

*Zuzana Čierna
Jana Prevužňáková
Slovak University of Agriculture in Nitra*

APPLICATION OF ACTIVITY INDICATORS IN SLOVAK AGRICULTURAL ENTERPRISES

The article evaluates the development of selected activity indicators in period of years 2004-2011 in Slovak agricultural enterprises. The time horizon represents the period of years after the accession of the Slovak republic into the European Union. From the nature of the agricultural arises its lower activity in comparison with industry. Contrary to other activity indicators which development was worsening during the period, DSO of trade receivables has the improving trend in selected companies in comparison between year 2004 and 2011.

Key words:

Activity indicators, Agricultural enterprises, Financial situation

Introduction

Activity indicators, as a part of the analysis of the overall financial situation of the company, reflect how effectively company uses its assets. (Serenčėš, P. – Tóth, M. – Čierna, Z. – Rábek, T. (2010)). Appropriate use of company's property is requirement of the consolidated financial situation. Insufficient use of the property is also inadequate as the situation when company has "too much" property, notes Zalai, K. et al. (2006).

According to Serenčėš, P. – Tóth, M. – Čierna, Z. – Rábek, T. (2010) positive period of development in indicator total assets turnover ration are years before entering Slovak republic into the European Union. After the entering SR into the EU the development of the indicator is decreasing. In context with effective use of total assets it means agricultural enterprises should try to raise sales and then decrease level of assets.

One of our strengths is the low value of liabilities. It means low performance in production and low indebtedness when our companies use mostly own capital. These specified financial comparisons confirm weak positions of our agricultural enterprises in field of performance and also low level of modern sources. (Grznár, M. – Foltínová, A. (2008)).

Aims and methods

The paper evaluates the development of selected activity indicators in period of years 2004-2011 in Slovak agricultural enterprises. The time horizon represents the period of years after the accession of the Slovak republic into the European

Union. There was used the database from The Research Institute of Agricultural and Food Economics (RIAFE). The base of data for activity indicators were data from the Balance sheet and the Income statement. The aggregated values as entrance data for activity indicators are listed in the table 1 and 2.

Table 1. Aggregated values as entrance data for activity indicators from the Balance sheet in thousands Euros

Year	Total assets (1)	Inventories (31)	Short-term receivables (46)	Short-term trade receivables (47)	Short-term liabilities (106)	Short-term trade liabilities (107)
2004	2,662,880	596,692	333,643	294,572	484,679	327,075
2005	2,905,546	622,715	388,721	329,945	535,891	384,328
2006	2,816,869	580,447	395,524	281,910	482,494	332,535
2007	3,069,738	631,453	484,581	320,285	608,193	407,898
2008	3,268,559	686,744	476,677	298,156	598,061	404,706
2009	3,285,525	613,500	480,931	283,337	622,186	387,302
2010	3,099,065	578,415	430,466	273,401	586,498	359,107
2011	3,139,678	633,283	458,115	296,755	575,622	368,862

Note: 1, 31, 46, 47, 106, 107 – the number of the row in the Balance sheet in year 2011

Source: RIAFE, own calculation

Table 2. Aggregated values as entrance data for activity indicators from the Income statement in thousands Euros

Year	Revenues from sales of goods (1)	Cost of goods (2)	Revenues from own products and services (5)	Production consumption (8)	Personal costs total (12)	Taxes and fees (17)
2004	179,242	155,309	1,274,276	1,072,602	370,638	26,675
2005	252,014	217,846	1,383,784	1,183,323	397,122	30,333
2006	195,140	168,807	1,293,399	1,092,585	391,367	30,889
2007	288,098	252,387	1,400,224	1,175,047	416,258	31,381
2008	313,626	278,549	1,383,495	1,253,910	419,086	33,062
2009	234,817	208,923	1,130,181	1,018,719	391,145	32,943
2010	223,294	196,037	1,146,785	973,249	364,181	31,447
2011	289,342	251,647	1,320,313	1,111,821	366,465	30,859
Year	Depreciation and adjustments of fixed assets (18)	Sales of fixed assets and material (19)	Other operating costs (23)	Revenues from sales of securities and shares (27)	Interest costs (39)	
2004	193,026	92,737	46,965	2,811	21,437	
2005	211,621	101,025	51,128	5,427	26,954	
2006	217,212	111,988	46,775	6,386	30,979	
2007	235,507	133,580	50,557	7,034	34,475	

2008	258,821	116,236	44,800	12,241	41,328
2009	281,860	105,437	48,288	1,735	35,008
2010	284,181	95,982	39,461	1,174	31,089
2011	276,006	107,257	38,159	1,868	32,353

Note: 1, 2, 5, 8, 12, 17, 18, 19, 23, 27, 39 – the number of the row in the Income statement in year 2011

Source: RIAFE, own calculation

The selected activity indicators were: total assets turnover ratio, days sales outstanding (DSO) of total assets, DSO of inventory, DSO of receivables, DSO of trade receivables, DSO of short term liabilities and DSO of short-term trade liabilities.

