

# Economic results of agricultural enterprises in 2009

*Ekonomické výsledky zemědělských podniků v roce 2009*

FRANTIŠEK STŘELEČEK, JANA LOSOSOVÁ, RADEK ZDENĚK

*Department of Accounting and Finances, Faculty of Economics, University of South Bohemia, České Budějovice, Czech Republic*

**Abstract:** Every year, an analysis of economic results of a sample of agricultural enterprises farming in various production and climatic conditions in the territory of the Czech Republic is carried out by applying economic statistical methods. Based on these results, long-term trends of economic results and their influencing factors are defined. This article is based on the analysis of development of economic indicators of a sample of agricultural enterprises in the Czech Republic in the period 2003–2009, divided according to the proportion of the LFA. The year 2009 brought, in comparison with the previous years, a strong deterioration in economic results. In 2009, the economic result was the worst during the whole monitored period. The decrease in the average number of workers together with the increase in labour productivity manifests a long-term tendency. Agricultural subsidies tend also to grow in the long-term even though their growth has been slowing down.

**Key words:** financial analysis, profit/loss, labour productivity, subsidies, LFA, NON LFA

**Abstrakt:** S použitím ekonomicko-statistických metod je prováděna každoročně analýza ekonomických výsledků výběrového souboru zemědělských podniků hospodařících v různých výrobně-klimatických podmínkách na celém území ČR. Na základě této analýzy jsou definovány dlouhodobé tendence hospodářských výsledků a faktory je ovlivňující. Předkládaný článek byl zpracován na základě analýzy vývoje ekonomických ukazatelů výběrového souboru zemědělských podniků v České republice v období 2003–2009, rozdělených podle podílu výměry zemědělské půdy v LFA. Rok 2009 znamenal především výrazné zhoršení ekonomických výsledků proti předchozím letům. Výsledek hospodaření byl v roce 2009 nejhorší za celé sledované období. Dlouhodobější tendenci vykazuje pokles průměrného počtu pracovníků současně se zvyšováním produktivity práce. Stejně tak i podpory do zemědělství dlouhodobě rostou, ale jejich růst se zpomaluje.

**Klíčová slova:** finanční analýza, výsledek hospodaření, produktivita práce, dotace, LFA, NON LFA

After 1990, the share of agriculture in the total GDP has manifested a tendency to decrease, similarly as the development of employment in the sector of agriculture. Gradually, the plant production has prevailed and the extensive types of farming have spread. The numbers of livestock have decreased but the yield has increased. The farm-gate prices show generally a moderate growth but at the same time, they are not stable, which is an obstacle to the development of farming (MZe 2010).

The production in agriculture has shown a significant decrease in 2009 by 18.1% compared with 2008. The main reason was the decrease in prices of cereals, technical crops and milk and the decrease in the production of pigs. The net value added dropped to 20% of the preceding year level. In spite of the important

growth of the volume of production subsidies, this decrease was reflected in the income from agricultural activity, the value of which was 3.2 milliards CZK, the lowest since the CR accession to the EU. This value shows a year-on-year decrease by 68%. All the above mentioned negative trends in Czech agriculture in 2009 are direct consequences of the economic crisis that became apparent already in the second half of 2008 (ČSÚ 2010).

The total value of subsidies has increased compared with 2008 by 16.2%, from which the subsidies into agriculture by 12.1%. This year-on-year change was supported by the higher expenditures from the EU sources (by 5.3 milliards CZK, which is by 25%), accompanied by the Ministry of Agriculture expenditures on the subsidy programs thereof (increase by

---

Supported by the Ministry of Education, Youth and Sports of the Czech Republic (Project No. MSM 6007665806).

26.6%) (Mze 2010). The development of farm-gate prices was very unfavourable in 2009. The farm-gate prices dropped in the year-on-year comparison more severely than the prices of the inputs into agriculture. The prices of plant products dropped to 67.8% and the prices of animal products to 73.3%, which is the greatest decrease recorded since 1993 (ČSÚ 2010).

The share of workers in agriculture in the total employment in the national economy of the Czech Republic was 2.4%, and in the year-on-year period, it decreased by 0.1 points. Agriculture continues to be characterized by negative income disparity and it falls behind the mean of the Czech Republic in the level of the average incomes. This disparity decreased in 2009 to 73.1%. Since the growth of the nominal wages in agriculture was lower than the inflation rate, the real wage decreased (MZe 2010).

## MATERIAL AND METHODS

The sample of the agricultural enterprises contains data since 1996. The chosen file includes agricultural enterprises keeping accounts, which is why the file in majority includes the enterprises of legal persons. The collection includes copies of standard statements – the Balance Sheet as of December 31, the Profit and Loss Statement as of December 31, the Annual Statement on the Harvest of Agricultural Plants, the Statement on the Areas Sowed with Agricultural Plants as of May 31. These data are completed by a questionnaire elaborated by the authors containing further enterprise data on production and farming. Due to the classification according to the LFA (Less Favoured Areas) share, the data of years from 2003 to 2009 were applied in the paper. The present development in a long term series is evaluated by the application of economic-statistical methods, especially by the financial analysis indicators.

Financial analysis was applied for the evaluation of economic situation of enterprises due to the high variability of economic data, hard processing thereof and due to the fact that there are no indicators and theoretic models of prospering firms applicable (Sedláček 2007). One of the conditions of an enterprise to compete successfully in the market is an incessant and exact monitoring and estimation of its economic situation, especially the financial situation. The financial analysis is the most common method to solve this problem since it is a systematic analysis of data received from the enterprise accounting (Kupčák 2005).

Divila (2004), Kopta (2009), Čechura (2010) and others deal with the problems of Czech agriculture.

Investigation based on the analysis of holdings that really went bankrupt revealed that agricultural holdings are in danger due to both the long-term negative profitability and by the steep fluctuation of the profit/loss followed by the negative cash flow from operations and financial insolvency. The permanently low or negative profitability affects especially agricultural holdings in the mountain and sub-mountain regions. The profit/loss of such holdings was negative, but without major fluctuations. The main danger resulted from the inability to renew the long-term assets. Problems with long-term negative profitability were best identified by the owner indices. (Kopta 2009). Donaldson et al. (1995), Beard and Swinbank (2001), Benjamin et al. (2006), Latruffe and Davidova (2007) study the problems of the CAP, direct payments and their impact on farmers in the EU. Offermann et al. (2009) state that direct payments play an important role in the financial viability of organic farms in both Western and Eastern European countries.

Technological inefficiency (the level of technological efficiency of a particular firm is characterised by the relationship between the observed production and some ideal or potential production) is a significant phenomenon in Czech agriculture. The average level of technological efficiency is around 90% for agricultural companies. Considering that technological efficiency is an important determinant of competitiveness of Czech agricultural companies, ways must be found to reduce the waste of resources due to the inefficient use of inputs (Čechura 2010).

For the purposes of comparative analyses, various methods of classification of agricultural enterprises were applied, for example according to the type of production orientation, according to the FADN, based on the the economic category of the standard gross margin. The standard gross margin determines the economic gain of a production unit of plant and animal production (Divila and Sokol 1999). Other classification types are chosen according to the agricultural production areas or according to the legal form of business (Grznár and Szabo 2008). In this paper, the classification according to the share of land situated in the LFA was applied. Štolbová (2007, 2008), Štolbová et al. (2008), Štolbová and Hlavsa (2008) deal with different conditions of farming in the LFA, the criteria of defining the LFA and the differentiation of rates of the LFA compensatory allowances.

