Determinants of economic results of the selected agricultural enterprises in mountain and sub-mountain areas in South Bohemia

Determinanty výsledků hospodaření vybraných zemědělských subjektů v horských a podhorských oblastech Jihočeského kraje

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Abstract: The evaluation of conditions for farming of agricultural enterprises in sub-mountain and mountain areas of South Bohemia results from the analyses of material and physical indicators and characteristics. The analyses of farmland fund and its exploitation, plant and animal structure and physical results converted into money enable to identify and assess the state and development of relations which affect the economic results of these agricultural enterprises.

Key words: farming, mountain and sub-mountain areas, determinants, production factors, production structure

Abstrakt: Hodnocení podmínek a předpokladů hospodaření zemědělských subjektů v horských a podhorských oblastech Jihočeského kraje vychází z analýzy věcných naturálních ukazatelů a charakteristik. Analýza půdního fondu a jeho využití, struktury rostlinné a živočišné výroby, naturálních výsledků v kontextu úrovně zpeněžování umožňují identifikovat a posoudit stav a vývoj vztahů a vazeb mezi některými faktory, ovlivňujícími výsledek hospodaření těchto podnikatelských subjektů.

Klíčová slova: hospodaření, horské a podhorské oblasti, determinanty, výrobní faktory, výrobní struktura

INTRODUCTION

The position and perspectives of each enterprise are based on mutual effect of internal and external factors. It obviously concerns also agricultural enterprises, in some areas even more significantly. Agricultural enterprises can more or less affect the size, the structure of the farmland fund, the rate of arable land and the extension and structure of plant and animal production. The area where the enterprise farms in cooperation with natural conditions as well as market influence cannot be affected at all.

Research in this field as a part of rural research is supposed to be an investment into future as it offers help in rural development although it cannot be considered a panacea (Wytrzens 1999).

The process of transformation has changed the enterprise structure in agriculture. The number of enterprises of natural persons and the number of business companies has risen while the number of agricultural cooperatives has gone down.

Next changes concerned labour. In spite of fewer workers, labour productivity has risen in both the Czech Republic and the Slovak Republic (Gozora 2002).

There are many obstacles in production as a result of activities of agricultural enterprises in small domestic economy which, incidentally, is a very open economy (Mühlbauer et al. 2002, Gallová 2003). It has resulted in a smaller number of agricultural and food commodities in the foreign trade of the Czech Republic. To change this state runs over the prospective of agricultural enterprises, e.g. in context of the research of foreign markets (Pucskov, Szelenyi 2002).

One of the starting points of restructuring of agriculture or individual agricultural enterprises can

This report is a framework of project MSM 122200002.

be the existing differences in facilities of the particular enterprises and in the way and intensity of use of disposable income. For example, in the Slovak Republic, four groups of districts, based on the facility of production factors in agriculture, have been set up on the basis of different enterprise strategies (Kozelová 2002).

MATERIAL AND METHODS

The database for correlating physical and material characteristics to economic results was obtained from the selective questionnaire enquiry. Twenty-five enterprises from the districts of Český Krumlov (10), Prachatice (8) and České Budějovice (7) were asked to participate. Considering the legal form, agricultural cooperatives participated with 60%, the rest of 40% were business companies – limited companies (28%) and joint stock companies (12%). Not all the returned forms were analysed as they were incomplete or contained unreliable data. At the end, only enterprises farming in the mountain and some other areas became the subjects of the enquiry. It represents 11.07% of farmland in the district of Český Krumlov, 9.90% of farmland in the district of Prachatice and 6.34% of farmland in the district of České Budějovice. These districts, together with the other districts in South Bohemia, belong to those with less favoured conditions.

This report tries, within the financial analysis frame, to identify and assess relations among some factors which affect farming. The most significant relations among the following characteristics were observed within the years 1999–2001: material and physical indicators and characteristics of enterprises in mountain and sub-mountain areas in South Bohemia, the structure of farmland and areas under crops, per hectare yield, intensity of breeding farm animals, intensity of milk production including converting significant agricultural products into money, labour productivity.