Total assets turnover ratio

Total assets turnover ratio is a ratio indicator that assesses the intensity of use of total assets. It is better that company needs less property to generate revenues. The numerator of the formula includes revenues from the sale of goods, own products and services and revenues from the sales of fixed assets and revenues from the sales of securities and shares.

$$\text{Total assets turnover} = \frac{\text{Sales (rows in IS 1, 5, 19, 27)}}{\text{Total assets (row in BS 1)}} \quad [1]$$

Note: rows in IS – rows in the Income statement in year 2011; row in BS – row in the Balance sheet in year 2011

DSO of total assets

Days sales outstanding of total assets are an expression of total assets turnover in days. It can be interpreted as the number of days required to turn all of the assets of all company sales.

$$\text{DSO of total assets} = \left[\frac{\text{Total assets (row in BS 1)}}{\text{Sales (rows in IS 1, 5, 19, 27)}} \right] * 365 \text{ days} \quad [2]$$

DSO of inventory

Days sales outstanding of receivables represents the time in days that company needs to use its inventory. Ratio can be measured either in respect of costs or revenues. We measured the DOS of inventory in respect of revenues from the sale of goods, own products and services.

$$\text{DSO of inventory} = \left[\frac{\text{Inventory (row in BS 31)}}{\text{Sales (rows in IS 1 and 5)}} \right] * 365 \text{ days} \quad [3]$$

DSO of receivables

A days sale outstanding of receivables is an indicator that shows average time for which the company collects its receivables in the current year. In calculation this indicator we take into account short-term trade receivables to revenues from the sale of goods, own products and services. Lower values of this indicator are in theory better than higher values.

$$DSO\ of\ receivables = \left[\frac{short - term\ receivables\ (row\ in\ BS\ 46)}{Sales\ (rows\ in\ IS\ 1\ and\ 5)} \right] * 365\ days$$

[4]

DSO of trade receivables

Separately, we examined the days of outstanding of trade receivables. In the numerator of formula we take into an account only trade receivables.

$$DSO\ of\ trade\ indicator = \left[\frac{trade\ receivables\ (row\ in\ BS\ 47)}{Sales\ (rows\ in\ IS\ a\ and\ 5)} \right] * 365\ days$$

[5]

DSO of short-term liabilities

Days sales outstanding of short-term liabilities evaluates the average time of payment liabilities in relation to the company's costs. It is better when the time is shorter. The company is credible for partners.

$$DSO\ of\ short - term\ liabilities = \left[\frac{Short - term\ liabilities\ (row\ in\ BS\ 106)}{Costs\ (rows\ in\ IS\ 2,8,12,17,18,23,39)} \right] * 365\ days$$

[6]

DSO of short-term trade liabilities

We focused also on days sales outstanding of short-term trade liabilities in relation to the costs.

$$DSO\ of\ short - term\ trade\ liabilities = \left[\frac{Short - term\ trade\ liabilities\ (row\ in\ BS\ 107)}{Costs\ (rows\ in\ IS\ 2,8,12,17,18,23,39)} \right] * 365\ days$$

[7]

Research results and discussion

From the nature of the agricultural arises its lower activity in comparison with industry. The reason is the length of the production process as well as the relatively low value of the products due to low of the production.

Total assets turnover ratio

The results of the total assets turnover ratio indicator are summarized in the table 3.