In the presented paper, the enterprises are classified into two groups, the enterprises farming in the NON LFA (production area) with the LFA share lower than 50%, and the enterprises farming in the LFA where the share of LFA is 50% and more. In the file divided in the above mentioned manner, different economic indica-

tors are monitored, especially the profit/loss before taxation, from which other indicators are derived, e.g. the profit rate, the structure of the profit/loss and the impact of subsidies on the profit/loss. The structure of revenues, labour productivity, fund efficiency and intensity of agricultural production are the further monitored indicators. The sample covers in average 120 agricultural enterprises. For 2009, we provide results of 112 enterprises, from which 71 farm in the LFA and 41 outside the LFA.

## RESULTS AND DISCUSSION

### Characteristics of the sample of farms

According to the legal form of business, the sample included in 2009 43 joint-stock companies, 52 co-operatives, 16 limited liability companies and one enterprise of natural person. An average LFA enterprise farms in the altitude of 532 m, a NON LFA enterprise in 328 m above the sea level. The average cultivated area of an enterprise covers about 2100 ha of land in the NON LFA and 1600 ha of land in the LFA. The share of arable land is 66% in the LFA and 87% in the NON LFA. The average price of land was in 2009 3.24 CZK/m<sup>2</sup> in the LFA and 8.19 CZK/m<sup>2</sup> in the NON LFA.

The volume of production in an average agricultural enterprise dropped in 2009 to 80% of the volume of production of the previous year and in the LFA, it only reaches to 57% of the production of a NON LFA

enterprise. To this, there corresponds the intensity of agricultural production which, if calculated as the proportion of revenues per 1 ha of agricultural land, reaches in the monitored period in LFA enterprise 77% of the intensity of a NON LFA enterprise. The lower production intensity is linked to the extensive method of farming characterized by lower inputs and often also with significantly lower outputs than in the intensive farming. The intensity of production in the NON LFA increased to 105% and in the LFA, it decreased to 96% compared with 2004. Compared with the preceding year, the production intensity fell to 83% in the NON LFA and to 82% in the LFA (Table 1).

### Development of production indicators

The area of agricultural land was 1765 ha in an average enterprise of the sample in 2009, while the area of an average agricultural enterprise in the NON LFA was 2103 ha and 1570 ha in the LFA. The share of arable land does not change significantly, in the NON LFA it was 87% (an increase by 0.7 point compared to 2003) and 65.8% in the LFA, which is by 1 point less than in 2003. The livestock density dropped in the NON LFA from 34 LU/100 ha of agricultural land (LU stands for Livestock Unit) to 30 LU/100 ha, compared to 2003, which is by 14%. In the LFA, the livestock density in 2003 was 44 LU/100 ha and up to 2009 it increased to 48 LU/100 ha, which is an 8% increase.

The proportion of revenues from plant production increased in an average agricultural enterprise

Table 1. Comparison of the volume of production, intensity of production and profit/loss in the LFA and the NON LFA

	2004	2005	2006	2007	2008	2009	Index 09/04
Volume of production (1000 CZK)							
NON LFA	93 386	98 754	98 548	116 567	128 293	103 133	1.104
LFA	62 153	65124	63 844	72 567	73 489	59 552	0.958
Intensity of production (CZK/ha)							
NON LFA	46 563	50 370	48 399	54 585	59 330	49 050	1.053
LFA	39 414	39 530	41 340	45 827	46 181	37 930	0.962
Profit/loss (CZK/ha)							
NON LFA	2 616	1 771	1 134	4 359	4 554	-620	
LFA	2 423	1 813	1 610	3 697	1 204	-609	
Profit/revenues ratio (%)							
NON LFA	5.6	3.5	2.3	8.0	7.7	-1.3	
LFA	6.1	4.6	3.9	8.1	2.6	-1.6	

Source: Monitoring of agricultural enterprises

compared to 2003 by 4.5 points; on the contrary, the proportion of revenues from animal production dropped by 1.8 points and the proportion of sales from non-agricultural activity dropped by 3.4 points. An average enterprise farming in the NON LFA increased the proportion of revenues from plant production by 13.5 points, the proportion of revenues from animal production dropped by 11.3 points and the proportion from non agricultural activity dropped by 1.4 points.

In the LFA, the share of revenues from non-agricultural production dropped by 4.6 points, the share of plant production slightly grew by 0.5 points and the share from animal production grew by 2.3 points.

The farm-gate prices in the sample increased, compared with 2003, only in meat cattle (by 10%) and slightly in meat pigs (2%). In poultry, the price dropped slightly, and the price of milk dropped significantly (by 20%). In all principal commodities of plant production, the farm-gate prices dropped in comparison with 2003. The price of wheat dropped by 17% in 2009, the price of grain maize by 27%, of rape and sugar beet by 8% and of potatoes by 14% in comparison with 2003. In comparison with 2008, the farm-gate prices (except of a slight increase in meat cattle by 1.6 %) dropped in all principal agricultural commodities. The deepest drop in prices was registered regarding cereals and milk.

### The development of the profit/loss

The profit/loss is a comprehensive indicator of the management of every enterprise. To satisfy

the needs of the analysis properly and in order to maintain the comparativeness, the profit/loss was monitored before taxation, calculated per 1 ha of agricultural land (Figure 1). The profit/loss in this form expresses both the efficiency and economy of the production process and besides the costs, it is importantly influenced by the conditions of realization (Střeleček et al. 2006). The profit/loss in 2009 was the lowest for the whole monitored period and it dropped to the level of 2003. The following graph shows that in 2008, there was a significant difference in the volume of profit between the NON LFA and the LFA, but in 2009 the profit/loss calculated per 1 ha of the utilised agricultural land in both areas was almost the same. In the LFA, there was a loss of 609 CZK/ha of agricultural land and in the NON LFA, the loss was 620 CZK/ha.

One of the significant elements of the evaluation of economic results is the assessment of the efficiency of management, which consists in assessing the distribution of enterprises according to the profit rate. If the distribution of enterprises is flat, then there are in the real economic conditions important reserves in the management of enterprises. On the contrary, a spiky distribution with a low variability implies that the quantitative reserves in management are exhausted and that a change may only be arrived at the influence of the qualitative conditions (Figure 2).

When we compare the distribution of enterprises according to the profit rate, it is then evident that from 2000 to 2003 the number of enterprises incurring loss had been increasing. In 2000, for example, 14.3% of the monitored enterprises incurred loss, while

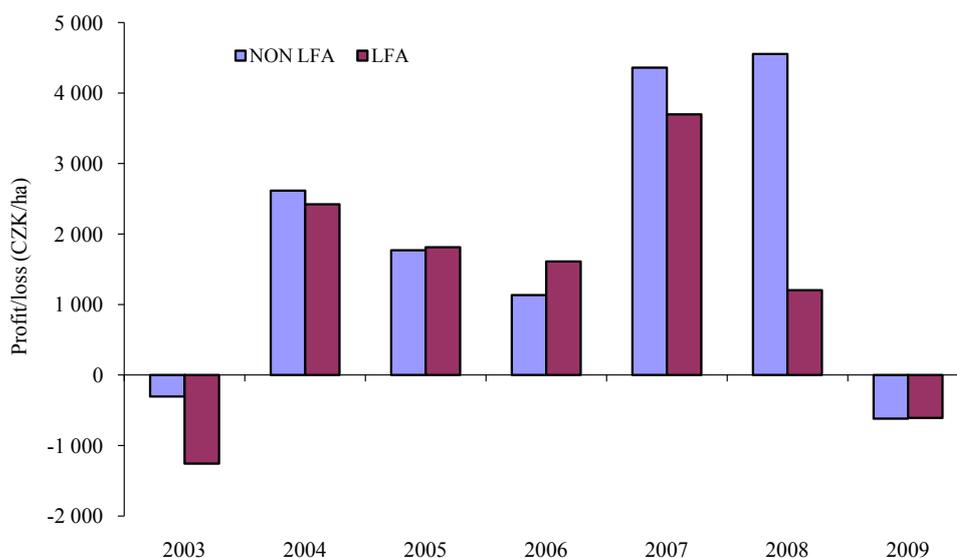


Figure 1. Development of profit/loss

Source: Monitoring of agricultural enterprises

in 2003 it was 57.7%. The exceptionally favourable climatic and economic conditions in 2004 caused a decrease in the number of enterprises incurring loss to 6%. In 2005, an increase to 19% of enterprises in loss follows. 2007 appears the most favourable year during the whole monitored period since only 2 enterprises from 115 incurred loss, which is 1.7%. In 2008, the number of enterprises incurring loss increased to 18% and in 2009, 60 enterprises from 112 incurred loss, which is 53% and this is the second worst result since 2000.

