

Economic efficiency of agricultural enterprises and its evaluation

Ekonomická efektivnost zemědělských podniků a její hodnocení

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Abstract: Agriculture as a sector of national economy shows a permanent loss (except the year 1995 and 2000). The investment volume and number of workers decreases. The necessary resources for businesses development are not created at the general level. Introducing of new technologies for restructuring appears as problematic from this point of view. The stated results of the sector of agriculture stem from the average data of the monitored set of enterprises collected by the RIAE. Evaluation objectivity of the agricultural enterprises economic results is influenced by the quality of the database and of the used evaluation method. In the contribution, the method of the financial analysis indices, economic normal and the indicators of the enterprise financial situation prediction were utilised for evaluation. For the analysis, own set of monitored enterprises is used and also its comparison with the selected results of the RIAE.

Key words: value added, business, economic normal, profit, loss

Abstrakt: Zemědělství jako sektor národního hospodářství vykazuje trvale ztrátu (kromě roku 1995). Dochází k poklesu objemu investic, snižuje se počet pracovníků. Potřebné zdroje pro rozvoj podniků se v obecné rovině nevytváří. Zavádění nových technologií pro potřebnou restrukturalizaci se z tohoto pohledu jeví jako problematické. Přesto zemědělské podniky existují a měly by dále existovat. Vykazované výsledky zemědělských podniků VŮZE vychází z průměrných hodnot sledovaného souboru. Při porovnání v delší časové řadě lze upozornit na nepřesnosti v návaznosti údajů jednotlivých let. Cílem příspěvku je najít objektivní hodnocení ekonomických výsledků zemědělských podniků a vymezení faktorů, které tyto výsledky nejvíce ovlivňují. Pro hodnocení jsou použity poměrové ukazatele finanční analýzy, ekonomický normál a ukazatele predikce finanční situace podniku. Pro rozborovou činnost je využit vlastní soubor sledovaných podniků a jeho srovnání s vybranými vykazovanými výsledky VŮZE.

Klíčová slova: přidaná hodnota, podnik, ekonomický normál, zisk, ztráta

INTRODUCTION

Agriculture as a sector of national economy shows a permanent loss (except the year 1995 and 2000). The volume of investment has declined, as well as the number of workers. The necessary resources for development of enterprises are not created at the general level. The introduction of new technologies for restructuring appears as problematic. The presented results regarding agriculture stem from the average data of the monitored RIAE set of enterprises. The objectivity of the agricultural enterprises economic results evaluation is influenced by the quality of the database and by the used evaluation method.

Methods of economic value of entrepreneurial subjects evaluation gain importance at present, when it is necessary to objectivise the distribution of subsidy means from both sources: own and those arising in the frame of the EU structural funds. Unsuitable allocation of resources

would influence the future development of the sector negatively.

AIMS AND METHODS

The aim of the contribution is to evaluate the method of economic normal for the evaluation of intensive or extensive development of agricultural enterprises and to compare the results with the selected indicators of profitability and productivity. Further, the aim was to verify whether the unfavourable development of economic situation in agriculture influences the very predicative ability of this method. The evaluation is a part of the NAZV research project No. QC0110/2000 which is, as a whole, focused at the evaluation of the structure and quantification of factors affecting the intensity of agricultural production, their characteristic features, impacts and their economic evaluation.

The contribution presented at the conference Agrarian Perspectives X – Sources of Sustainable Economic Growth in the Third Millennium: Globalisation Versus Regionalism (CUA Prague, September 18–19, 2001).

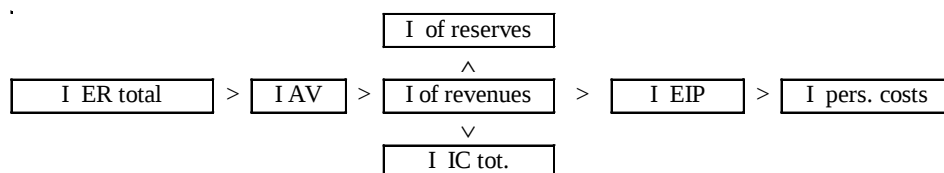


Figure 1. The ideal relation of the economic normal

Source: Šůvová at al. 1999

I ER total = Index of economic result in total

I IC tot. = Index of intermediate consumption total

I pers. c. = Index of personal costs

I AV = Index of value added

I EIP = Index of economic investment property

The economic normal arises from a system of indices non-equations. For a successful intensive development of an enterprise, it is necessary that:

- the growth of costs is slower than the growth of assets
- the growth of investment property is slower than the growth of revenues
- the growth of reserves is slower than the growth of revenues
- the growth of intermediate consumption is slower than the growth revenues
- the growth of value added is faster than the growth of revenues
- the growth of profit is faster than the growth of value added.