RESULTS AND DISCUSSION

Concerning the land fund of the observed enterprises, the main part is leased and is situated at the average altitude of almost 600 meters. Non-agricultural land makes only a fraction of the total farmland fund and its share has dropped from 3.5% to 2%. Out of it, the main part is other land – almost 80%, forest land 16% and waters 4% (Table 1).

The structure of farmland is typical for natural conditions in which the observed enterprises farm. It is characterized by lower percentage of arable land. In 2001, compared to farmland fund of the Czech Republic, it was almost by 23% lower and, on the contrary, the share of meadows and pastures was more two times higher (Table 2).

Within the two year period, especially in 2000, the rate of arable land dropped rapidly while the share of meadows and pastures rose, this demonstrates decreasing intensity of the use of farmland fund in the observed enterprises. The structure of farm land in the Czech Republic has also changed though the change is not so obvious. The rate of arable land dropped by 0.4% and the share of permanent grassland rose by 0.4% with no changes in agricultural cultures, orchards and gardens, vineyards and hop-gardens.

This situation is reflected in objectives of agrarian policy through different grants and subsidies. The amount of grants used for improving relations between agriculture on one side and environment and landscape on the other reached 2 188 mil. CZK in 1995–1999 (i.e. 1.7% of all grants), 3 853 mil. CZK in 2000 (21.6%) and 3 769 mil. CZK in 2001 (18%) (Zpráva o stavu zemědělství 1999, 2000, 2001). These grants belong to those mostly used by agricultural enterprises farming in mountain and sub-mountain areas.

In relation to particular grants, in 1999 4 329.465 thousand CZK were spent on landscape conservation under the Regulation 24/1999; in 2000 it was 3 679.115 thousand CZK on LFA, non-production functions and

Table 1. Structure of land fund in enterprises observed (in %)

Indicator	1999	2000	2001
Farmland	96.45	97.26	97.93
Non-agricultural land	3.55	2.74	2.07
Total land fund	100.00	100.00	100.00

Source: Own calculation

Table 2. Structure of farmland in enterprises observed (in %)

Culture	1999	2000	2001
Arable land	55.45	48.09	48.91
Meadows	37.95	39.11	38.68
Pastures	6.52	12.38	12.01
Orchards and gardens	0.08	0.42	0.40
Total farmland	100.00	100.00	100.00

Source: Own calculation

landscape under the Regulation 344/1999 and in 2001 2 867.683 thousand CZK on the same items, the Regulation 505/2000 (Zpráva o stavu zemědělství 1999, 2000, 2001).

Table 3. Structure of areas under crop in enterprises observed (in %)

Crop plants	1999	2000	2001
Total cereal plants	44.70	43.07	44.52
winter wheat	20.26	18.47	20.18
rye + triticale	4.37	3.50	4.69
winter barley	6.07	4.14	4.51
spring barley	11.65	13.80	12.34
oats	2.35	2.83	2.56
Rape	12.47	8.04	8.42
Poppy	2.05	0.34	0.00
Pea	0.59	0.60	0.00
Potatoes	0.50	0.57	0.48
Annual forage crops	10.42	13.95	14.40
Perennial forage crops	27.53	33.05	31.60
Other crops	1.74	0.38	0.58
Total areas under crops	100.00	100.00	100.00

Source: Own calculation

Table 4. Per hectare yields in enterprises observed (in tons)

Crops	1999	2000	2001
Winter wheat	4.05	3.93	4.15
Rye + triticale	3.55	3.64	4.04
Winter barley	3.45	3.75	3.66
Spring barley	3.35	3.25	3.28
Oats	3.79	3.32	3.69
Rape	2.84	2.66	2.81
Poppy	0.55	0.15	–
Pea	3.41	2.11	–
Potatoes	21.44	19.06	16.52
Annual forage crops	30.71	29.68	29.76
Perennial forage crops (hay)	5.93	4.97	4.68
Meadows	3.48	3.63	3.63
Pastures	2.66	2.30	2.35

Source: Own calculation

For areas under crop, observing the structure (Table 3), a stable share of cereal plants is typical (43–45%), with 18–20% of winter wheat and 12–14% of spring barley. The next largest group of crops are forage crops, the share of which on arable land rose from 38% in 1999 up to 46% in 2001 (30% out of it are annual forage crops, mainly maize for silage and 70% are perennial crops grown on arable land). So forage crops on arable land together with meadows and pastures occupied more than 73% of the total acreage of farmland in 2001.

