

# Methodical approach to evaluation of financial health of agricultural enterprises in relation to the Sector Operational Program

*Metodický přístup k hodnocení finančního zdraví zemědělských podniků ve vztahu k Sektorovému operačnímu programu*

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**Abstract:** The contribution deals with the analysis of methodological approaches to the general evaluation of enterprise results. It is concerned mainly about the methodology of evaluation of financial health of enterprises in the frame of the program SAPARD and further about the possible outline of methodology in the frame of the Sector Operational Plan for agriculture and the Payment Agency. This contribution was prepared in frame of solution of the Institutional Research Intention MSM 411100013.

**Key words:** methods of enterprise evaluation, criteria, financial health, subsidies, Agrarian Payment Agency

**Abstrakt:** Příspěvek se zabývá analýzou metodických přístupů k souhrnnému hodnocení podnikových výsledků. Jedná se hlavně o metodiku hodnocení finančního zdraví podniků v rámci programu SAPARD a dále o možný nástin metodiky v rámci Sektorového operačního plánu zemědělství a Agrární platební agentury. Příspěvek vznikl v rámci řešení IVZ MSM 411100013.

**Klíčová slova:** metody hodnocení podniku, kriteria, finanční zdraví, dotace, Agrární platební agentura

## INTRODUCTION

The Sector Operational Programme (SOP) of the Ministry of Agriculture (MAG) “Development of countryside and multifunctional agriculture” represents the development of the 5th priority axis of the National Development Plan of the Czech Republic (NDP) for the period 2004–2006. A purpose of the SOP MAG development is the support of agricultural primary production and processing of agricultural products, the support of forestry and water industries, and to secure sustainable development of countryside. The co-financing of projects from the SOP MAG is covered from the EAGGF Guidance Section and in the period 2004–2006 it will influence Czech agriculture and rural space. Financial means for the projects are divided according to the profit rate of a project into private resources, the means required from the state budget, and means required from the EU.

In re-redistribution of means from the European budget, a basic necessity is to fulfil the condition that subsidies for the particular entrepreneurial subjects will be assigned on the base of transparent criteria. The decision which entrepreneurial subject has already had a

claim for support and which has not had it yet is very sensitive from this point of view. Therefore, a part of the accreditation of Payment Agencies in the individual states is also a well-arranged methodology for the evaluation of the total efficiency of an enterprise.

## AIMS

To propose suitable criteria for the transparent and objective evaluation of entrepreneurial subjects in conditions of the SOP MAG implementation; to determine limits and point evaluation.

## MATERIAL AND METHODOLOGY

With the introduction of pre-accession programmes in the CR, a suitable environment has been created for the SOP implementation – the Payment Agency, regional workplaces, project principles for structural funds. The accredited SAPARD Agency creates a basic pillar of the newly built Payment Agency (7 regional workplaces on the level NUTS 2 and a central workplace in Prague).

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The administration of the SOP MAg includes also an evaluation of feasibility of a project; and ex-ante check; fulfilment of the basic project criteria, an expert technological judgement; a point evaluation according to specific criteria; a selection of project; a confirmation of the selection of a project. After that, the European Commission should verify a justification of the selective criteria for the selection of a project. That is why the determined rules should be transparent and at the same time, the criteria should ensure that the objectives would be reached in the cost-efficient way.

Data for the selecting commissions can be evaluated economically in the following way:

- a) An evaluation of vitality (economic efficiency) of entrepreneurial subject, which asks for a subsidy from the Operation Programme.
- b) An evaluation of vitality (returnability, economic efficiency) of own realized project (investment) – in non-profitable projects, it is dealt with through the evaluation of cost efficiency.

In case of evaluation of entrepreneurial subject, in most cases it is stemming from the obligatory valid accounting statements (single or double-entry bookkeeping) and the criterion for evaluation is so called “Financial Health”, rising from financial analysis (ratio indicators partial and multi-criterial).

In case of the evaluation of own investment, it is stemming from dynamic indicators of investment efficiency evaluation (net present value, internal revenue percent; from static indicators (time of return simple, cumulative) or from cost indicators (retained costs, carried costs).

Basic methods of evaluation are described in the publications: “Finanční řízení a veřejné zakázky” (Malý 2000), “Metodická příručka k vypracování Cost-benefit analýzy projektů pro prioritu 2.1 a 2.2 programu SAPARD” (Methodological guidebook for working-up cost-benefit analysis of projects for priority 2.1 and 2.2 of programme SAPARD – a team of authors from the MMR and VŠE, a translation of the European Commission publication, MRD, Prague 2002).