The share of enterprises with a profit higher than 5 million CZK was 10.5% in 2000, in 2003 only 3.4%. In 2004, the share of enterprises the profit of which was more than 5 million CZK increased to 31.5%, in 2005 there was a significant decrease again and in 2007, the number of enterprises having profit above 5 million CZK increased to 47%. In 2008, there was seen another drop in the share of enterprises with a profit above 5 million to 28%, and in 2009 it was only 6%. A general shift of enterprises to a worse result or, on the contrary, to a better economic result indicates the increasing influence of the external factors, especially of prices and climatic conditions.

The profit/loss calculated per one worker expresses the same tendency in the development; in 2006 it was higher in the LFA and it represented 39 958 CZK per worker, which is by 62% more than in the NON LFA, where it represented 24 543 CZK/worker. In 2007, the profit per one worker in the LFA was 95 725 CZK, which is 97% of the profit in the NON

LFA, and in 2008 the difference deepened significantly. In the LFA, the profit was 32 672 CZK/worker, which is only 28.6% of the profit in the NON LFA, 114 422 CZK per worker. The year 2009 registered a loss, which was 16 207 CZK/worker in the NON LFA and 18 213 CZK/worker in the LFA.

Net value added shows the same tendency as the profit/loss. The net value added grew both in the LFA and NON LFA in 2004 and 2007, in the NON LFA furthermore also in 2008. In other periods, a decrease in the net value added was noted.

The most frequently applied indicator of profitability is the profit rate. This indicator measures profit with the total assets. In respect of the development of an enterprise, only positive values are important. A negative profit rate is always inappropriate. The analysis of the profit rate implies that neither the profit of an average enterprise in the NON LFA, nor in the LFA was capable of providing the conditions for an adequate reproduction until 2007. If the lowest acceptable profit rate is considered 4, then during the whole monitored period, an average enterprise in both the NON LFA as well as in the LFA managed to come close to the lowest profit rate required only in 2004 and 2007. A significant difference was marked in the last year of the research, as the profit/loss suggests, the profit rate is negative in both areas (Table 2). To arrive at a 4% profit rate, the economic result of an average enterprise in the NON LFA would have had to be 7.5 million CZK, and in the LFA 5.2 million CZK.

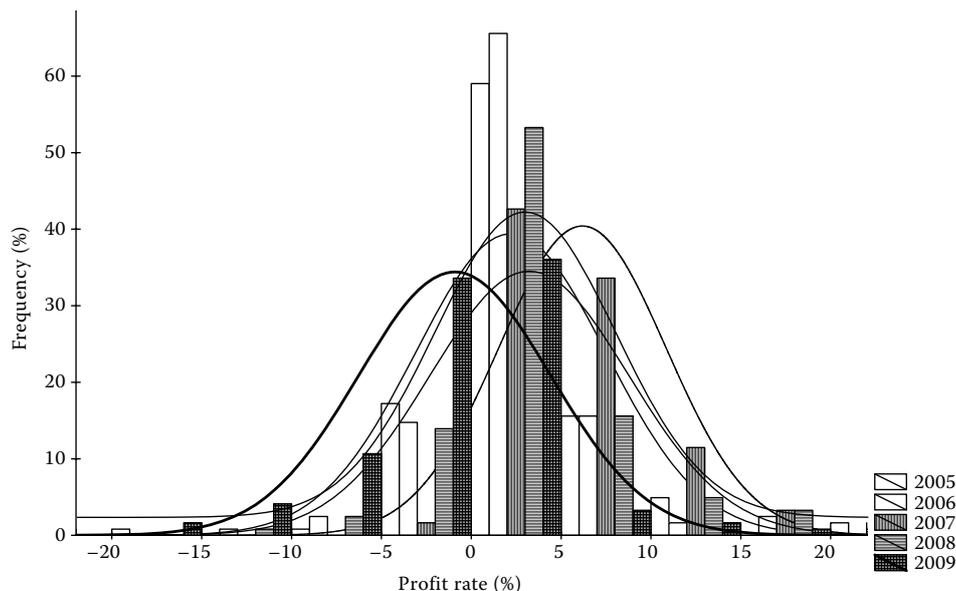


Figure 2. Distribution of enterprises according to the profit rate

Source: Monitoring of agricultural enterprises

Table 2. Development of profit/loss per 1 ha of agricultural land and of the profit rate

	2003	2004	2005	2006	2007	2008	2009
<b>NON LFA</b>							
Total assets (in thousands CZK)	115 702	125 038	137 015	137 010	152517	163 977	154 411
Area of agricultural land (in ha)	2 018	2 006	1 961	2 036	2136	2 162	2 103
Number of workers	102	100	99	94	93	86	80
Profit/loss before tax (thousand CZK)	-615	5 246	3 471	2 308	9309	9 848	-1 303
Net value added (thousand CZK)	15 664	18 769	16 410	12 781	19 579	20 797	7 397
Profit rate (in %)	-0.53	4.20	2.53	1.68	6.10	6.01	-0.84
Profit/ha agricultural land (in CZK)	-305	2 616	1 771	1 134	4359	4 554	-620
Profit/worker (in CZK)	-6031	52 451	35 190	24 543	99694	114 422	-16 208
Required profit under 4% profit rate	4 628	5 002	5 481	5 480	6101	6 559	6 176
Required profit under 6% profit rate	6 942	7 502	8 221	8 221	9151	9 839	9 265
<b>LFA</b>							
Total assets (in thousands CZK)	87 279	89 802	98 833	98 156	108732	110 126	106 059
Area of agricultural land (in ha)	1 668	1 577	1 647	1 544	1583	1 591	1 570
Number of workers	73	66	65	62	61	59	53
Profit/loss before tax (thousand CZK)	-2098	3 821	2 988	2 487	5854	1 916	-957
Net value added (thousand CZK)	7 718	9 767	7 867	5 468	9 663	6 422	584
Profit rate (in %)	-2.40	4.25	3.02	2.53	5.38	1.74	-0.90
Profit/ha agricultural land (in CZK)	-1257	2 423	1 813	1 610	3697	1 204	-609
Profit/worker (in CZK)	-28 787	58 088	46 041	39 958	95725	32 672	-18 214
Required profit under 4% profit rate	3 491	3 592	3 953	3 926	4349	4 405	4 242
Required profit under 6% profit rate	5 237	5 388	5 930	5 889	6524	6 608	6 364

Source: Monitoring of agricultural enterprises

### Activity indicators

Indicators of activity show on one hand the business possibilities, and on the other hand the usage rate of the production capacity of an enterprise. Both these factors have an important impact on the profit/loss. Increasing the volume of production in the profitable production sector implies a proportionate growth of profit; where the profit/revenues ratio is the proportional constant. A higher usage of production capacity causes a decrease in the depreciation costs and other fixed costs items. The consequence of this process is a decrease in the total costs/revenues ratio of production, accelerating the profit growth progressive. On the other hand, a decline in output causes the inertia of costs implying a higher costs/revenues ratio of production (Střeleček et al. 2007). The volume of revenues of an average enterprise in the NON LFA and LFA in 2003–2008 had a growing tendency (Figure 3), a decrease occurred in 2009 in the NON LFA by 19.6% and in the LFA by 19% compared with the preceding year. An average

growth rate since 2003 is 3.3% in the NON LFA, in the LFA the revenues grew more slowly, by 1.8% annually. The same tendency in development alike the revenues were shown by the total assets. In the NON LFA, there was a decrease to 94%, and in the LFA to 96% of the 2008 values. The average rate of growth of the total assets since 2003 was 4.9% in the NON LFA and 3.3% in the LFA.