Table 3. Descriptive characteristics for the total assets turnover ratio in years 2004-2011

Year	2004	2005	2006	2007	2008	2009	2010	2011
upper decile	1.282	1.246	1.260	1.241	1.083	0.860	0.941	1.048
upper quartile	0.867	0.799	0.803	0.826	0.722	0.590	0.623	0.724
average	0.690	0.656	0.635	0.649	0.588	0.472	0.494	0.572
median	0.563	0.516	0.523	0.547	0.494	0.385	0.417	0.487
lower quartile	0.388	0.342	0.324	0.340	0.317	0.229	0.248	0.292
lower decile	0.268	0.213	0.193	0.192	0.193	0.141	0.142	0.170

Source: RIAFE, own calculation

For the values of the total assets turnover ratio in year 2011 can be stated:

- 10% of companies with the best total assets turnover ratio reached the values 1,048 and more (upper decile).
- 25% of companies with the best total assets turnover ratio reached the values 0,724 and more (upper quartile).
- Average value of the total assets turnover ratio in selected companies reached the level 0,572 (average) in year 2011.
- 50% companies reached the values of the total assets turnover 0,487 and less and 50% companies reached values 0,487 and more (median).
- 25% companies with the worst values of the total assets turnover ratio reached values 0,292 and less (lower quartile).
- 10% companies with the worst values of the total assets turnover ratio reached values 0,170 and less (lower decile).

The results of the total assets turnover ratio in time show a decreasing intensity of the use of the total assets. It is result of the increasing level of the total assets and stagnant respective decreasing sales. It represents that agricultural sector is less active in comparison between years 2004 and 2011 in sense of realization its production in form of sales in relation to assets. However, from 2009 to 2011 is possible to identify a clear growing trend. This growing trend did not eliminate the decrease in comparison with the year 2004. The reason of this development was extremely negative year 2009.

DSO of total assets

The results of this indicator are necessary to interpret in reverse. We prefer higher values in the total assets turnover indicator. In case of the DOS of total assets company prefers lower value of this indicator. The results of the Slovak agriculture are in the table 4.

For the values of DSO of total assets in year 2011 can be stated:

- 10% companies with the worst DSO of total assets reached values 2143,2 days and more (upper quartile).
- 25% companies with the worst DSO of total assets reached the values 1251,8 days and more (upper quartile).
- Average value DSO of total assets in selected companies reached in year 2011 level 1056,7 days (average).
- 50% companies reached values of DSO of total assets 750,1 and less and 50% companies reached 750,1 and more (median).
- 25% companies with the best value of the DSO of total assets reached values 504,4 days and less (lower quartile).
- 10% companies with the best value of the DSO of total assets reached values 348,3 days and less (lower decile).

Table 4. Descriptive characteristics for the DSO of total assets in years 2004-2011

Year	2004	2005	2006	2007	2008	2009	2010	2011
upper decile	1362.2	1713.3	1887.9	1904.3	1894.0	2586.5	2578.0	2143.2
upper quartile	941.5	1067.9	1125.8	1073.2	1152.6	1596.1	1469.0	1251.8
average	781.7	932.4	973.7	943.4	1006.1	1338.7	1253.1	1056.7
median	648.2	707.4	697.9	667.3	738.4	947.4	874.7	750.1
lower quartile	421.1	456.7	454.3	441.8	505.3	619.1	585.8	504.4
lower decile	284.7	293.0	289.7	294.2	337.1	424.6	387.8	348.3

Source: RIAFE, own calculation

DSO of inventory

The results of the DSO of inventory are in the table 5. For indicator DSO of inventory is the same rule as for the DSO of total assets that company prefers less value of the indicator.

For the values of DSO of inventory in year 2011 can be stated:

- 10% companies with the worst DSO of inventory reached values 445,3 days and more (upper decile).
- 25% companies with the worst DSO of inventory reached values 267,5 days and more (upper quartile).
- Average value of DSO of inventory in selected companies reached in 2011 level of 221,3 days (average).
- 50% companies reached values DSO of inventory 163,4 days and less and 50% companies reached values 163,4 and more (median).

- 25% companies with the best DSO of inventory reached 101,1 days and less (lower quartile).
- 10% companies with the best DSO of inventory reached 53,6 days and less (lower decile).

Table 5. Descriptive characteristics for the DSO of inventory in years 2004-2011

Year	2004	2005	2006	2007	2008	2009	2010	2011
upper decile	319.7	361.0	373.0	348.6	419.1	473.9	449.7	445.3
upper quartile	236.0	237.1	239.4	208.1	264.0	300.4	279.8	267.5
average	183.4	181.5	190.1	174.6	212.3	240.6	231.0	221.5
median	163.8	161.3	157.2	144.6	168.5	188.1	179.4	163.4
lower quartile	102.4	84.4	87.1	82.3	99.7	103.9	104.3	101.1
lower decile	50.6	27.3	29.1	30.0	40.6	39.7	47.8	53.6

