	2002	2003
Total assets (in thousands CZK)				81 620	88 380	85524	81 650	80 806
Farmland area (in ha)	1 540	1 750	1 881	1 425	1 697	1718	1 555	1 549
Profit rate (in %)				0.03	1.99	0.78	–1.09	–2.08
Profit*per 1 ha (in thousand CZK)	–0.63	–0.33	0.60	0.02	1.03	0.39	–0.57	–1.08
Profit required*at 4% of profit rate				3 265	3 535	3421	3 266	3 232
Profit required*at 6% of profit rate				4 897	5 303	5131	4 899	4 848

Source: Monitoring agricultural enterprises in the period 1996–2003

* the term *profit* replaced here the term economic result before tax

The question how large increase in the operational economic result would be necessary to reach an appropriate profit rate becomes more and more important. It can be illustrated by the following simple calculation:

In production areas it is necessary to cover:	
Required profit per 1 ha at profit rate of 4%	2 281 CZK
Loss for the year 2003	540 CZK
Subsidies per 1 ha of farmland	2 882 CZK
Loss from financial operations	538 CZK
Total	6 241 CZK

Using the same method, we can find out that, at 6% profit rate, it is necessary to obtain operational economic result amounting to 7 382 CZK/ha.

In marginal areas, it is necessary to have operational economic result of 6 142 CZK/ha at 4% profit rate; at 6% profit rate it would be 7 185 CZK. These values basically express the economic dimension of agricultural enterprises. For this purpose, there are three sources: reduction of costs per calculation unit, the volume of subsidies and price relations between inputs and outputs. Currently it can be hardly presumed that the required operational profit will be reached by lowering the costs or by an increase in subsidies system. Thus the only applicable source is the change of price policy. After all, unfavourable price relations in 2003 were one of the most significant causes of the economic result decrease.

THE COMPOSITION OF ECONOMIC RESULT BEFORE TAX

Economic result before tax can be divided into three components which are in the additive relationship: operational economic result, economic result from financial operations and extraordinary economic result. The operational economic result belongs to the most changeable components of the economic result. In production areas its value was negative in 1997, 1999, 2002 and 2003, whereas in the other years (1996, 1998, 2000, 2001) it was positive. Its value was impressive in 2000 – it was 3.6 million CZK, and in 2001 it was 2.8 million CZK. In the next year 2002, there was a loss of –733 000 CZK, which is the lowest value during the whole period of monitoring. In 2003 the loss of operational economic result in production area was –267 000 CZK per enterprise.

In marginal areas there was a positive trend in profit volume increase in particular years; unfortunately it was interrupted in 2001, when the profit of an average enterprise dropped to mere 594 000 CZK; then in 2000 there was a loss of –913 000 CZK. In 2003 the loss was even higher by 32% (–1 208 CZK).

Negative economic result obtained from financial operations both in marginal and production areas acts as a retarding factor when we consider the development of the entire enterprise. In production areas, compared to the previous year, this loss was higher by 61% in 2003; in the same year, the drop was only moderate in marginal areas when compared to the previous year (only 15%).

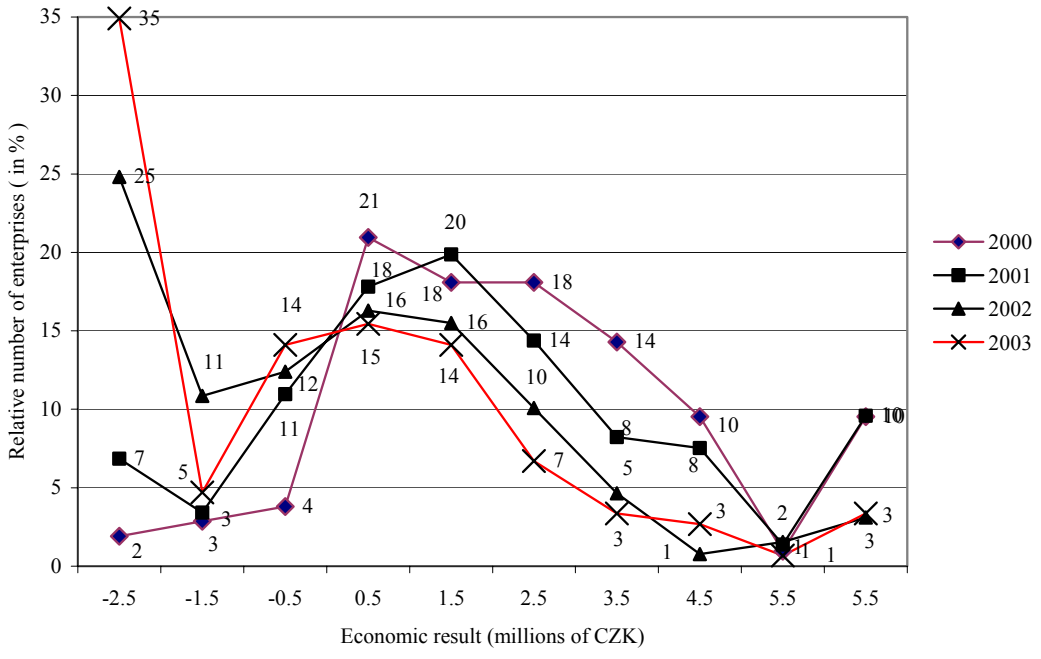

Figure 3. Division of enterprises according to pre-tax economic result volume

Table 3. Grouping of enterprises according to pre-tax economic result volume

Pre-tax economic result in millions of CZK	Number of enterprises											
	2000			2001			2002			2003		
	abs.	%	cum. (%)	abs.	%	cum. (%)	abs.	%	cum. (%)	abs.	%	cum. (%)
–3	2	1.9	1.9	8	5.48	5.48	31	24.03	24.03	46	30.9	30.9
–3 to –2	1	0.95	2.9	3	2.05	7.53	5	3.88	27.91	10	6.7	37.6
–2 to –1	3	2.86	5.7	11	7.53	15.06	16	12.40	40.31	11	7.4	45.0
–1 to 0	9	8.57	14.3	16	10.96	26.02	18	13.95	54.26	19	12.8	57.7
0 to 1	24	22.86	37.1	40	27.4	53.42	25	19.38	73.64	29	19.5	77.2
1 to 2	22	20.95	58.1	19	13.01	66.43	16	12.40	86.05	15	10.1	87.3
2 to 3	17	16.19	74.3	18	12.33	78.76	10	7.75	93.80	6	4.0	91.3
3 to 4	13	12.38	86.7	11	7.53	86.29	2	1.55	95.35	5	3.4	94.7
4 to 5	3	2.86	89.5	4	2.74	89.03	0	0.00	95.35	3	2.0	96.7
5 to 6	3	2.86	92.4	4	2.74	91.77	3	2.33	97.67	1	0.7	97.3
6 to 7	4	3.8	96.2	3	2.06	93.83	0	0.00	97.67	0	0.0	97.3
7+	4	3.8	100	9	6.17	100	3	2.33	100	4	2.7	100
Total	105	100	100	146	100	100	129	100	100	149	100	100

Source: Monitoring agricultural enterprises in 2003

One of the important elements in the process of economic result evaluation is the determination of management efficiency. This consists in the determination of the numbers (relative frequencies) of enterprises according to economic result. If the course of such plots is flat, then there are considerable reserves in the enterprise management. On the other hand, peaks with low variability mean that quantitative reserves in management are depleted and a change can be brought about only by means of different qualitative conditions (Figure 3).