The turnover ratio of the total assets in enterprises in the LFA is lower compared with the enterprises in the NON LFA. This difference means that the turnover period was longer by 106 days in 2009 (Figure 4). A lower volume of revenues together with a lower turnover ratio is the second important factor of a worse economic situation of the enterprises in the LFA.

Due to the significant decrease in revenues in 2009, the decrease in labour productivity occurred together with a decrease in the average number of workers. In the NON LFA, a decrease of labour productivity by 14% occurred, in the LFA by 10%. Due to the decrease in labour productivity, the number of workers was increased in the NON LFA by 11 and in the LFA by

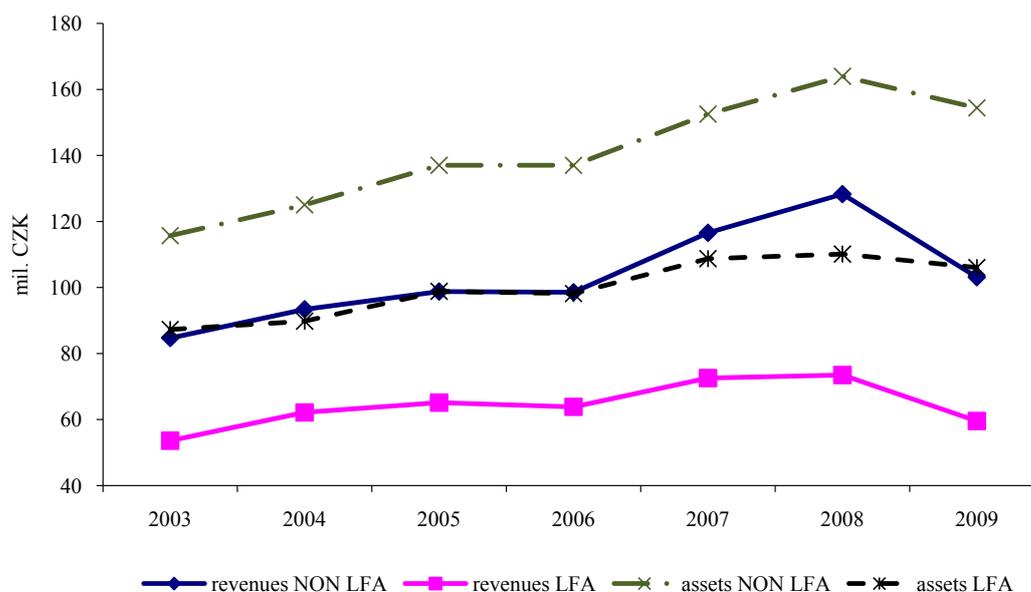


Figure 3. The development of revenues and of the total assets

Source: Monitoring of agricultural enterprises

5 workers. The average growth rate of labour productivity was in both areas 7% (Figure 5).

The average number of workers calculated per 100 ha of agricultural land shows a decreasing tendency and it was 3.8 in the NON LFA and 3.3 workers per 100 ha of agricultural land in the LFA, which is a decrease compared with 2008 by 4% in the NON LFA and by 9% in the LFA. There was no significant difference in the average annual wage per 1 worker in the LFA and in the NON LFA in 2009, it was just slightly higher in the LFA. The average growth rate

in annual wage per 1 worker was 7.5% in the LFA and 6.5% in the NON LFA.

#### Technological development and the costs/revenues ratio

The consequence of reconstruction and modernization of buildings and technologies and of the growing concentration of agricultural enterprises is the growth of the tangible fixed assets. The volume of

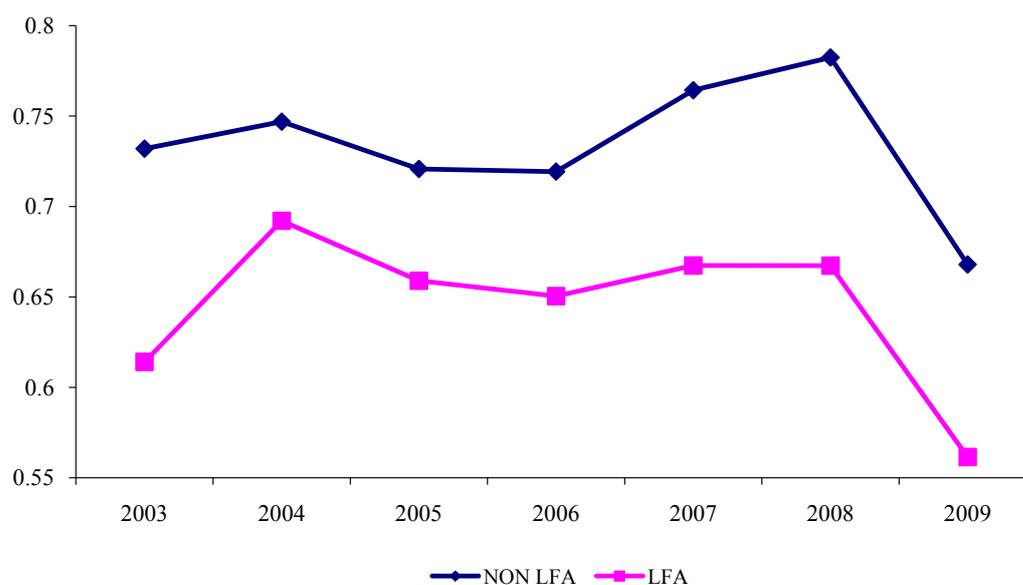


Figure 4. The turnover ratio of the total assets

Source: Monitoring of agricultural enterprises

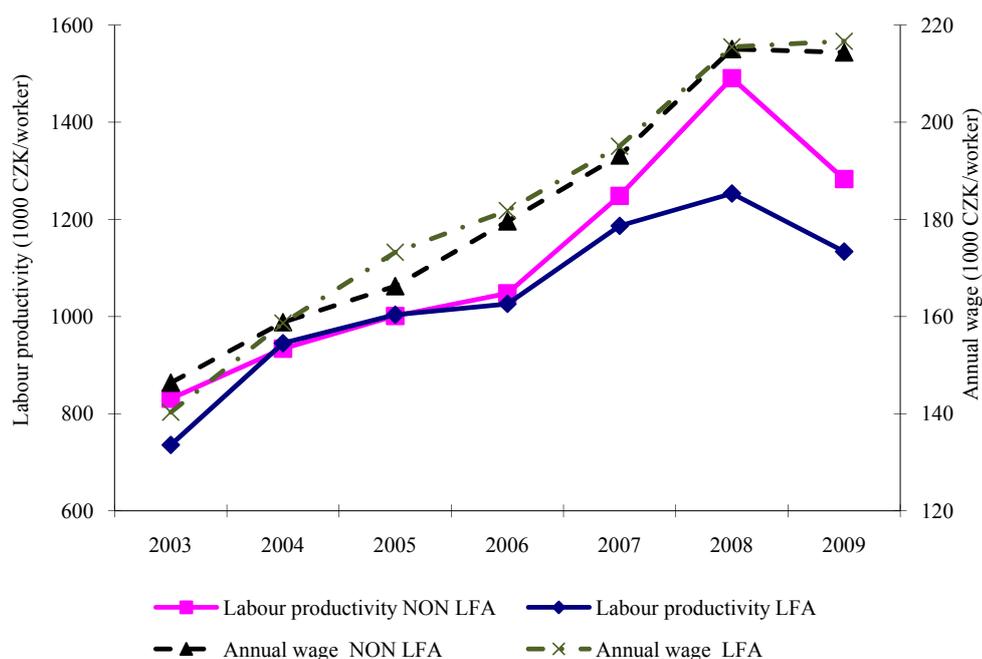


Figure 5. Development of labour productivity and of the average annual wage

Source: Monitoring of agricultural enterprises

the tangible fixed assets of an average agricultural enterprise in the NON LFA grew by 5.6% in average, in the LFA by 4% annually. In 2009, there was a decrease in the tangible fixed assets in both areas. However, a greater decrease occurred in the NON LFA (Figure 6). The relative age of the tangible fixed assets is relatively balanced in both areas. In the NON LFA, 51.5% of property was amortised, in the LFA