## RESULTS AND DISCUSSION

Within the SAPARD programme, also the determination of financial health is a part of the evaluation of entrepreneurial subject. The methodology went over several periods. In the first period, an applicant evaluation was realised in the frame of the FAN programme; inputs in this programme were inserted in the Excel environment. Indicators were defined for evaluation of agricultural measures and for evaluation of measures within the Ministry of Regional Development. The total number of indicators consisted of 20 ratio indicators and 6 multi-criteria models (value and bankruptcy models, Altman, Beaver, IN95, IN99, Ch-index, Taffler).

A wide collection of indicators was maintained for the evaluation of entrepreneurial subjects in the 1<sup>st</sup> to 5<sup>th</sup>

round of the SAPARD programme; financial stability was evaluated separately. However, from an applicant's point of view, such a wide collection seemed as rather non-transparent. For the entrepreneurial subject, it was considerably problematic to realize a preliminary evaluation of its value, especially in multi-criteria models. The evaluation system was less transparent as well (duplicity), that is why a revision of indicators (criteria), a simplification of the system and its “testing” on the selected set of entrepreneurial subjects is the actual problem at present. Bases of the system revision (an application for concrete conditions) are in progress continually with the rise of the criteria of “Financial Health” – see final reports of the NAZV project QC0110/2000, QC0110/2001, QC0110/2002 and doctoral thesis “Criteria of evaluation of entrepreneurial subjects in agriculture” (Řezbová 2001). Revised methods of financial health evaluation will later form the base for the selection criteria of the Agrarian Payment Agency. Except the purposes of criteria selection (a point system) in connection with accounting statements, it will be necessary also to change the linkages of models to particular rows (the influence of the amendment of the Act on Accounting for the year 2003).

The same problems (financial health) are solved e.g. in the SR – within the programme SAPARD only four simple ratio indicators of financial analysis were used. The claim for subsidies was assigned to an enterprise, which had fulfilled the standard in case of 2 from 4 indicators (very simplified, an entrepreneurial subject will find their value quickly).

The Ministry of Industry and Trade CR (MIT) in frame of the Sector Operational Programme (industry) evaluates proposals for the year 2003 according to “economic capability” of an applicant. A minimal rating is 52% from the maximal point evaluation. The rating for the MIT is carried by a commercial firm Adviser Euro – rules are not transparent; an applicant supplies accounting statements, the firm provides the evaluation (economic value, financial stability, entrepreneurial activity) – the base are the indicators of financial analysis.

The above-mentioned facts lead to the necessity to simplify the collection of indicators for the future needs of the Agrarian Payment Agency in the CR. On base of historical data from the 1<sup>st</sup> to 4<sup>th</sup> round of the programme SAPARD administration, selective collections of indicators were counted for the set of enterprises. There is an effort to suggest more simple, evident and efficient financial indicators from them.

The solution team received data from the MAg CR for the analysis in three collections, under the names DATA1, DATA and DATA3. The collection DATA1 referred to the measure 1.1 and consisted of four groups of enterprises x1, x2, x3 and x4. The collection DATA2 considered the measure 1.2 and consisted of groups of enterprises x1, x2, x3, x4 and x5; and the collection DATA3 referred to the measure 1.3 and consisted of groups of enterprises x1, x2, x3, x4 and x5. In each enterprise in the group, a full version of the statement of profits and losses was introduced for the years 1999, 2000, 2001.

Table 1. Criteria of evaluation of financial vitality in the SR (double-entry bookkeeping, a full version of statements, till 2000)

Indicator	Figure	Resource	Criteria
Total liquidity	$(\text{Reserves} + \text{cr. claims} + \text{fin. property}) / (\text{Cr. claims} + \text{common bank credits} + \text{cr. fin. assistances})$	$(R029 + R042 + R051) / (R091 + R103 + R104)$	CL >1
Coverage of operational costs by operational yields	$\frac{\text{Operational yields} \times 100}{\text{Operational costs}}$	$(V01 + V04 + V19 + V21 + V23 + V25 + V27) / (V02 + V08 + V17 + V18 + V20 + V22 + V24 + V26 + V28) \times 100$	KPNPV >100%
Share of added value in production and trade	$\frac{\text{Added value} \times 100}{\text{Production and goods}}$	$V11 / (V04 + V01) \times 100$	PPER >10%
Total indebtedness of assets	$\frac{\text{Foreign capital} \times 100}{\text{Total assets}}$	$R79 / R01 \times 100$	CZA <70%

Source: SAPARD methodological guidebook – SR, <http://www.mpsr.sk>, 1. 9. 2003

Table 2. Concept of criteria for financial heat evaluation in the CR (Sector Operational Programme)