If we compare the division of enterprises according to the volume of economic result as it is expressed in Figure 3, it is obvious that from 2000 there was an annual increase in the number of enterprises with worse economic result. Let us mention several examples. In 2000, 14.3% of the enterprises in the sample were at a loss; in 2001 the number represented 26.02%, in 2002 54.26%, and in 2003 57.7% of the enterprises ended up at a loss (Table 3).

The number of enterprises with a profit larger than 2 million CZK was equal to 41.9% in 2000, in 2001 the

Table 4. Volume of the subsidies for an average agricultural enterprise in thousands of CZK

Elevation in m a.s.l.	Volume of subsidies in thousands of CZK								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
To 450	23.23	818	1 411	1 856	3 420	5 308	3 432	3 503	6 193
450–500	31.00	1 450	1 196	3 279	4 110	5 352	4 268	4 308	5 948
500–550	19.49	1 769	1 872	2 798	3 806	4 770	3 920	4 320	4 126
550–600	15.02	1 235	1 649	2 159	4 040	4 620	3 819	3 747	3 586
600–650	16.82	2 362	2 791	3 995	6 670	4 753	5 566	4 561	5 099
Over 650	5.03	2 383	3 387	4 647	3 904	4 356	4 368	4 532	5 672
Over 450	18.03	1 739	1 921	3 090	4 330	4 849	4 339	4 246	4 807
Total	19.36	1 552	1 765	2 703	3 945	4 997	3 978	3 952	5 439

Source: Monitoring agricultural enterprises in the period 1996–2003

percentage was 33.57%, in 2002 it was only 13.95% and in 2003 12.7%. The shift towards worse result notifies us of the increasing influence of external factors, mainly prices and climatic conditions.

INFLUENCE OF SUBSIDIES ON THE VOLUME OF PRE-TAX ECONOMIC RESULT

The volume of subsidies in the period 1995–2000 shows a significant monotonous growth. Substantial increase in subsidies volume for the year 2000 consisted in the compensation for drought spells; this situation was also partly settled in 2001. In the period 1995–1998, the subsidies in marginal areas prevailed over those in production areas. E.g., the index of 1999 for comparing marginal and production areas was 126.6%. In 2000 this ratio was reversed and the index was 91.16%; in 2001 the volume of subsidies for an average agricultural enterprise in marginal and production areas was almost the same as in 1999 (index 126.4).

In 2002 the volume of subsidies for an average agricultural enterprise is almost the same as in 2001 (Table 4); the indices in particular zones according to elevation fluctuate between 110% (500–550 m) and 82% (600–650 m). In 2003 we noticed a substantial increase in average subsidies per enterprise mainly in production areas (index $_{03/02}$ = 176%).

To enhance the comparability of subsidies in production and marginal areas, subsidies volume was calculated per 1 ha of farmland (Figure 4). From 1996 the subsidies per 1 ha of farmland were higher in marginal areas by 45% (1998) up to 124% (1996). In 2000 this figure was practically the same, in 2001 the subsidies were higher in marginal areas by 39%, and in 2002 by 53%. In 2003 the subsidies were higher in production areas by 8.5%.

In production areas the largest amount of financial means (38%) was paid out in the framework of the Government Regulation No.86/2001 Coll.; it specifies the conditions under which financial support can be provided if farmland is set aside as well as the compensation amounts for starting to set farmland aside, and the rules for selling rape seed grown on such land. Further important support was offerd within the B1 Measure – subsidies provided to mitigate the damage that was caused by unfavourable climatic conditions (ploughing crops away); this support created 18 % of the entire subsidies invested in this sphere.

On the other hand, in marginal areas the largest volume of funds was paid out in the framework of the Government Regulation No. 505/2000 Coll., which specifies supportive programs to develop the non-production functions of agriculture; the sum was equal to 37%.

The subsidies for agricultural enterprises have currently been an important factor affecting the profitability of farming. Subsidies accounting within operational economic result also offers the explanation for the substantial change of this result mainly in the years 1999–2001. The considerable rise of subsidies in these years resulted in relatively favourable economic result from operational performance in production

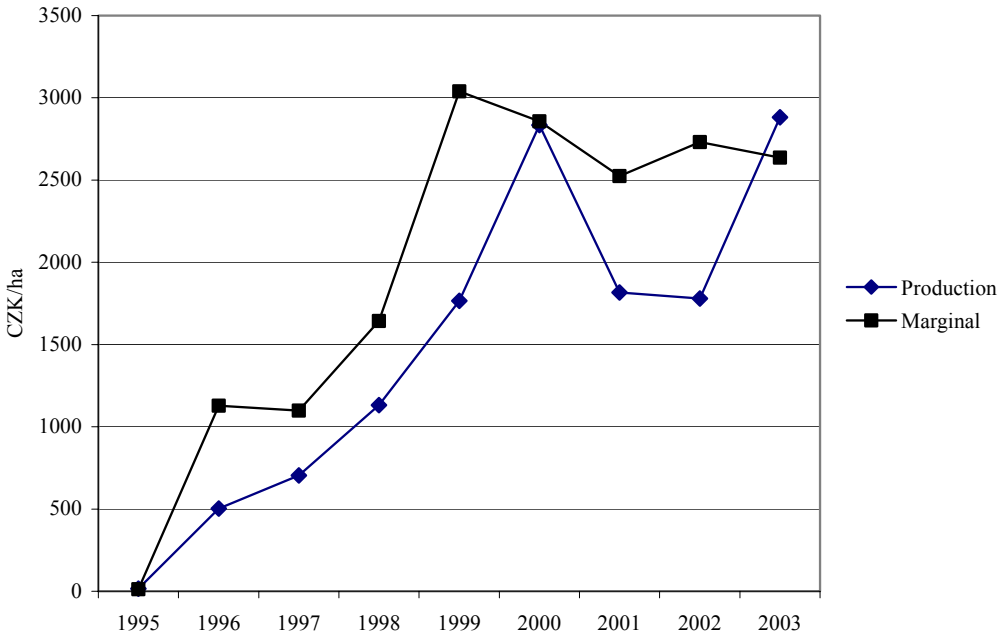

Figure 4. Development of subsidies in production and marginal areas in CZK/ha of farmland

areas. Similarly, the qualitative change of subsidies volume in the years 1998–2001 launched a positive operational economic result. In 2002, even a relatively high volume of subsidies could not reverse the crushing impact of unfavourable conditions and thus eliminate the worst loss during the last five years. This trend continued in 2003, and, despite the increasing volume of subsidies, the loss became even bigger.