51.9%. The dynamics of growth in the technological equipment of work has been faster in both the NON LFA and in the LFA compared with the dynamics of growth of the tangible fixed assets. In the NON LFA as well as in the LFA, the average rate of growth was 10% (Figure 6). The decomposition of the index of technological equipment infers that this index is a quotient of the tangible fixed assets index and of

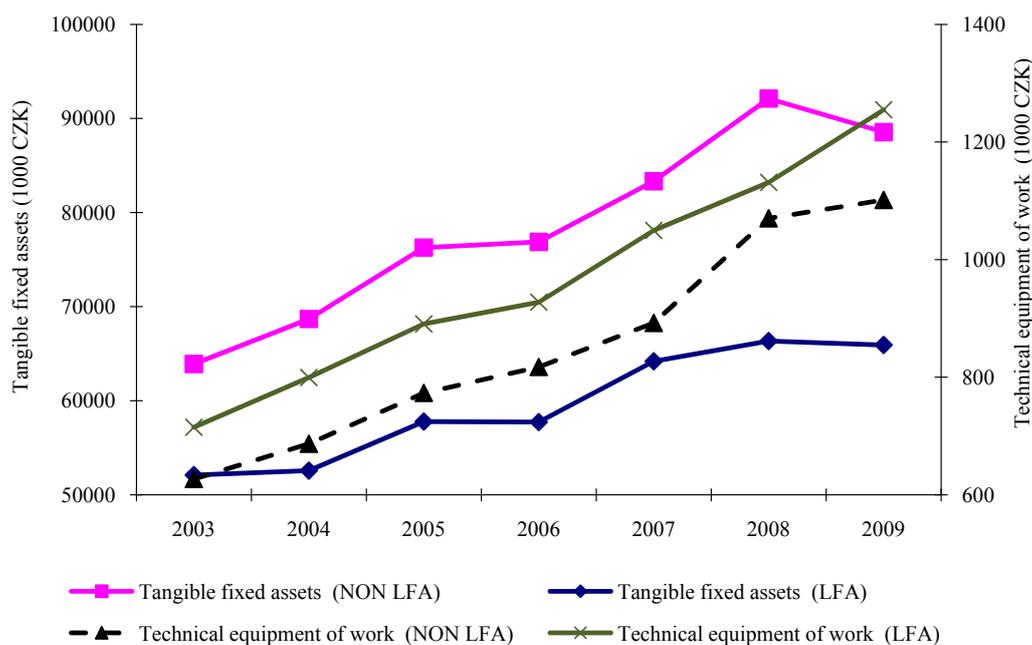


Figure 6. Development of the tangible fixed assets and of the technological equipment of work

Source: Monitoring of agricultural enterprises

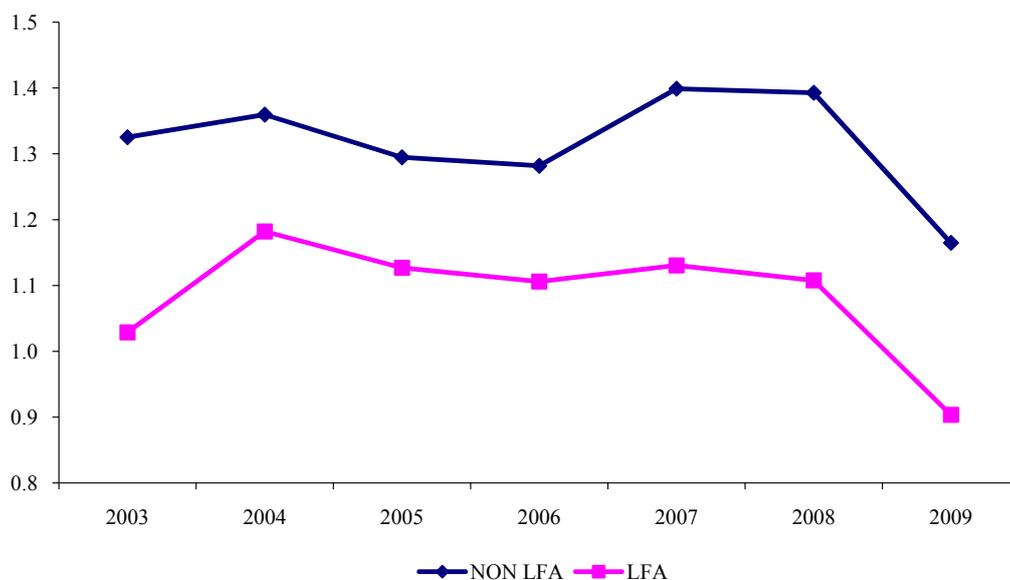


Figure 7. Development of fund efficiency

Source: Monitoring of agricultural enterprises

the index of the average number of workers. If the technological equipment index grows faster than the tangible fixed assets index, then the index of the average number of workers must decrease.

The growth of fund efficiency causes a relative saving of the fixed assets related to the relative saving of depreciations and of other costs. Increasing the turnover ratio of current assets causes the decrease of costs for storing and the manipulation with material. The relative savings of the assets have as a consequence a higher interest yield. The fund efficiency reflects the same tendencies influencing the volume of revenues. In the NON LFA, until 2008 there is no significant development of this indicator recorded. Recorded are only its year-on-year oscillations; the value of this indicator was high and it oscillated between 1.3–1.4 (Figure 7). In 2009, a noticeable change occurred, the indicator value dropped to 1.16. In the LFA, the values of fund efficiency oscillated till 2008 from 1.03 to 1.18. In 2009, a decrease was shown as the value dropped to 0.90. The decrease of fund efficiency in 2009 is a relative overrun of the tangible fixed assets of an average enterprise by 14.5 mil. CZK in the NON LFA and by 12.2 mil. CZK in the LFA.

The evaluation of the type of technological development, i.e. the relationship between the tangible fixed assets and the revenues of an enterprise, has not been studied in the economic theory nor practice sufficiently. The efficiency of investments is assessed usually before the investment project has been carried out and then several years after the investment has started to operate. This assessment aims at evaluation of the investment. The assessment of the type

of the technical development aims at evaluating the proportional development between the development of the volume of the tangible fixed assets, the average number of workers and the volume of revenues (Střeleček et al. 2007).

An average agricultural enterprise in the NON LFA and in the LFA carried out in 2009 an intensive type of technological development connected with a decreasing labour productivity, the relative overrun of the number of workers and with the relative overrun of personal costs. At the same time, an average agricultural enterprise carried out a relative overrun of the tangible fixed assets and a relative overrun of depreciations. The relative overrun of personal costs was 1.5 mil. CZK in an average LFA enterprise and 3.2 mil CZK in an average NON LFA enterprise. The relative overrun of the tangible fixed assets caused the relative overrun of depreciations by 1.57 mil. CZK in an average LFA enterprise and 1.7 mil. CZK in an average NON LFA enterprise. This type of technological development is not advantageous for an enterprise in the terms of economics.