First separation period		Second separation period	
1	added value/ER operational		
2	added value/(cost for goods + operation consumption)	1	added value/(cost for goods + operation consumption)
3	total indebtedness foreign c./liabilities	2	total indebtedness foreign c./liabilities
4	interest coverage ER in total + interest rates/interest rates	3	interest coverage ER in total + interest rates/interest rates
5	ROA ER + interests rates/liabilities	4	ROA ER + interests rates/liabilities
6	trade claims/trade liabilities	5	trade claims/trade liabilities
7	current liquidity OA/short time liabilities + c. bank. credits + short time financial assistance	6	current liquidity OA/current liabilities + c. bank. credits + kfz
8	ROE ER in total/VK		
9	Altman 22	7	Altman 22
10	IN 99		
11	Taffler	8	Taffler

In the first stage of data processing, the collections DATA1, DATA2 and DATA3 were unified in the collection DATA border and in all enterprises data were arranged formally in a standard form of accounting statements. In the whole, there were calculated 46 indicators, from them 4 integral indicators (Altman2 and Altman 22, IN99 and Taffler). Outputs of the calculation of all 46 indicators for all 42 enterprises were evaluated in the written form including charts and suggestions for determination of marginal values of chosen indicators. the next stage of evaluation was the determination of “the worst” and “the best” enterprises in the particular groups 1, 2 and 3. This determination had two periods: in the first one, enterprises were separated on the base of 11 selective characteristics (indicators); in the second, one enterprise was separated on the base of 8 distinctive characteristics. The enumeration is shown in the Table 2.

Reduction of indicators to the total number 8 was provided because of the following reasons:

The indicator *added value/ER operational* (ER = economic result) could reach positive value (a positive phenomenon) also in the case when added value is negative (a negative phenomenon) and at the same time, also ER operational is negative (a negative phenomenon). That is why it is more suitable to evaluate enterprises on the base of the indicator added value/(costs for goods + operation consumption).

The indicator *ROE* (return on equity) is very high often (a positive phenomenon) in enterprises with a high indebtedness (a negative phenomenon). It means in enterprises with a low value of own capital. That is why it is better to use the indicator *ROA* (return on assets). The indebtedness it is better to record in the indicator of total indebtedness.

Table 3. Indicators for enterprises of the first group

	1999	2000	2001	1999	2000	2001	1999	2000	2001
Values of the indicator added value/(costs for goods + operation consumption)									
1X1	17.78	14.24	17.34	46.26	32.11	39.43	54.68	39.35	51.41
1X2	48.13	46.08	49.70	<b>79.14</b>	<b>63.42</b>	<b>65.59</b>	<b>50.11</b>	<b>55.20</b>	<b>47.33</b>
1X3	4.44	5.37	7.81	41.77	19.88	22.76	44.80	20.04	37.91
1X4	29.76	42.02	48.79	29.76	42.02	48.79	<b>55.99</b>	<b>44.93</b>	<b>46.11</b>
Indicator of total indebtedness									
1X1	79.00	81.56	76.54	99.58	99.58	98.31	53.88	55.74	54.09
1X2	<b>13.05</b>	<b>20.44</b>	<b>13.04</b>	<b>40.97</b>	<b>40.38</b>	<b>56.07</b>	83.60	76.44	80.29
1X3	92.78	93.84	86.30	70.78	68.09	65.09	102.84	102.31	85.24
1X4	<b>15.29</b>	<b>10.33</b>	<b>12.36</b>	<b>15.29</b>	<b>10.33</b>	<b>12.36</b>	<b>22.13</b>	<b>28.56</b>	<b>20.74</b>
Indicator of current liquidity									
1X1	0.56	0.58	0.75	0.70	0.64	1.01	1.40	1.13	1.20
1X2	<b>2.54</b>	<b>2.12</b>	<b>3.65</b>	<b>10.85</b>	<b>4.54</b>	<b>4.34</b>	<b>3.25</b>	<b>5.32</b>	<b>3.06</b>
1X3	1.02	1.39	1.33	0.95	1.03	1.20	1.16	1.01	1.43
1X4	<b>12.59</b>	<b>23.07</b>	<b>6.74</b>	<b>12.59</b>	<b>23.07</b>	<b>6.74</b>	<b>5.21</b>	<b>2.53</b>	<b>4.54</b>
Indicators of Altman's index									
1X1	1.561	1.554	1.615	0.489	0.429	0.760	1.129	1.060	1.243
1X2	3.577	2.456	3.789	1.472	1.541	1.313	1.320	1.708	1.529
1X3	3.084	2.396	2.440	1.654	1.650	2.392	1.286	1.701	1.858
1X4	<b>3.571</b>	<b>5.251</b>	<b>4.677</b>	<b>3.571</b>	<b>5.251</b>	<b>4.677</b>	<b>3.163</b>	<b>2.688</b>	<b>3.622</b>
Indicators of Taffler's index									
1X1	0.131	0.140	0.139	0.018	0.009	0.079	0.080	0.027	0.093
1X2	0.044	0.092	0.144	1.266	<b>0.443</b>	<b>0.498</b>	0.136	<b>0.432</b>	0.154
1X3	0.230	0.235	0.216	0.188	0.139	0.230	0.196	0.123	0.095
1X4	-0.677	<b>2.152</b>	<b>0.697</b>	-0.677	<b>2.152</b>	<b>0.697</b>	<b>0.414</b>	<b>0.294</b>	<b>0.567</b>

Index IN99 separated less suitably good and bad enterprises in previous investigations, that is why it was excluded in the second separation period. At the same time, it is possible to state that partial indicators of the index IN99 are already contained in Altman's and Taffler's indexes. Therefore, IN99 seems to be redundant. The above Table 3 show a part of results for the enterprises of the first group.