Rape is a significant cash crop in these conditions, even if the percentage of rape in arable land dropped from 12.5% to 8.05%. Poppy, grown just in two observed enterprises, was quite a profitable crop. However, these enterprises stopped growing it because of the well-known problems connected with protection of these areas. Potatoes are grown only in some enterprises on small areas and are mostly grown for the farmer's personal consumption.

Intensity of plant production is characterized by per hectare yields (Table 4). Crop yields in all observed enterprises are quite stable. Compared with the republic average, the yields are lower in main grown crops, i.e. winter wheat and spring barley; on the other hand, the yields of oats are higher. Comparable results are achieved by growing rape. Better results were achieved in annual forage crops while perennial forage crops indicated significantly dropping yields. Higher yields were achieved in permanent pastures and meadows which occupy more than 50% of farmland fund in the observed enterprises. Rising number of all forage crops and achieved yields seem to be a base for successful breeding of farm animals.

Cattle rate in the observed enterprises is quite stable; it is about 60 head per 100 hectares of farmland with a slight increase of milk cows (about 1.5 head). The share between milk and suckler cows changed a little in the two-year period (1999–2001), compared in percentage the share of suckler cows rose from 15.5% to 18.5%. In observed enterprise, suckler cows are bred in 73% of them, but the mutual rate of milk and suckler cows is very different in particular enterprises. In one of the enterprises, suckler cows represents almost two thirds of the total number of cows.

While cattle is bred in all observed enterprises and makes a base of animal production, pigs are bred in only 55% of the observed enterprises (Table 5). To mention other farm animals, one enterprise breeds a small number of sheep and one enterprise carried on broilers fattening in 1999 and 2000.

Market production of milk per 1 milk cow looks positive in its development; it increased from 3 972 litres to 4 466 litres in the period of 1999–2001, i.e. by

Table 5. Intensity of breeding farm animals in enterprises observed (in heads)

Farm animals	1999	2000	2001
Total cattle/100 ha of agr. land	59.50	60.58	60.50
cows	25.95	27.66	27.41
milk cows	21.93	22.30	22.36
suckler cows	4.02	5.36	5.05
Total pigs/100 ha of arable land	98.73	111.02	98.84
sows	12.90	15.46	15.47

Source: Own calculation

Table 6. Intensity of milk production in enterprises observed (in litres)

Indicator	1999	2000	2001
Market production of milk per cow	3 972	4 299	4 466
Market production of milk per hectare of agr. land	871	959	999

Source: Own calculation

Table 7. Average selling price of agricultural products in enterprises observed (in CZK/1 t)

Agricultural product	1999	2000	2001
Bread wheat	3 696	3 491	4 130
Feed wheat	2 503	2 754	3 152
Malting barley	2 280	–	3 499
Feed barley	1 967	2 628	3 475
Feed rye + triticale	2 305	3 055	3 363
Rape	5 292	5 663	6 180
Milk (in CZK/l)	6.93	7.41	7.81

Source: Own calculation

500 litres. Rising milk efficiency at the stable number of cows was the decisive factor in the increase of market production of milk per hectare of farmland, by 128 litres (Table 6).

However, the positive development of the average market production of milk per milk cow and per hectare of farmland does not reflect significant differences among the particular observed enterprises. In 2001 market production of milk per milk cow ranged from 1 744 litres to 5 957 litres at the average of 4 466 litres and per hectare of farmland was between 233–1 987 litres at the average of 999 litres.

Comparing intensity of milk production in the observed enterprises with the average of the Czech Republic, the following conclusion can be drawn. The observed enterprises presented a considerably higher and quite stable number of milk cows per 100 hectare of farmland while the number of milk cows per 100 hectare of farmland within the Czech agriculture was dropping permanently. Market production of milk per milk cow was increasing in both cases; however, in the observed enterprises it was lower by 600 litres in 1999 and 2000 and by 800 litres in 2001. Differences in the number of milk cows and its development and different amount of market production of milk per milk cow reflects in market production of milk per hectare of farmland. In the observed enterprises, a higher market production of milk per hectare of farmland is affected by higher number of milk cows and its positive development by rising efficiency. On the contrary, in agriculture rising as a whole, milk efficiency is compensated by dropping number of milk cows. In the observed enterprises market production of milk per hectare of farmland achieved almost 1 000 litres, in agriculture as a whole it was about 700 litres.