REVENUE STRUCTURE IN AN AVERAGE AGRICULTURAL ENTERPRISE

In production areas, the share of the proceeds of plant production has been slightly decreasing since the year 2000. The share of plant production within the overall composition of revenue was 41%; in 2003 it was 35.8%. In production areas, the share of animal production was moderately growing. In 2000 the share of animal production proceeds was 45%, in 2001 it was 48% and in 2002 and 2003 it was 50%. The share of the proceeds of non-argicultural activities falls down till year 2000; they represent 14% of the entire return achieved in an enterprise.

In marginal areas, the share of plant production in the entire revenue volume realized by enterprises is decreasing – it ranges from 30% to 25%. In these areas, the share of animal production plays the most important role. Here the share of animal production is permanently increasing since 1995. Whereas in 1995 this share was 48% of the enterprise revenue, in 2003 it was almost 62%. The increase in animal production was connected with the decrease of the proceeds of non-agricultural activities. Non-agricultural activities significantly dropped in 1996. In 1995 the proceeds of these activities represented almost one third of an enterprise overall revenue (27.03%); in 1996, there was a decrease of the volume of the proceeds to 17.41%. Then the share of these activities was decreasing till the year 2000, when the trend became stagnant at 14%. The effort of agricultural enterprises to concentrate on agricultural production and thus diminish production diversification does not correspond with the current trends in the European Union which are focused on strengthening the added value mainly in the sphere of product processing.

LAND RESOURCES STRUCTURE

In 2003 the average area of farmland in production area enterprises was 2 149.13 ha; tillage rate was 85.69%. An average agricultural enterprise uses land that belongs to a different owner; the percentage of this land is 99.2% and out of this, 7.58% of land is state property. In marginal areas, the area of agricultural land in an average enterprise is 1 549.4 ha. As tillage rate decreases with higher elevation, the relevant percentage in marginal areas is only 64.5%. The structure of marginal areas farmland according to ownership

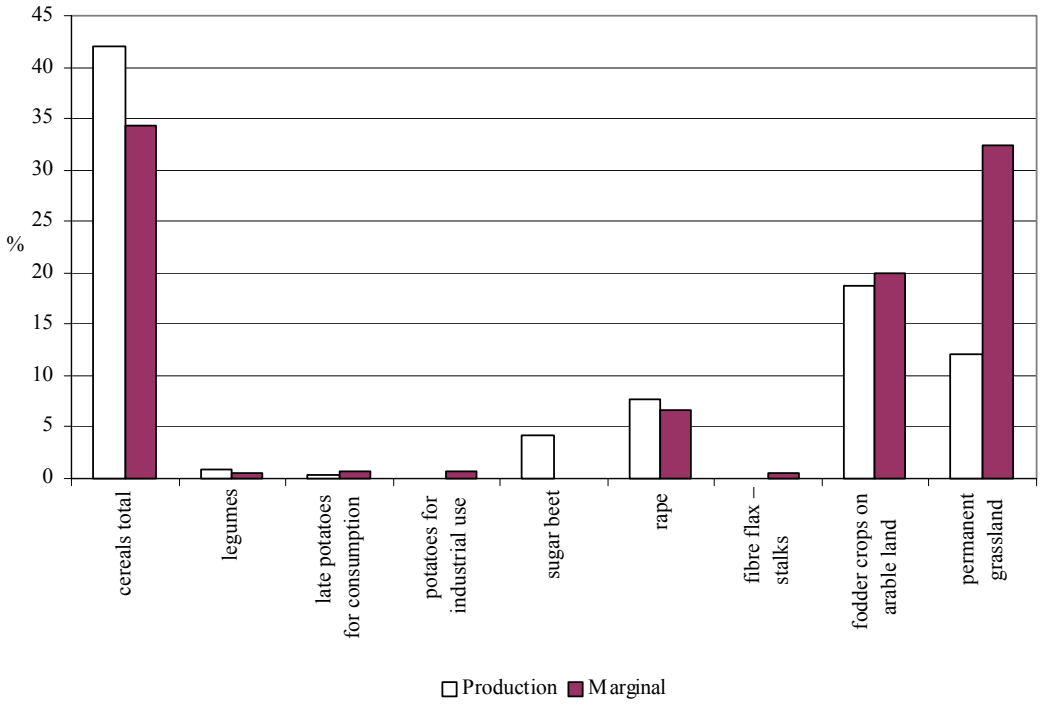

Figure 5. Plant production structure in 2003

is not very different in comparison with production areas. An average enterprise cultivates 97.8% of the land belonging to different owners; out of this, 12.37% of land is state property. This structure has been roughly the same for the last four years.

PLANT PRODUCTION STRUCTURE

In production areas, 42% of the farmland was sown with cereals; 17% with winter wheat with the average yield of 6.45 t/ha, which was higher by 23% compared to the year 2002. Spring barley was grown on 12% of the farmland and the the average yield was 4.5 t/ha, i.e. 104% of the yield in 2002. Sugar beet was grown on 4.2% of the farmland, the yield being 38.6 t/ha (i.e. 75% of the yield in 2002), rape area was 7.7% of the farmland and the yield was 2.1 t/ha (86% of the yield in 2002). 18.7% of the farmland was covered with fodder crops on arable land and 12% with permanent grass cover (Figure 5).

In marginal areas, cereals were sown on 34% of the farmland, winter wheat with average yield of 4.42 t/ha on 11% of the farmland (which is 88% of the yield in 2002). Spring barley was sown on 10% of the farmland and the average yield was 3.6 t/ha, which was 107% compared to 2002. Rape was sown on 6.7% of the farmland and the yield was 1.8 t/ha (77% of the year 2002), flax area was 0.6% and the yield was 1.9 t/ha (61% of the year 2002). Fodder crops on arable land took 20% of the farmland and 32% by permanent grassland.

In comparison with 2002, there was a decrease in grain crops share on farmland in production areas by 2.2%, in marginal areas by 1.5%. The share, which dropped most dramatically, was that of winter wheat (by 6.7%) in production areas; in marginal areas the drop was 6.1%. Potatoes for consumption showed a moderate increase in the farmland share of 0.06% in both areas; the share of sugar beet in production areas increased by 0.93%. In both areas, there was a decrease of rape share – by 3.03% in production areas by 2.03% in marginal areas. On the other hand, there was an increase in the share of fodder crops on arable land in both areas (by 0.83% in production areas and by 1.04% in marginal areas) as well as the share of permanent grassland (by 0.74 in production areas and 0.85% in marginal areas).