## CONCLUSIONS

The above mentioned analysis, detailed calculations and separations of indicators led the team of authors to the final suggestion of a collection of indicators for future needs of the Agrarian Payment Agency including determination of marginal values, the point evaluation and the separation of enterprises into groups A to D.

The above-mentioned table contains 10 indicators, multi-criteria indicators (Altman22, Taffler) were discarded – thanks to a low transparency and lower predicative

ability for subjects in the CR agriculture. From the model Altman22, only a partial indicator was used: the long term profitability of assets (liabilities).

Allocation of enterprises in the particular categories on the base of reached number of points show Table 4.

Category A	more or equal 25 max 30
Category B	more or equal 20 max 24.99
Category C	more or equal 16 max 19.99
Category D	more or equal 13 max 15.99
Category E	more or equal 10 max 12.99

The mentioned allocation of enterprises into categories, the point evaluation of indicators and the selection of particular indicators stem from the previous analysis of methodology in frame of the programme SAPARD. All that is verified on the base of historical data of enterprises, which already applied for the projects.

The team of authors welcomes any discussion and suggestions to these problems, including the possibility of further verification of the data in the selected set.

Table 4. Criteria of financial health evaluation for the needs of the Agrarian Payment Agency CR (double-entry bookkeeping, full version of statements, since 2003)

No.	Indicator	Figure	Resource
1	Share of added value in operation consumption and costs for goods	Added value/(costs expounded for sold goods + operation consumption)	$V11/(V02 + V08)$
2	Total indebtedness	$\frac{\text{Foreign resources} \times 100}{\text{Total liabilities}}$	$(R084/R\ 066) \times 100$
3	Interest coverage	(Economic result from accounting period + cost interests)/cost interests	$(V60 + V43)/V43$
4	ROA	$[(\text{Economic results for accounting period} + \text{cost interests})/\text{liabilities}] \times 100$	$(V60 + V43)/R066 \times 100$
5	Ratio of short-time claims and liabilities from trade relations	Short-time claims from trade relations/short-time liabilities from trade relations	$R048/R102$
6	Total liquidity	Turnover assets/(short-time liabilities + s.t. bank credits + s.t. financial assistances)	$R031/(R101 + R115 + R116)$
7	Time of turnover of short-time liabilities	$360 \times (\text{short time liabilities} + \text{s.t. bank credits} + \text{s.t. fin. assistance})/(\text{Receipts from sale of goods} + \text{operations})$	$360 \times (R101 + R115 + R116)/(V01 + V04)$
8	Turnout of assets (liabilities)	(Receipts from sale of goods + operations)/total liabilities	$(V01 + V04)/R066$
9	Long term profitability of assets (liability)	$100 \times (\text{Reserve funds, indivisible fund and other funds from profit} + \text{economic result from last years})/\text{total liabilities}$	$[(V077 + V080)/R066] \times 100$
10	Efficiency of added value	$[(\text{Added value} - \text{personal costs} - \text{depreciation})/\text{added value}] \times 100$	$[(V11 - V12 - V18)/V1] \times 100$

Marginal values for the particular indicators including point evaluation:

Indicator	less than	from	more than
Indicator 1 points	less than 12 1	from 12 to 30 (including) 2	more than 30 3
Indicator 2 points	more than 75 1	from 75 to 45 (including) 2	less than 45 3
Indicator 3 points	less than 1.1 1	from 1.1 to 2.5 (including) 2	more than 2.5 3
Indicator 4 points	less than 2 1	from 2 to 6 (including) 2	more than 6 3
Indicator 5 points	less than 1 1	from 1 to 1.5 (including) 3	more than 1.5 2
Indicator 6 points	less than 1.5 1	from 1.5 to 2.5 (including) 2	more than 2.5 3
Indicator 7 points	more than 100 1	from 60 to 100 (including) 2	less than 60 3
Indicator 8 points	less than 0.8 1	from 0.8 to 1.6 (including) 2	more than 1.6 3
Indicator 9 points	less than 3 1	from 3 to 7 (including) 2	more than 7 3
Indicator 10 points	less than 7 1	from 7 to 10 (including) 2	more than 10 3

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