One of the frequent issues of the evaluation of the economics of an enterprise production is to assess whether the increasing of the volume of production is effective from the economic point of view. The degrees of effectiveness of costs can provide some basic information on this topic as they express qualitatively different tendencies in development dependent on the volume of production and costs. These tendencies influence the basic changes in the dynamics of the profit rate, the volume of the profit/loss and the volume of production. The degrees of effectiveness

of costs can be used to evaluate the effectiveness of the development of costs of the whole enterprise, its organization departments, and the individual fields of production (Štrleček et al. 2007).

The development of the costs/revenues ratio has in both the NON LFA and in the LFA a slightly decreasing tendency. An average enterprise in both areas carried out the lowest costs/revenues ratio in 2007. An average enterprise in the NON LFA carried out a decreasing efficiency of cost related to an increase in loss arising from a reduction of production in 2009. Due to the increase of the costs/revenues ratio by 0.09, the costs were relatively exceeded by 9.22 mil. CZK. In the the LFA, an average enterprise carried out the same degree of the costs/revenues ratio as in the NON LFA in 2009. The index of revenues was lower than the index of costs, which caused the relative overrun of costs by 2.51 mil. CZK and an increase in the costs/revenues ratio compared to the preceding year by 0.04. This degree of the cost efficiency is related to the loss.

### Indebtedness and liquidity

The indicators of indebtedness assess the financial structure of an enterprise from the long term view and they act as indicators of the level of risk the enterprise incurs with the given structure of its equity and outside capital. They also indicate the capability of an enterprise to multiply its profit by using the

outside capital. To evaluate indebtedness, several indicators are applied which are derived from the balance sheet. The indicator of the total indebtedness is the proportion of the outside capital in the total assets. In general, the following applies: the higher the indebtedness of an enterprise, the higher risk for its creditors and shareholders. It should, however, be assessed together with the total rate of return the enterprise achieves from the total capital invested, also in relation to the structure of the outside capital. The development of indebtedness of an average agricultural enterprise in the NON LFA has a slightly decreasing tendency by 0.2 points annually, while in the LFA, there is no obvious tendency. In 2009, the value of the total indebtedness in the NON LFA was 38.3% and in the LFA 40.2% (Figure 8).

The liquidity indicators express the ability of an enterprise to cover its liabilities due in the near future promptly. The condition of an enterprise being solvent is locking up a portion of property in the monetary form. An enterprise of full liquidity then must have a sufficient amount of monetary means to cover its liabilities. If this is not the case, the enterprise is only partially solvent or insolvent. The basic indicators are derived from the current assets. The higher is the value of the short- term liquidity, the more favourable is the maintenance of solvency of an enterprise. The value of this indicator should be around 2 to 2.5. A too high liquidity indicates an unproductive locking up of cash money and the disruption of the operational

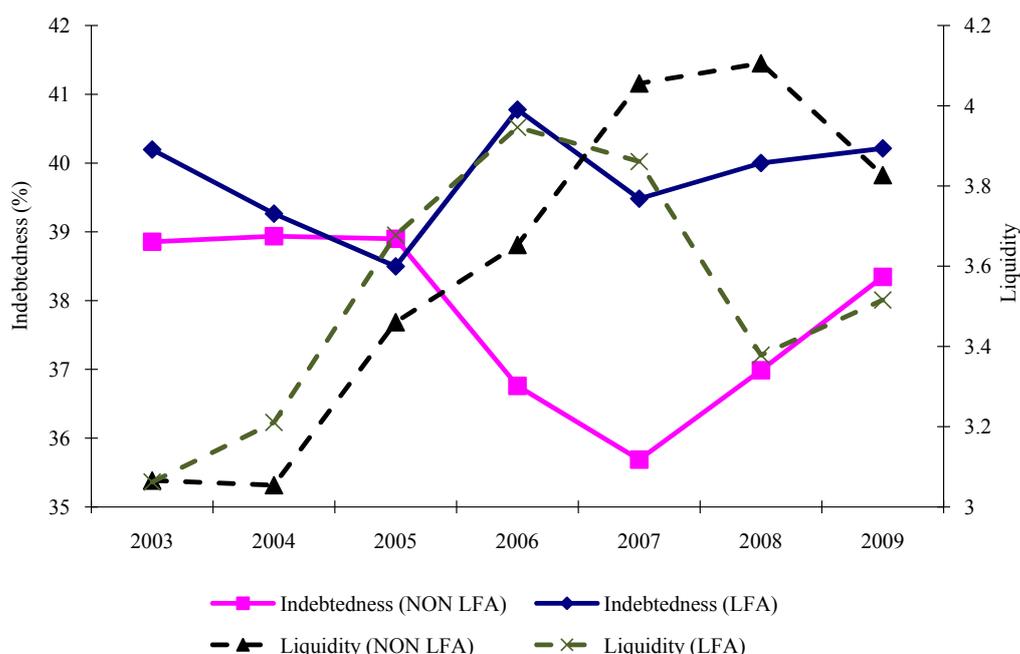


Figure 8. The development of liquidity and indebtedness

Source: Monitoring of agricultural enterprises

Table 3. Values of indicators of an average enterprise

Indicator	2003	2004	2005	2006	2007	2008	2009
Extent of file	141	149	122	127	115	116	112
ROA (%)	-1.21	5.35	3.30	2.27	6.31	4.63	-0.51
Long term profitability (%)	12.73	16.14	16.00	17.69	21.14	24.11	23.21
Value added/input (%)	48.26	51.62	46.14	39.29	48	41.09	29.39
Profitability of output, from cash flow (%)	10.53	20.64	18.88	18.18	24.05	21.14	15.88
Total indebtedness (%)	38.09	37.43	36.62	36.88	35.64	36.56	37.61
Interest coverage	-1.38	7.13	4.85	2.93	7.52	5.17	-0.55
Payback of debt, from cash flow (years)	6.66	3.67	4.05	4.30	2.93	3.1	4.89
Supplies covered by net working capital	0.96	1.07	1.16	1.22	1.29	1.21	1.13
Total liquidity	2.51	2.61	2.80	3.01	3.23	3.09	2.95
Number of points	24	31	31	30	31	31	26

Source: Monitoring of agricultural enterprises

cycle of an enterprise. The short-term liquidity in an average enterprise in the NON LFA and the LFA has an increasing tendency, growing faster in the NON LFA (3.7% annually) than in the LFA (2.3%). In 2009, the value of this indicator was 4.1 in the NON LFA and 3.4 in the LFA.

The period of the operational cycle represents a problem for the short-term liquidity, when supplies must be exchanged into free monetary means. Another indicator, the acid test, excludes supplies from the current assets. A satisfying value is about 1. A low value of this indicator indicates that the enterprise lacks a sufficient amount of free monetary means. Also the acid test value had been growing in the NON LFA in the last years and it appears on the scale 1–2. In 2009, this indicator dropped to 1.63 in the NON LFA. In the LFA, this indicator had a slightly decreasing tendency with the value of 1.36 in 2009.

### Development of financial health of an enterprise

To evaluate financial health, the methodology of the Rural Development Program (SZIF 2010) was ap-

plied. Table 3 shows the development of the individual components of financial health. The value of the ROA indicators and of the interest coverage achieved positive values in the period 2004 to 2008. Due to the loss in 2009, a drop in both indicators from 3 to 1 point occurred. Due to the loss, the cumulated profit/loss from previous periods had to be used, the long term profitability dropped by 0.9 points. The total indebtedness of an average enterprise in the monitored period oscillated within the interval 35–38%. The indicators of supplies covered by the net working capital and the total liquidity achieved favourable values in all years. In all components of financial health, there was seen deterioration compared with the preceding year, an average agricultural enterprise reached the value of financial health of 26 points.