STRUCTURE AND UTILITY OF LIVESTOCK

From 1999, there was a moderate annual increase in livestock total number (index $_{03/99}$ = 1.13) and particularly in cow number (index $_{03/99}$ = 1.13) in production areas, whereas in marginal areas there was livestock number decrease (Figure 6) from 1999 by 9 percentual points; the number of cows per an average agricultural enterprise dropped to 99% in comparison with their number in 1999. For comparison – the density of livestock in marginal areas was higher by 36% in 1999; in 2003 it was only higher by 21%.

Concerning the development of the numbers of pigs, both in marginal and production areas, there

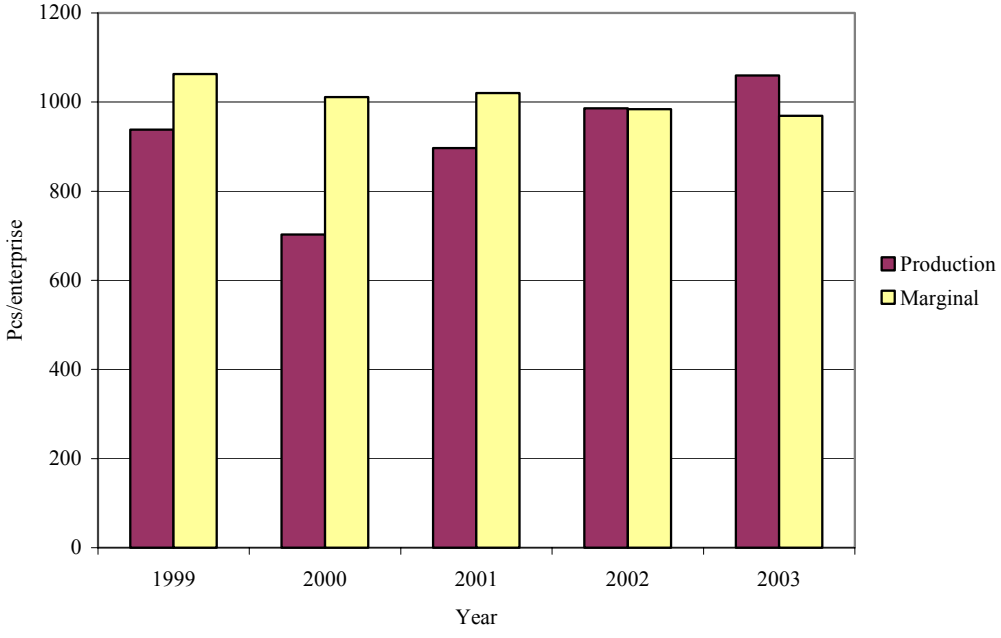

Figure 6. The development of livestock numbers in production and marginal areas

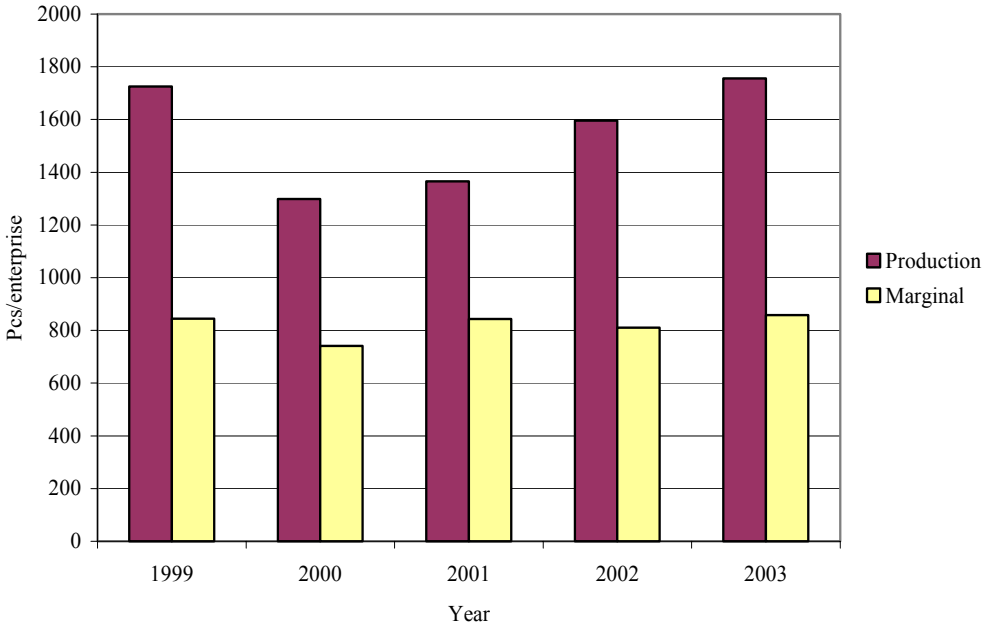

Figure 7. The development of pig numbers in production and marginal areas

was a decline in 2000 compared to the previous year (Figure 7). In the following years, there comes a gradual increase of these numbers – index $_{03/99}$ in production areas was 1.018, in marginal areas 1.015. In production areas, the density of pigs on farmland is higher by 32%.

It can be said that, from 1999, animal production performance grew faster in production areas than in marginal areas. In production areas, the daily weight gains in livestock grew almost by 12 points to 0.905 kg in 2003; in marginal areas during the same period, these gains are rather stagnant, ranging from 0.78 to 0.82 kg/day. The similar situation was marked in pigs – from 1999, in production areas the gains grew by 9 points to 0.654 kg/day and in marginal areas by 2 points to 0.612 kg/day.

Considering the performance of dairy cows, there is an obvious inter-annual increase in all zones according to elevation but in production areas the performance of dairy cows grows much faster (index $_{03/99}$ = 1.46) than in marginal areas (index $_{03/99}$ = 1.12). In 2003 the performance of dairy cows in production areas was 6 269 l/year and in marginal areas 5 379 l/year.