RESULTS

To verify the suitability of the economic normal method, four enterprises were chosen from the monitored set. By the methods of financial situation prediction (Řezbová 2001), there were evaluated as good the enterprises No. 5 and 4 and as enterprises with problems, the enterprises No. 13 and 1 for the time period 1997–1999.

In following tables, databases and indexes (Table 1 and Figure 2) calculations necessary for setting the economic normal are shown.

Table 1. Input data for the calculation of economic normal; index calculations

		Enterprise 5					Enterprise 13				
		1997	1998	1999	98/97	99/98	1997	1998	1999	98/97	99/98
V 060	ER total	2 583	3 656	5 838	1.415	1.597	–7 417	–4 932	140	0.665	–0.028
V 011	add. value	49 853	48 590	45 100	0.975	0.928	25 971	29 079	24 673	1.120	0.848
V01+V05	revenues	131 164	238 188	106 748	1.816	0.448	48 624	50 597	45 450	1.041	0.898
R 012	EIP	89 072	96 231	95 147	1.080	0.989	70 745	68 088	65 550	0.962	0.963
V 012	person.c.	31 925	31 358	27 603	0.982	0.880	24 777	25 468	22 879	1.028	0.898
R 029	reserves	39 272	41 871	44 797	1.066	1.070	29 851	33 100	31 923	1.109	0.964
V 008	Int.cons.	80 311	76 092	67 400	0.947	0.886	27 696	29 983	27 850	1.083	0.929

		Enterprise 4					Enterprise 1				
		1997	1998	1999	98/97	99/98	1997	1998	1999	98/97	99/98
V 060	ER total	567	2 448	1 767	4.317	0.722	–2 597	–2 185	–5 181	0.841	2.371
V 011	add. value	56 718	60 184	60 048	1.061	0.998	10 405	10 024	5 535	0.963	0.552
V01+V05	revenues	135 275	163 585	144 000	1.209	0.880	54 080	49 863	44 763	0.922	0.898
R 012	EIP	147 852	145 089	163 073	0.981	1.124	45 817	59 350	56 049	1.295	0.944
V 012	person.c.	36 321	39 704	38 777	1.093	0.977	9 615	7 551	6 302	0.785	0.835
R 029	reserves	56 569	53 611	59 839	0.948	1.116	17 747	18 231	14 333	1.027	0.786
V 008	Int. cons.	73 498	90 834	77 698	1.236	0.855	34 543	30 916	28 892	0.895	0.935

Source: Research report QC0110/2000

Enterprise 5	1998/97	Enterprise 5	1999/98
	1.066		1.070
	^		v
1.415 > 0.975 < 1.816 > 1.080 > 0.982		1.597 > 0.928 > 0.448 < 0.989 > 0.880	
	v		^
	0.947		0.886

Enterprise 4	1998/97	Enterprise 4	1999/98
	0.948		1.116
	^		v
4.317 > 1.061 < 1.209 > 0.981 < 1.093		0.722 < 0.998 > 0.880 < 1.124 > 0.977	
	^		v
	1.236		0.855

Enterprise 13	1998/97	Enterprise 13	1999/98
	1.109		0.964
	v		v
0.665 < 1.120 > 1.041 > 0.962 < 1.028		-0.028 < 0.848 < 0.898 < 0.963 > 0.898	
1.504 >	^	1.028 >	^
	1.083		0.929

Enterprise 1	1998/97	Enterprise 1	1999/98
	1.027		0.786
	v		^
0.841 < 0.963 > 0.922 < 1.295 > 0.785		2.371 > 0.848 < 0.898 < 0.963 > 0.898	
1.189 >	^	0.422 <	^
	0.895		0.935

Figure 2. Economic normal for the individual enterprises

DISCUSSION

In the monitored enterprises, the economic results were different during the time development. There were shown sustained positive values (enterprise 4 and 5) and sustained negative values (enterprise 1). In the case of the enterprise 13, negative values changed into positive values. Another possibility is the opposite development, i.e. that the positive value of economic result changes in the negative one in the next year.

If the enterprises reach a sustained profit in the time series, the method of economic normal can be used for the evaluation of enterprise development without other modifications.