The methodology for calculation of financial health assesses the last three or two, respectively, years with closed accounting. The resulting value to evaluate financial health of an enterprise was the arithmetical mean of the point valuation of the last three or two years, respectively. For this purpose, financial health of 94 enterprises was evaluated for the years 2007 to

Table 4. Distribution of enterprises according to points received

Category	Number of points	Number of enterprises (proportion in %)		
		2007	2008	2009
A	25.01–31	71 (73.2%)	72 (71.3%)	63 (67%)
B	17.01–25	22 (22.7%)	26 (25.7%)	26 (27.7%)
C	15.01–17	0 (0%)	1 (1%)	2 (2.1%)
D	12.51–15	4 (4.1%)	1 (1%)	2 (2.1%)
E	9–12.5	0 (0%)	1 (1%)	1 (1.1%)

Source: Monitoring of agricultural enterprises

2009. Enterprises having healthy finances were put into the categories A, B or C, these were the enterprises that reached more than 15 points. This condition was met by 96.8% of the enterprises (Table 4).

### The influence of subsidies on the profit/loss

The decrease of the difference in the total subsidies paid per 1 ha of agricultural land in the NON LFA and the LFA is typical for the development of subsidies within the monitored period. While in 2004–2005 the subsidies in the LFA were by 30% higher, in the years 2008–2009 this difference was about 10%.

There was marked a strong tendency of growth in the development of subsidies calculated per 1 ha of agricultural land since 2003 (Figure 9). In 2009, an average agricultural enterprise in the NON LFA received subsidies of 8041 CZK/ha of agricultural land, which is 2.9 times more than in 2003. The highest growth compared with the preceding year was marked in 2004 (index 1.78). The average growth rate in 2003–2009 in the NON LFA was higher than in the LFA, and it was 19.4%. Subsidies in the LFA grew more slowly and in 2008 they even decreased by 1% compared to the preceding year. The average growth rate of subsidies in the LFA was 18.8%. Compared to 2003, they increased up to 2009 2.8 times, and in 2009 their value was 8961 CZK/ha of agricultural land. The greatest year-on-year increase of subsidies in the LFA occurred in 2004 when the subsidies in CZK/ha increased 1.98 times compared to the previous year.

Figure 9 shows the strong tendency of growth of subsidies during the monitored period characterized by the equation of regression  $y = 846x + 2926$  in the NON LFA,  $y = 824x + 4078$  in the LFA. The profit/loss had a slightly growing tendency during the monitored period, even though there was registered a loss in 2009, the loss being almost identical in both areas when calculated per 1 ha. In the NON LFA, there occurred a greater drop in the profit/loss, since it had the higher profit during the whole monitored period. In an average enterprise farming in the LFA, a significant drop occurred already in 2008.

Should we compare the structure of subsidies calculated per 1 ha of agricultural land, we would find out that in the case of the SAPS (Single Area Payment Scheme), the payments are almost identical, the minimal differences might have arisen due to the inaccuracies in the area of agricultural land. As for the Top-Up, these payments favoured in 2004–2007 rather the NON LFA (i.e. enterprises disposing of a high share of arable land), to which the authors drew attention in the earlier papers (Střeleček and Lososová 2005; Střeleček et al. 2008). In the last two years, the Top-Up was by 18% higher in the LFA. This change was caused by the fact that up to 2007, the Top-Up payment was paid only for arable land, which handicapped the enterprises disposing of a higher proportion of permanent grassland. In 2008, a change was triggered and the payment was paid for agricultural land. Besides that, in the last two years the Top-Up payments for ruminants and suckler cows have increased, therefore, these pay-

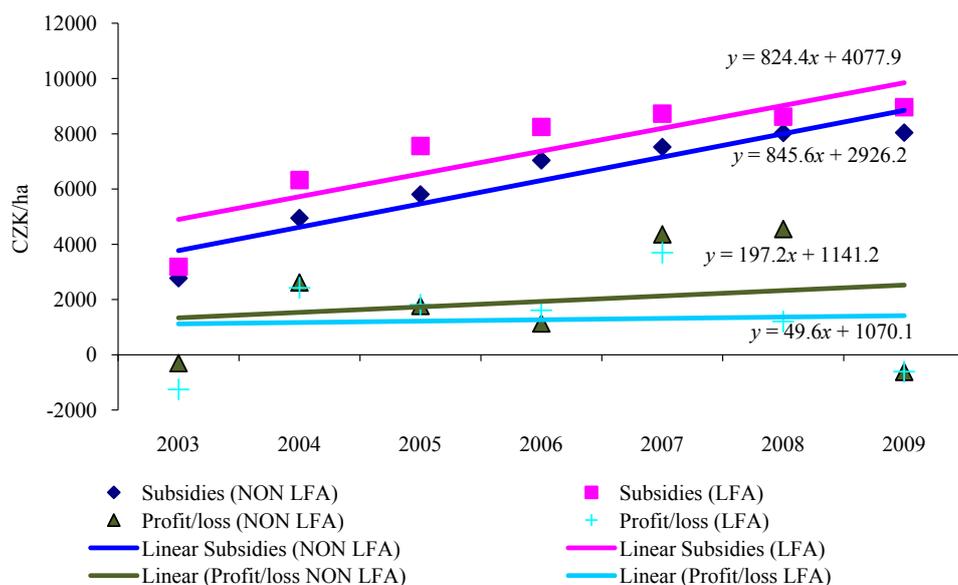


Figure 9. The development of the profit/loss and subsidies

Source: Monitoring of agricultural enterprises

Table 5. Principal subsidies in CZK/ha of agricultural land

	2004	2005	2006	2007	2008	2009	Index 09/04
LFA							
Number of enterprises	78	65	75	65	73	71	
Subsidies total (CZK/ha)	6 327	7 559	8 247	8 729	8 620	8 961	1.42
SAPS (CZK/ha)	1 821	2 115	2 504	2 807	3 085	3 683	2.02
TOP-UP (CZK/ha)	1 541	2 145	2 388	2 422	2 278	2 027	1.32
Other (HRDP, PRV)	2 096	2 184	2 239	2 885	2 194	2 679	1.28
NON LFA							
Number of enterprises	63	57	52	50	43	41	
Subsidies total (CZK/ha)	4 950	5 807	7 037	7 522	8 030	8 041	1.62
SAPS (CZK/ha)	1 807	2 092	2 527	2 776	3 049	3 679	2.04
TOP-UP (CZK/ha)	1 635	2 190	2 333	2 409	1 847	1 674	1.02
Other (HRDP, PRV)	617	731	752	1 092	832	1 439	2.33

Source: Monitoring of agricultural enterprises

ments have grown in the enterprises with a higher livestock density.

The highest differences appeared in the Rural Development Program supports, reaching in the NON LFA to 40% (in 2009 54%) of the payments in the LFA. This was due to the compensatory allowance in the LFA. Other payments, e.g. special payments like the SSP (Separate Sugar Payment), subsidies for vineyards, orchards, subsidies of the breeders' union etc. were much higher in the NON LFA. The total volume of subsidies calculated per 1 ha of agricultural land was in 2009 10% in favour of the LFA (Table 5).

## CONCLUSION

The results of agricultural enterprises during the monitored period reached their top in 2007. After 2004, in majority of economic indicators a favourable development was recorded compared with the years preceding the accession of the Czech Republic to the EU. In 2009, due to the economic crisis, in majority of the monitored economic indicators an important drop occurred. It was especially the great drop in production which caused the worst profit/loss since the accession of the Czech Republic to the EU.

Total revenues calculated per 1 ha of agricultural land showed a growing tendency in both the NON LFA and the LFA. A more important slump occurred only in 2009, by 17% in both areas. The profit/loss before taxation calculated 1 per ha of used agricultural land was almost identical in both areas in 2009. In the LFA, the loss was 609 CZK/ha of agricultural land and in the NON LFA, the loss was 620 CZK/ha.