Source: RIAFE, own calculation

DSO of receivables

The results of the indicator show the table 6. For the values of DSO of receivables in year 2011 can be stated:

- 10% companies with the worst DSO of receivables reached values 334,7 days and more (upper decile).
- 25% companies with the worst DSO of receivables reached values 150,3 days and more (upper quartile).
- Average value of the DSO of receivables in selected companies reached in 2011 level 142,2 days (average).
- 50% companies reached values DSO of receivables 75,1 days and less and 50% companies reached values 75,1 days and more (median).
- 25% companies with the best DSO of receivables reached values 41,7 days and less (lower quartile).
- 10% companies with the best DSO of receivables reached values 21,3 days and less (lower decile).

Table 6. Descriptive characteristics for the DSO of receivables in years 2004-2011

Year	2004	2005	2006	2007	2008	2009	2010	2011
upper decile	160.0	201.0	256.8	277.5	257.1	417.3	346.3	334.7
upper quartile	103.9	125.4	139.0	151.8	146.3	196.0	179.9	150.3
average	81.6	99.8	121.5	135.7	125.1	179.9	152.7	142.2
median	64.4	73.5	76.0	91.7	84.6	99.1	94.2	75.1
lower quartile	38.5	44.4	44.4	54.3	45.5	52.8	48.8	41.7
lower decile	19.8	26.2	23.5	22.4	23.3	26.4	25.1	21.3

Source: RIAFE, own calculation

The DSO of receivables has increasing trend. It was caused by rising level of the receivables and by staging respective decreasing level of the sales. This indicator also shows decreased activity of the sector and slight improvement after the year 2009.

DSO of trade receivables

The results of the indicator are summarized in the table 7. For the values of DSO of trade receivables in year 2011 can be stated:

- 10% companies with the worst DSO of trade receivables reached values 138,1 days and more (upper decile).
- 25% companies with the worst DSO of trade receivables reached values 83,3 days and more (upper quartile).
- Average value of the indicator DSO of trade receivables reached in selected companies reached in 2011 level 66,3 days (average).
- 50% companies reached values of the DSO of trade receivables 49,1 and less and 50% companies values 49,1 days and more (median).
- 25% companies with the best DSO of trade receivables reached values 26,8 days and less (lower quartile).
- 10% companies with the best DSO of trade receivables reached values 8,0 days and less (lower decile).

Table 7. Descriptive characteristics for the DSO of trade receivables in years 2004-2011

Year	2004	2005	2006	2007	2008	2009	2010	2011
upper decile	132.6	152.5	135.9	136.4	130.3	157.6	153.8	138.1
upper quartile	90.1	93.5	84.3	82.6	80.7	95.4	93.5	83.3
average	67.9	74.4	69.3	67.1	63.7	76.8	73.6	66.3
median	55.8	57.8	52.4	49.9	46.9	54.8	52.7	49.1
lower quartile	31.5	33.1	31.4	29.0	25.1	29.9	28.2	26.8
lower decile	13.5	13.4	10.5	5.9	7.9	8.2	10.7	8.0

Source: RIAFE, own calculation

In contrast to other indicators which development was worse in period of years 2004-2011, DSO of trade receivables has better development in agricultural sector in comparison between 2004 and 2011 (median 2004 versus median 2011).

DSO of short-term liabilities

Results of the indicator are shown in the table 8. For the values of DSO of short-term liabilities in year 2011 can be stated:

- 10% companies with the worst DSO of short-term liabilities reached values 256,3 days and more (upper decile).
- 25% companies with the worst DSO of short-term liabilities reached values 149,0 days and more (upper quartile).
- Average value of the indicator DSO of short-term liabilities in selected companies reached in 2011 level 113,4 days (average).
- 50% companies reached values of the DSO of short-term liabilities 78,4 and less and 50% companies reached 78,4 days and more (median).
- 25% companies with the best DSO of short-term liabilities reached values 42,8 days and less (lower quartile).
- 10% companies with the best DSO of short-term liabilities reached values 25,1 days and less (lower decile).