If the enterprises reach a sustained loss in longer time series, the method of economic normal with a modification can be used. It means, that the index of economic result development has to be introduced in its reciprocal value – e.g. for the enterprise 1, value 0.841 $\rightarrow$ $1/0.841 \rightarrow 1.189$.

A more disputable is the interpretation in case of the changes of positive values into negative and vice versa.

The problematic of calculation and interpretation of the economic normal is shown in the enterprise 13. In the year 1999, profit of 140 thous. CZK was reached in comparison with the previous year when a high loss was

noticed (–4.932 thous. CZK). In this case, for the calculation of the index of economic result change, it is at first necessary to express the absolute difference between the values of economic result in the monitored years. The absolute difference (e.i. the value of 5.072 thous. CZK) has to be related to the base, as which the value of economic result from the start period (1998) can be considered. This value has to be expressed in the denominator in its absolute value. The index 99/98 of the enterprise 13 then has the following calculation algorithm: $5\,072 / | -4\,932 | \rightarrow 1.028$. This procedure enables to eliminate the influence of positive and negative signs in the mathematical calculation of indices; then the method of economic normal can be used even in enterprises which have an unstable development and fall in a loss and vice versa.

The method of economic normal issues only from the accounting statements; it does not respect the base production factor in agriculture – land; the influence of labour is not included, either. With regard to that, we suggest completing the evaluation of enterprises by economic normal with other productivity indicators.

The suggested indicators for the monitored enterprises are shown in following tables (Table 2–5), including the comparative basis of the RIAE Prague.

Table 2. Economic indicators per 1 ha (in CZK)

		Enterprise 5			Enterprise 13		
		1997	1998	1999	1997	1998	1999
V 011/ha	AV per ha	16 928	16 499	15 314	13 734	15 378	13 048
V 029/ha	ER op./ha	699	2 078	2 553	-2 089	-2 551	-437
V 060/ha	ER total/ha	877	1 241	1 982	-3 922	-2 608	74

		Enterprise 4			Enterprise 1		
		1997	1998	1999	1997	1998	1999
V 011/ha	AV per ha	18 590	19 726	19 681	12 711	12 245	6 762
V 029/ha	ER op./ha	666	1 110	327	-977	-1 234	-5 114
V 060/ha	ER total/ha	185	802	579	-3 172	-2 669	-6 329

Table 3. Comparative basis (in CZK)

		Enterprises set values				RIAE values		
		maximum	median	average	minimum	agr.co-op	business comp.	total
AV/ha	1997	20 262	13 734	14 216	7 959	11 263	9 240	10 339
	1998	21 811	14 187	14 420	10 196	13 200	10 842	12 069
	1999	20 301	11 912	12 671	6 786	10 870	9 682	10 270
ER op./ha	1997	2 325	419	-461	-4 180	-434	33	-261
	1998	4 156	660	637	-3 159	722	271	509
	1999	2 553	339	-510	-5 132	-129	-222	-160
Total ER/ha	1997	877	74	-1 176	-5 078	-848	-403	-681
	1998	1 973	219	-1 760	-26 830	175	-247	-23
	1999	1 982	226	-1 076	-7 165	-611	-664	-621

Table 4. Economic indicators per 1 worker (in CZK)

		Enterprise 5			Enterprise 13		
		1997	1998	1999	1997	1998	1999
V 011/PS	AV per ha	275 431	268 453	249 171	150 121	168 087	142 618
V 029/PS	ER op./ha	11 381	33 807	41 541	-22 838	-27 879	-4 780
V 060/PS	ER total/ha	14 271	20 199	32 254	-42 873	-28 509	809

		Enterprise 4			Enterprise 1		
		1997	1998	1999	1997	1998	1999
V 011/PS	AV per ha	242 385	257 197	256 615	179 397	172 828	95 431
V 029/PS	ER op./ha	8 688	14 484	4 261	-13 793	-17 414	-72 172
V 060/PS	ER total/ha	2 423	10 462	7 551	-44 776	-37 672	-89 329

Table 5. Area in hectares per 1 worker

Enterprise	5	4	13	1
Ha/labour	16.27	13.04	10.93	14.11

ER op. = Economic result – operational
 AV = Added value

CONCLUSION

An agricultural enterprise cannot be evaluated only on the base of one method which utilises only the business statements (balance, profit and loss statement). In evaluation, it is necessary to respect also the influence of production factors – land and labour. The indicator of

value added per one worker and per hectare is a sufficient distinctive criterion which suitably proves the difference between a good and a problematic enterprise. This opinion is supported by the research results, part of which is presented in the Tables 2–5.

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Arrived on 12th February 2002

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