Looking at it from the economic point of view, it is not important only to produce a certain amount of agricultural production, as the actual conversion affected by the quality of sold products usually decides about the final economic results (Table 7).

The development of average selling prices of all significant market plant products in the observed enterprises was positive. The share of milling wheat in the total amount of wheat changed during the years (24.2%, 45.6% and 19.6%). The share of malting barley was significantly lower – 6.2%, 0%, and 16.1%.

Milk was the essential animal product in the set conditions, not only regarding its highest and rising share in sales from animal production (the share of sales from milk rose from 69.5% to 76.5%) but also regarding the fact that sales from milk represent regular financial income during the whole year. Average selling prices of milk developed positively though there are big differences in converting milk production into money in the particular enterprises, even concerning one buyer. For example, in 2001 the selling price in particular enterprises ranged from 6.45 CZK to 8.22 CZK at the average price of milk 7.81 CZK per litre. So we can find reserves in quality of milk in some enterprises as each heller more can count for a sizeable financial income at the set amount of milk.

Comparing average selling prices of agricultural products in the observed enterprises with the agri-

culture of the Czech Republic at the clear positive development in both cases, it is obvious that the observed enterprises achieved better results in converting bread wheat and feed barley into money but worse results in feed wheat, malting barley and rape. This process got worse especially at rape, in the last year of the set period its selling price was by 10% lower than the average in the Czech agriculture.

What can be seen as a positive feature in selling prices of milk is the fact that their growth was quicker than the republic average so they could be comparable in 2001.

Labour productivity is another characteristic of agricultural enterprises. Productivity level and development can be presented as the acreage of farmland per worker. Within the observed period the number of workers went down by 8.3% which changed the acreage of farmland per man significantly but again differently in the particular enterprises. In 2001, this rate ranged in the particular enterprises between 13.97 ha and 66.83 ha at the average acreage per worker of 27.03 ha.

Decrease of labour in agriculture of the Czech Republic was quicker, almost 13%. The acreage of cultivated farmland per worker (the average number of individuals was considered) was only 23.04 ha in 2001. Much lower intensity of use of farmland, lower percentage of cultivated land in mountain and submountain areas compared to the republic average results in larger acreage per worker. On the contrary, worse opportunities for people in mountain and submountain areas to find another job affect the fact that the decrease in the observed enterprises was only 8.3% in the given period.

The analysis of level and development of physical indicators and characteristics in the chosen enterprises in mountain and sub-mountain areas of South Bohemia pointed at more extensive ways of farming in these conditions, at decreasing intensity of use of farmland and animal production focused on cattle breeding with rising number of suckler cows. It adversely affected the economy of enterprises in these less favoured areas and their worse financial stability. Agricultural enterprises, especially in mountain and sub-mountain areas, have their irreplaceable role in non-production activities in landscape.

A systematic policy is necessary for Czech agriculture and its higher competitive strength (Střeleček et al. 2003) supporting mainly development of agriculture focused on extensive production, landscape preservation and other ecological activities. The economic result is considerably affected by the price of land. With rising price of land, the loss per hectare drops. The connection between equation describing this relation and the price of land (Střeleček et al. 1997) should be the objective base for grants and subsidies to compensate more difficult production conditions.

Respecting the facts mentioned above could positively affect also socio-economic aspects of agriculture (Leitmanová 1999).

CONCLUSION

Findings about structure of agricultural enterprises, not only in mountain and sub-mountain areas of South Bohemia, its state and development together with economic results should become a starting point for setting strategic aims.

If the only way how to solve problems of agricultural enterprises is restructuring, then it should be connected with searching for structure of forces which affect the enterprise and for demands of processing industries to create and launch competitive advantages.

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Arrived on 28th April 2004

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