In 2008, the number of enterprises incurring loss was 18% and in 2009 there were 60 out of 112 enterprises incurring loss, which was 53% and it was the second worst result since 2000. The proportion of enterprises having profit higher than 5 million CZK was 28% in 2008, and in 2009, only 6% of enterprises reached that profit.

The average number of workers calculated per 100 ha of agricultural land decreased during the monitored period by 5% in average in the NON LFA and by 4% in the LFA and was related to the growing labour productivity up to 2008. In 2009, due to the slump in production, the labour productivity dropped by 14% in the NON LFA and by 10% in the LFA compared with the previous year.

The development of indebtedness showed a positive decreasing tendency since 2003 but it has been growing in both areas since 2008, the growth being faster in the NON LFA. Also the value of liquidity had been developing positively till 2007 but in the last two years, it has been decreasing. Due to the impact of the loss, the cumulated profit/loss of the preceding periods was used – the long-term profitability dropped by 0.9 points. In all components of financial health, impairment occurred compared with the preceding year. An average agricultural enterprise reached the value of financial health of 26 points.

An important limiting factor of the competitiveness of agricultural enterprises in the Czech Republic still are the non equal conditions in the subsidies into agriculture compared with the EU 15 countries. Although the growth rate of subsidies has been slowing down since 2004, their share in the revenues has been growing. In 2009, a growth of this indicator was

recorded in both areas, which, however, was more influenced by the decrease in production than by the growth in subsidies. In 2009, subsidies increased in an average NON LFA enterprise only by 0.1% compared with the preceding year and reached the value of 8041 CZK/ha of agricultural land; in the LFA, the subsidies increased by 4% and reached the value of 8961 CZK/ha. The tendencies in development of the principal economic indicators of the enterprises farming in the LFA and outside of the LFA are very similar, the subsidies calculated per 1 ha of agricultural land are in general balanced, which means that the subsidies in the LFA are in the course of not fulfilling their function of balancing the worse conditions for farming in the LFA.

During the monitored period, a general shift of enterprises towards a worse or better economic result has been apparent, which indicates the growing impact of the external factors. As the analyses of the development of economic results of agricultural enterprises have shown besides the influence of subsidies and climatic conditions, a very important factor having impact on profitability of agricultural enterprises is the development of the farm-gate prices.

The problem of stagnation of the farm-gate prices under the fast increase of the general price level in the Czech economy has been pointed to by agricultural unions, in the research papers it was Seják and Zavíral (2007), for example. They warned that the unprofitable agricultural production cannot be maintained by the means of increasing subsidies, but it is necessary to correct the institutional conditions in the production verticals (agri-food chains) in a fundamental manner.

## Acknowledgements

This study was supported by the grant No. MSM 6007665806 from the Ministry of Education, Youth and Sports of the Czech Republic "Sustainable methods of agricultural management in montane and submontane areas with respect to harmonization of the production and nonproduction spheres".

## REFERENCES

- Beard N., Swinbank A. (2001): Decoupled payments to facilitate CAP reform. *Food Policy*, 26: 121–145.
- Benjamin C., Le Roux Y., Phimister E. (2006): Direct payments versus interest rate subsidies to new farmers: a simulation analysis of alternative farm set-up policies in France. *Land Use Policy*, 23: 311–322.
- Čechura L. (2010): Estimation of technical efficiency in Czech agriculture with respect to firm heterogeneity. *Agricultural Economics – Czech*, 56:183–191.
- ČSÚ (2010): Economic accounts for agriculture – preliminary results for 2009. Czech Statistical Office [on-line]. Available at <http://www.czso.cz/csu/2010edicniplan.nsf/p/2115-10> (accessed 2010-09-13).
- Divila E. (2004): Transor amation debt of agricultural enterprises in the Czech Republic. *Politická ekonomie*, 52: 637–655.
- Divila E., Sokol Z. (1999): Problémy klasifikace a třídění zemědělských podniků. *Agricultural Economics – Czech*, 45: 459–466.
- Donaldson A.B., Flichman G., Webster J.P.G. (1995): Integrating agronomic and economic models for policy analysis at the farm level: the impact of CAP reform in two European regions. *Agricultural Systems*, 48: 163–178.
- Grznár M., Szabo L. (2008): Prosperity factors of agricultural companies in the SR in the LFA after the EU integration. *Agricultural Economics – Czech*, 54: 461–466.
- Kopta D. (2009): Possibilities of financial health indicators used for prediction of future development of agricultural enterprises. *Agricultural Economics – Czech*, 55: 111–125.
- Kupčák V. (2005): Elementary financial analysis of the forests of the Czech Republic, state enterprise. *Journal of Forest Science*, 51: 127–140.
- Latruffe L., Davidova S. (2007): Common Agricultural Policy direct payments and distributional conflicts over rented land within corporate farms in the New Member States. *Land Use Policy*, 24: 451–457.
- MZe (2010a): Vize českého zemědělství po roce 2010 (Vision of Czech agriculture after 2010). Ministry of Agriculture of the Czech Republic [on-line]. Available at <http://eagri.cz/public/web/file/56419/> (accessed 2010-10-01).
- MZe (2010b): Zemědělství 2009 (Agriculture 2009). Ministry of Agriculture of the Czech Republic [on-line]. Available at <http://eagri.cz/public/web/mze/zemedelstvi/publikace-a-dokumenty/publikace-zemedelstvi/> (accessed 2010-09-13).
- Offermann F., Nieberg H., Zander K. (2009): Dependency of organic farms on direct payments in selected EU member states: Today and tomorrow. *Food Policy*, 34: 273–279.
- Sedláček J. (2007): Finanční analýza podniku (Financial Analysis). 1<sup>st</sup> ed. Computer Press, Brno; ISBN 978-80-251-1830-6.
- Seják J., Zavíral J. (2007): Growing inequalities in added-value distribution in the Czech agri-food chains. *Agricultural Economics – Czech*, 53: 235–245.
- SZIF (2010): Metodika výpočtu finančního zdraví (Methodology of calculation the financial health). The State Agricultural Intervention Fund [on-line]. Available at <http://www.szif.cz> (accessed 2010-09-10).

- Štolbová M. (2007): Comparative analysis of less-favoured areas payments in the EU states. *Agricultural Economics – Czech*, 53: 455–465.
- Štolbová M. (2008): Eligibility criteria for less-favoured areas payments in the EU countries and the position of the Czech Republic. *Agricultural Economics – Czech*, 54: 166–175.
- Štolbová M., Hlavsa T. (2008): The impact of the LFA payments on the FADN farms in the Czech Republic. *Agricultural Economics – Czech*, 54: 489–497.
- Štolbová M., Hlavsa T., Maur P. (2008): Impact of LFA payments on economics results of farms and proposal on rates differentiation. Study No. 89, VÚZE, Praha; ISBN 978-80-86671-50-5.
- Střeleček F., Lososová J. (2005): Economic impact of several variants of additional direct payments for 2005 and 2006 years on the Czech economy. *Agricultural Economics – Czech*, 51 (3): 93–111.
- Střeleček F., Lososová J., Zdeněk R. (2006): Results of Agricultural Enterprises Management in 2004. *Agricultural Economics – Czech*, 52: 31–44.
- Střeleček F., Lososová J., Zdeněk R. (2007): Economic results of agricultural enterprises in 2005. *Agricultural Economics – Czech*, 53: 201–216.
- Střeleček F., Lososová J., Zdeněk R. (2008): Economic results of agricultural holdings in less favoured areas. *Agricultural Economics – Czech*, 54: 510–520.

Arrived on 6<sup>th</sup> December 2010

---

*Contact address:*

František Střeleček, Jana Lososová, Radek Zdeněk, University of South Bohemia in České Budějovice, Studentská 13, 370 05 České Budějovice, Czech Republic  
e-mail: strelec@ef.jcu.cz; lososova@ef.jcu.cz; zdenek@ef.jcu.cz

---