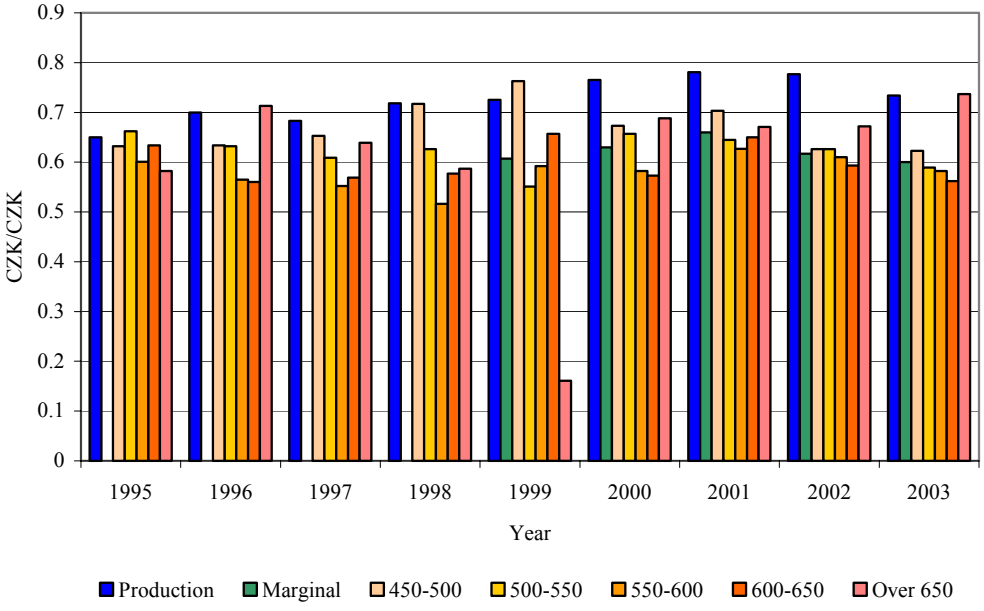

Figure 8. Turnover velocity

EVALUATION OF EFFICIENCY INDICATORS IN PRODUCTION PROCESS

Efficiency indicators are based on the comparison of output volume according to three basic factors, i.e. land, labour and capital. The relationship between outputs and farmland area characterises production intensity; the interdependence of outputs and average registration number of workers is characterising productivity of labour, and the relation of outputs and assets is characterised by the indicators of activity.

An increase in the volume of outputs in itself, in the case of profitable production in starting period, leads to the profit from production extent. An increase in labour productivity facilitates relative savings in workforce number and consequently also the decrease of wage costs; an increase in the efficiency of funds determines relative savings in enterprise property, which are connected with relative savings concerning depreciation and further costs. An increase in the velocity of short-term assets turnover leads to the reduction of the costs covering storage and material handling. Relative savings concerning assets and farmland are also connected with higher interest rate on them. On the other hand, lowering the volume of outputs under otherwise stable conditions leads to a relative excess of basic production factors and thus to associated additional costs. The reduction of output

Table 5. Activity indicators of an average agricultural enterprise according to elevation

Elevation (m a.s.l.)	Revenue in millions of CZK									Index 03/95
	1995	1996	1997	1998	1999	2000	2001	2002	2003	
To 450	59.16	60.52	68.49	72.55	80.95	79.08	85.61	87.98	89.92	1.520
450–500	48.67	50.67	64.96	76.46	66.19	62.96	75.38	62.69	71.58	1.471
500–550	43.82	47.15	55.28	52.03	46.97	57.60	53.17	47.35	43.20	0.986
550–600	42.25	41.25	43.01	42.51	35.29	46.74	49.22	47.56	36.55	0.865
600–650	47.44	39.51	69.27	47.98	62.24	60.58	55.05	49.92	45.20	0.953
Over 650	31.23	39.50	34.41	36.37	19.07	18.38	19.54	20.34	25.48	0.816
Over 450					49.55	55.66	56.47	50.41	48.51	
	Total assets in millions of CZK									Index 03/95
	1995	1996	1997	1998	1999	2000	2001	2002	2003	
To 450	90.61	86.42	100.34	101.69	111.69	103.37	109.65	113.30	122.57	1.353
450–500	77.01	79.88	99.45	102.46	86.79	93.53	107.19	100.22	114.93	1.492
500–550	66.00	76.79	90.72	83.06	85.30	87.72	82.44	75.62	73.30	1.111
550–600	70.96	72.95	77.94	82.32	59.61	80.27	78.49	77.97	62.77	0.885
600–650	75.12	70.48	121.59	83.19	94.73	105.78	84.66	84.17	80.40	1.070
Over 650	53.47	55.41	53.83	61.99	118.15	26.71	29.11	30.27	34.58	0.647
Over 450					81.62	88.38	85.52	81.65	80.80	
	Rate of turnover of total assets									Index 03/95
	1995	1996	1997	1998	1999	2000	2001	2002	2003	
To 450	0.650	0.700	0.683	0.718	0.725	0.765	0.781	0.777	0.734	1.129
450–500	0.632	0.634	0.653	0.717	0.763	0.673	0.703	0.626	0.623	0.985
500–550	0.662	0.632	0.609	0.626	0.551	0.657	0.645	0.626	0.589	0.890
550–600	0.601	0.565	0.552	0.516	0.592	0.582	0.627	0.610	0.582	0.969
600–650	0.634	0.560	0.569	0.577	0.657	0.573	0.650	0.593	0.562	0.887
Over 650	0.582	0.713	0.639	0.587	0.161	0.688	0.671	0.672	0.737	1.266
Over 450					0.607	0.630	0.660	0.617	0.600	

Source: Monitoring agricultural enterprises in the period 1996–2003

volume also means the reduction of profit volume from production extent. Lower output volume is often associated with cost remanence, which leads to a higher cost rate of the produce.

The volume of revenue in an average agricultural enterprise in production areas in the period 1995–2003 shows an increase that displays certain stabilization in the years 1999–2002 (Table 5). The growing volume of proceeds is accompanied by growing velocity of total assets turnover, with a slight decrease in the last two years. In 2003, in the enterprises in production areas, turnover velocity was 0.734; compared to 2002, it dropped to 94.5% (Figure 8).

The growth of revenue volume is much slower in marginal areas in comparison with 1995; in 2002 and 2003 there is even a decrease. In 2003 the proceeds dropped to 96% of those in the previous year. Also turnover velocity, ranging to 0.600 in marginal areas, is lower in comparison with production areas, and this difference means that turnover period is longer by 134 days. The decrease of output volume together with a moderate turnover velocity is the second factor playing an important role in the entirely worse situation of the enterprises in marginal areas.

The enterprises in production areas displayed a moderate increase in the number of workers during

Table 6. Productivity of labour and remunerations in an average agricultural enterprise

Elevation (m a.s.l.)	Average number of registered workers								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
To 450	90	79	134	108	100	96	100	105	108
450–500	105	99	95	100	78	75	80	73	92
500–550	89	90	126	83	81	79	71	68	62
550–600	95	83	81	65	66	57	61	58	47
600–650	90	85	97	105	117	100	79	72	71
Over 650	71	78	76	68	30	26	28	29	34
Over 450					78	74	71	66	67
	Productivity of labour								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
To 450	657.3	766.1	511.1	671.8	809.5	823.8	854.9	837.3	830.84
450–500	463.6	511.8	683.8	764.6	848.6	839.4	937.3	862.9	780.32
500–550	492.4	523.8	438.7	626.8	579.9	729.2	748.2	701.3	694.99
550–600	444.7	497.0	531.0	654.0	534.7	820.0	806.3	814.7	769.87
600–650	527.1	464.8	714.1	457.0	532.0	605.8	701.3	698.2	636.66
Over 650	439.8	506.5	452.8	534.8	635.6	706.7	709.2	707.5	755.48
Over 450					635.3	752.2	799.0	767.6	726.17
	Average income per year and worker								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
To 450	79.368	94.44	106.35	129.79	117.14	127.99	133.32	143.09	145.06
450–500	82.400	94.74	105.54	112.42	121.78	132.53	129.74	146.36	143.59
500–550	78.876	90.23	100.58	106.73	113.11	121.93	131.91	136.81	140.99
550–600	78.453	81.90	101.58	100.49	110.70	119.76	126.94	144.04	145.99
600–650	79.590	89.02	96.66	106.10	105.79	119.91	127.61	132.39	137.41
Over 650	74.077	65.36	96.49	105.59	121.73	117.02	134.88	137.18	145.76
Over 450					113.63	123.99	129.47	140.02	141.67

Source: Monitoring agricultural enterprises in the period 1996–2003

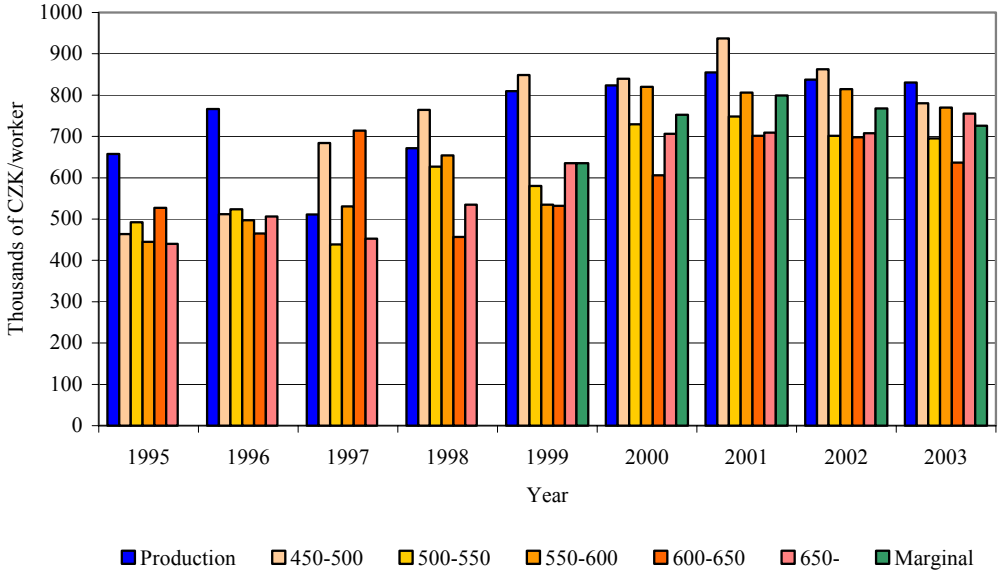

Figure 9. Productivity of labour

the last three years of the period of interest (Table 6). In 2003, an average enterprise had 108 workers. In comparison with 1995, the number of workers rose by 18. The increase in workforce numbers occurring from 1995 was connected with the growth of labour productivity till 2001 (Figure 9). In the years 2002 and 2003, there was a decrease of labour productivity in production areas. In 2003 labour productivity was 830.84 thousand CZK – it rose to 126% when compared with the year 1995; in comparison with 2001, however, there was a decrease to 99%. Due to this decrease, 0.69 relatively exceeded the average number of registered workers and the overhead costs by 100 thousand CZK.

In marginal areas, the number of workers in average agricultural enterprises entirely drops. In 2003, there was a moderate increase from 66 to 67 workers. In marginal areas, there was also a decrease of labour productivity to 96.1% in 2002 when compared with the previous year; in 2003 it declined to 94.6%. In 2003 its value was 726.17 thousand CZK and it was lower than labour productivity in production areas. Due to labour productivity decrease, 3.48 relatively exceeded the average number of registered workers and the overhead costs by 491.5 thousand CZK.

The causes of labour productivity decrease in particular areas are different. In production areas, it is connected with the increase in workers number (up to 103%) at insufficient increase in revenue volume (to 102%); in marginal areas, the decrease is mainly caused by the revenue decrease in comparison with the previous year (to 96.2%) at simultaneous increase in workers number to 102%. These figures are also supported by the comparison of farmland area per worker. In 2003, the average area per worker in production areas was 19.86 ha; in marginal areas it was

Table 7. Average efficiency of funds in agricultural enterprises

Elevation (m a.s.l.)	Efficiency of funds								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
To 450	1.13	1.34	1.32	1.20	1.32	1.323	1.388	1.359	1.315
450–500	1.10	0.98	1.02	1.21	1.35	1.189	1.187	1.018	1.013
500–550	1.11	1.06	1.09	1.12	0.94	1.081	1.103	1.056	0.996
550–600	0.97	1.16	0.94	0.98	1.18	1.139	1.210	1.125	1.052
600–650	1.01	1.21	0.91	1.06	1.01	0.987	1.120	0.971	0.934
Over 650	0.89	0.86	0.94	0.90	0.33	1.111	1.157	1.162	1.408
Over 450					1.07	1.106	1.153	1.042	1.011

Source: Monitoring agricultural enterprises in the period 1996–2003

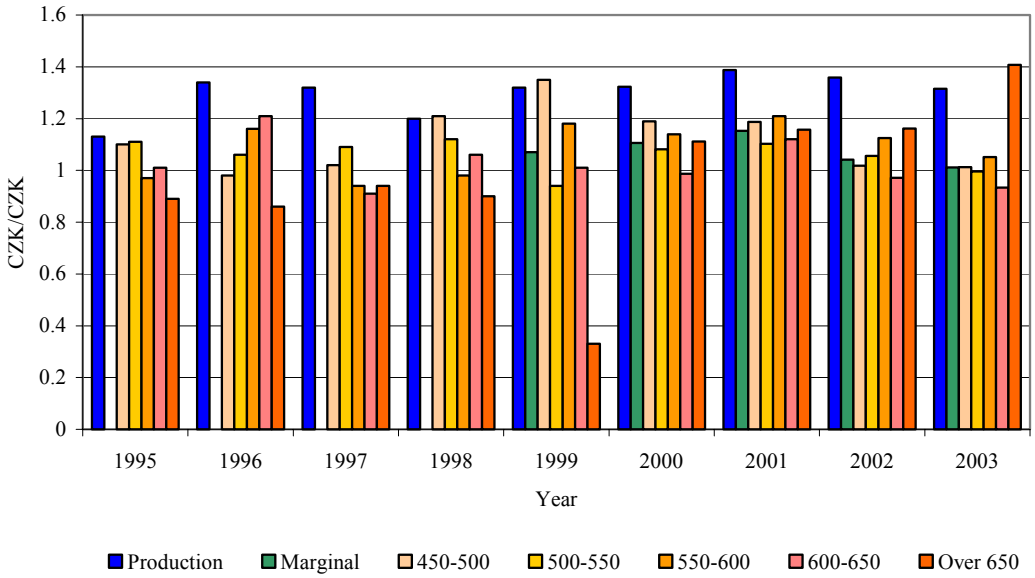

Figure 10. Efficiency of funds

23.19 ha, i.e. larger by 14.3%. The mentioned correlation proves to be generally valid – with higher elevation the average number of registered workforce in an enterprise decreases and the share of farmland area per worker increases.

The efficiency of funds reflects the same trends which also influence the volume of output. In production areas, no development of this indicator has been recorded since 1996, only its inter-annual oscillation (Table 7).

Table 8. Intensity of agricultural production in an average agricultural enterprise

Elevation (m a.s.l.)	Area of farmland (ha)			
	2000	2001	2002	2003
To 450	1 873.2	1 890.25	1 974.98	2 149.13
450–500	1 816.3	1 867.97	1 762.20	2 104.78
500–550	1 763.5	1 692.65	1 550.39	1 382.79
550–600	1 653.1	1 624.48	1 435.71	1 092.61
600–650	1 626.8	1 834.79	1 564.36	1 680.22
Over 650	1 046.3	1 025.86	1 016.50	1 062.15
Over 450	1 697.1	1 718.53	1 554.83	1 549.40
Elevation (m a.s.l.)	Revenue per 1 ha of farmland (thousand CZK)			
	2000	2001	2002	2003
To 450	42.218	45.288	44.549	41.840
450–500	34.661	40.358	35.576	34.007
500–550	32.664	31.410	30.541	31.241
550–600	28.275	30.301	33.125	33.449
600–650	37.240	30.004	31.910	26.903
Over 650	17.562	19.050	20.012	23.991
Over 450	32.797	32.862	32.419	31.310

Source: Monitoring agricultural enterprises in the period 2000–2003

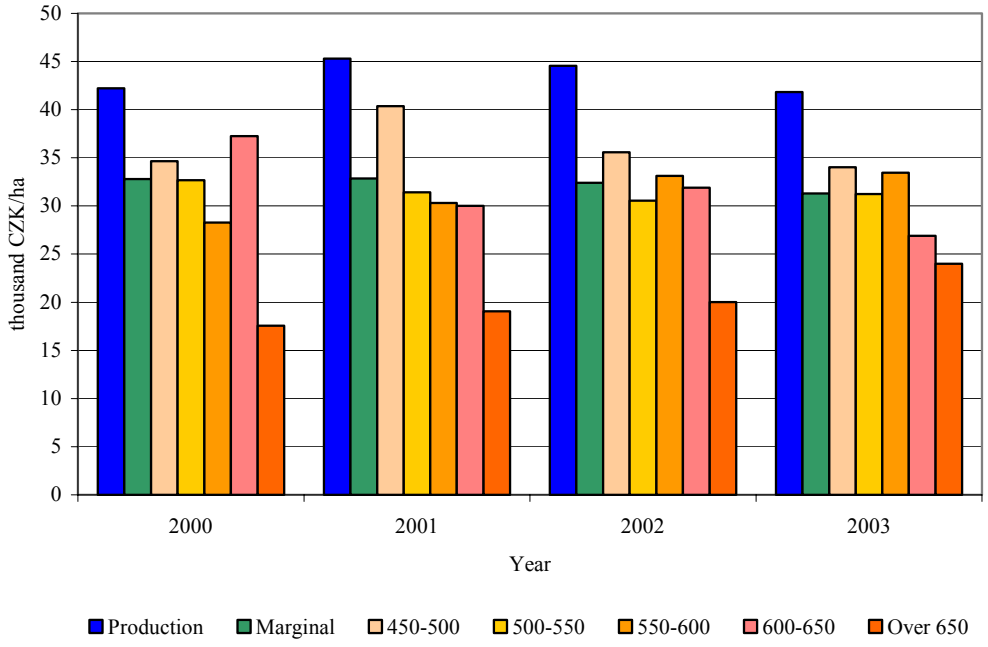

Figure 11. Agricultural production intensity

In marginal areas, there was a relative growth of fund efficiency from 1996 to 2001. Since 2002 we have observed its decrease in production areas. Considering the efficiency of funds, there are considerable differences between production and marginal areas (Figure 10). In 2003 the efficiency of funds in marginal areas represented 79.6% of that in production areas and thus meant a relative excess of tangible assets by 1 441 thousand CZK.

The revenue per 1 presents the monetary expression of agricultural production intensity in accounting statements ha of farmland. The comparison of years 2000 to 2003 yielded the following tendency: the volume of outputs decreases with elevation increase. In 2003, an average enterprise in marginal areas reached only 54 % of the revenue in production areas.

The average size of an enterprise in marginal areas is smaller than in production areas (Table 8). An average enterprise in marginal areas has 72% of farmland area in comparison to production areas, 70.2% of long-term tangible assets, 62% of the average number of registered workers and 54% of revenue. Disproportionality showed mainly in revenue volume, which is caused by extensive production. This causes a decrease of revenue per 1 ha of farmland. Production intensity decreases with elevation – the average intensity of production in marginal areas is only 74.8 % of the intensity in production areas (Figure 11). Low intensity of production in marginal

Table 9. Structure of external sources of an average agricultural enterprise

Category	Number of enterprise	External resources 1000 CZK	Reserves		Long-term liabilities		Current liabilities		Bank credit	
			1000 CZK	%	1000 CZK	%	1000 CZK	%	1000 CZK	%
Production	68	45 634	1 043	2.29	15 968	34.99	15 680	34.36	12 942	28.36
450–500	22	39 876	1 033	2.59	16 930	42.46	10 965	27.50	10 947	27.45
500–550	19	33 074	893	2.70	18 073	54.64	7 422	22.44	6 687	20.22
550–600	18	33 586	522	1.56	20 296	60.43	7 157	21.31	5 611	16.71
600–650	16	36 799	15	0.04	21 271	57.80	10 648	28.94	4 865	13.22
Over 650 m	6	13 251	2 296	17.33	3 257	24.58	4 291	32.38	3 407	25.71
Marginal	81	34 302	779	2.27	17 790	51.86	8 731	25.45	7 002	20.41

Source: Monitoring agricultural enterprises in 2003

Table 10. Structure of bank credit in an average agricultural enterprise

Category	Number of enterprises	Bank credit total	Long-term credit		Current credit		Short-term credit	
		1000 CZK	1000 CZK	%	1000 CZK	%	1000 CZK	%
To 450 m	68	12 942	8 556	66.11	4 215	32.57	160.74	1.24
450–500	22	10 947	8 427	76.97	2 341	21.38	115.18	1.05
500–550	19	6 687	5 544	82.91	1 143	17.09	0.00	0.00
550–600	18	5 611	4 753	84.71	858	15.29	0.00	0.00
600–650	16	4 865	3 403	69.95	1 453	29.86	9.38	0.19
Over 650 m	6	3 407	3 319	97.42	88	2.58	0.00	0.00
Marginal	81	7 002	5 563	79.45	1 388	19.82	33.14	0.47

Source: Monitoring agricultural enterprises in 2003

areas, influenced by the extensive type of management, affects a higher cost rate of production and thus also lower level of profitability.

STRUCTURE OF EXTERNAL FINANCIAL SOURCES OF AN AVERAGE AGRICULTURAL ENTERPRISE

The structure of external sources is formed mainly by long-term liabilities (Table 9) which represent 34.99% in production areas and 51.86% in marginal areas. Current (short-term) liabilities from trading contacts represent 34.36% in production areas and 24.45% in marginal areas. Bank credit in an average agricultural enterprise in production area was 12.942 million CZK, which represents 28.36% of the total volume of external capital. In marginal areas, the volume of bank credit equals 7 002 million CZK, which represents 20.41% of the entire external capital. The considerable volume of bank credit is one of the decisive factors responsible for high losses from financial operations which affect the economic result for an accounting period. E.g., at the mean interest rate of 9.98%, the mentioned volume of credit requires 1 292 million CZK in production areas and 702 thousand CZK in marginal areas. Any profit rate, which is lower than interest rate, means that the financial gear does not have positive effect and only the aid from the Support and Guarantee Farm and Forest fund (PGRLF) facilitates the utilization of the credit with appropriate effectiveness.

The prevailing type of bank credit is the long-term bank loan (Table 10). These bank loans are connected with investment activities of agricultural enterprises. In production area, the volume of these bank loans in an average agricultural enterprise represents 8.556 million CZK and they are equal to 66.11% of the entire bank credit in the enterprise. In marginal areas the average volume of long-term bank loans was 5.563 million CZK in 2003 and this amount represented 79.45%. A big share of long-term bank loans in an agricultural enterprise means that the losses from financial operation will also have long-term character.

Current loans, which in 2003 were equal to 4.215 million CZK in production areas and this volume accounted for 32.57% of the entire credit, are another important factor. In marginal areas, the average volume of these loans was 1.388 million CZK, which represented 19.82% of the entire bank credit. Short-term bank loans contribute to the liquidity of an agricultural enterprise but at the same time they represent a considerable burden in the sense of high interest.

LIQUIDITY OF AN AVERAGE AGRICULTURAL ENTERPRISE

Liquidity of an enterprise is the ability of the enterprise to stick to its short-term liabilities. To express liquidity we usually use two indicators – the indicator of short-term liquidity and the indicator of quick liquidity (quick test, acid test).

$$\text{Short–term liquidity} = \frac{\text{Current assets}}{\text{Short-term liabilities}}$$

$$\text{Quick liquidity} = \frac{\text{Current assets} - \text{Reserves}}{\text{Short-term liabilities}}$$

Quick liquidity has been changing in production areas since 1996 and in marginal areas since 1997. Before this period, quick liquidity was entirely insufficient. Liquidity index was < 1 which meant that the agricultural enterprises could not perform their obligations

Table 11. Liquidity of an average agricultural enterprise in production and marginal area

Indicator	1998		1999		2000	
	marginal area	production area	marginal area	production area	marginal area	production area
Short-term liquidity	4.65	3.05	3.714	3.009	4.019	3.191
Acid test	1.73	1.08	1.395	1.284	1.582	1.225
Indicator	2001		2002		2003	
	marginal area	production area	marginal area	production area	marginal area	production area
Short-term liquidity	3.915	3.682	3.634	3.368	3.123	3.025
Acid test	1.485	1.412	1.223	1.267	1.057	1.149

Source: Monitoring agricultural enterprises in 2003

Note: Short-term liquidity = current assets/short-term liabilities

Acid test = (current assets – reserves)/short-term liabilities

without arranging loans. In 2003, compared to the year 2002, liquidity in production area dropped from 1.267 to 1.149. In marginal areas, liquidity decrease was from 1.223 in 2002 to 1.057 in 2003 (Table 11). An important factor for securing liquidity is a high share of short-term bank loans.

On the basis of a longer time series, it is possible to presume that the standard value of short-term liquidity in an agricultural enterprise is equal to three. It means that current assets are on the average three times higher than short-term liabilities. A higher value of liquidity means that the enterprise has an excess of current assets; on the other hand, a lower value can bring about shortage of reserves. The mentioned facts give evidence that, despite the negative economic results of agricultural enterprises during the last three years, the enterprises are capable of covering their obligations towards banks.

CONCLUSION

After the disastrous floods in 2002, which had a negative impact on the economic result of many agricultural enterprises, there were spells of drought in 2003, which caused vast damage to plant production. Besides bad weather, the recent years' results have been also impacted by unfavourable economic conditions, mainly the decrease of market prices. These undesirable factors bring about a steady increase in the numbers of enterprises ending at a loss considering their economic result.

In 2003, compared with the previous year, there was a drop of the area covered with cereals and rape but an increase in the area of root crops, fodder crops on arable land and permanent grass cover. In production areas, grain crops yields were higher than in 2002 but the yields of other crops as well as most crops in marginal areas were lower than in 2002. Livestock numbers per an average enterprise in production areas were growing from 1999; on the other hand, they were decreasing every year in marginal areas. Livestock performance is growing at a higher rate in production areas than in marginal ones.

Marginal areas are characterised by a bigger share of agricultural cooperatives and a smaller proportion of joint stock companies. An average enterprise in marginal area has a smaller area of farmland and a smaller degree of the tillage rate. During the last three years, the economic result before tax per 1 ha of farmland in marginal areas was worse than that in production areas. In 2003 the loss incurred in the economic result per 1 ha of farmland in production areas was higher by almost 2% compared to 2002. This loss increased by 89% in marginal areas, which was the biggest drop during the whole period of interest. The volume of outputs grows at a much slower pace in marginal areas when compared with production ones; in 2002 and 2003 there was even a decrease of outputs. Unlike an average enterprise in production area, the enterprise in marginal areas displays almost a monotonous decrease of workforce number, an increase in the area of farmland per worker with growing elevation, and a drop of average annual income per worker.

These facts confirm the continuous transition to desirable extensive management in marginal areas, leading to better quality and more ecological production. On the other hand, extensive management requires higher cost rate and thus also more substantial support from the state. Although it is possible to suppose

that after joining the EU the subsidies will be bigger, their impact under varied production-climatic conditions will be different. Whereas in production areas they will facilitate the development of businesses and competitiveness, in marginal areas the subsidies will be crucial for the existence of the enterprise provided the areas are to be cultivated and if agriculture is supposed to perform non-production functions.

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