Table 8. Descriptive characteristics for the DSO of short-term liabilities in years 2004-2011

Year	2004	2005	2006	2007	2008	2009	2010	2011
upper decile	240.5	270.8	232.3	253.8	234.2	293.0	289.1	256.3
upper quartile	145.3	148.3	138.7	151.1	145.5	182.2	168.3	149.0
average	123.8	132.7	120.0	133.4	123.4	149.6	134.7	113.4
median	85.1	86.6	75.6	85.6	84.4	96.6	93.7	78.4
lower quartile	47.6	45.6	41.4	46.3	45.6	53.7	48.8	42.8
lower decile	27.9	24.5	22.8	28.1	26.0	27.8	27.5	25.1

Source: RIAFE, own calculation

According to the table 8 can be stated that in agricultural sector in period of years 2004-2011 DSO of short-term liabilities in the most companies was shorten (median in 2011 is less than median in 2004).

DSO of short-term trade liabilities

Results of the indicator are shown in the table 9 and for the values of the DSO of short-term trade liabilities in year 2011 can be stated:

- 10% companies with the worst DSO of short-term trade liabilities in reached values 156,0 days and more (upper decile).
- 25% companies with the worst DSO of short-term trade liabilities in reached values 92,1 days and more (upper quartile).
- Average value of the indicator DSO of short-term trade liabilities in selected companies reached in 2011 level 67,4 days (average).
- 50% companies reached values of the DSO of short-term trade liabilities 44,9 and less and 50% companies reached values 44,9 and more (median).

- 25% companies with the best DSO of short-term trade liabilities reached values 19,3 days and less (lower quartile).
- 10% companies with the best DSO of short-term trade liabilities reached values 6,9 days and less (lower decile).

For evaluation of the financial health of the company is also very important to review the relationship between the indicators DSO of receivables and DSO of short-term liabilities.

Table 9. Descriptive characteristics for the DSO of short-term trade liabilities in years 2004-2011

Year	2004	2005	2006	2007	2008	2009	2010	2011
upper decile	149.5	167.5	145.2	167.2	155.1	191.2	183.5	156.0
upper quartile	90.6	97.3	89.7	101.2	92.9	117.6	102.1	92.1
average	75.5	79.1	71.8	80.3	76.1	88.9	77.1	67.4
median	53.5	54.6	45.9	53.1	52.5	59.8	52.4	44.9
lower quartile	24.7	25.1	22.3	25.2	23.2	23.5	22.3	19.3
lower decile	10.9	10.4	8.0	8.8	8.3	8.7	9.0	6.9

Source: RIAFE, own calculation

According to the development of the DSO of short-term liabilities can be stated that in most companies in agricultural sector in period of years 2004-2011 the length was shorten.

Conclusions

From the nature of the agricultural arises its lower activity in comparison with industry. In the assessment of the selected activity indicators in Slovak agriculture can be reached results summarized as follow.

The results of the total assets turnover in time demonstrate decreasing intensity of use of total assets. It is result of the rising level of the total assets and staging respective decreasing sales. It represents that agricultural sector is less active in comparison between year 2004 and 2011 in sense of realization of its production in form of sales in relation to used assets. However, from 2009 to 2011 is possible to identify a clear growing trend. This growing trend did not eliminate the decrease in comparison with the year 2004. The reason of this development was extremely negative year 2009. Decreasing development of the activity in comparison year 2004 and 2011 measured by the total assets turnover confirms also the rising DSO of the total assets.

DSO of receivables has rising trend. It was caused by rising level of receivables and staging respective decreasing level of sales. This indicator also confirms the lower activity of the agricultural sector and slight improvement after the year 2009. In contrast to other activity indicators which development was worse in period of years 2004-2011, DSO of trade receivables has better development in agricultural sector in comparison between 2004 and 2011.

During the reporting period the length of the DSO of short-term liabilities was shortening in most of the selected companies. A significant improvement has been made since 2009. According to the indicator DSO of short-term trade liabilities during the period of years 2004-2011 in most of the selected companies the length was shorten.

Literature

Grznár, M. – Foltínová, A.: Finančné pozície podnikov v agrárnom sektore po vstupe do EÚ. (výstup projektu VEGA č.1/0686/08 „Podpora controllingových systémov v praxi SR podľa vyspelých controllingových systémov v krajinách EÚ“. [www.ekonomikaamanagement.cz/getFile.php?fileKey...lang=cz] (10.3.2013)]

Serenčéš, P. – Tóth, M. – Čierna, Z. – Rábek, T.: Development of profitability, liquidity and activity in agricultural enterprises in years 2000-2008, In.: Acta oeconomica et informatica 1/2010, Nitra, s.1-8

Zalai, K.: Finančno ekonomická analýza podniku. Bratislava, 2006, 305 s. ISBN 8-88848-89-1

Authors' details

Ing. Zuzana Čierna, PhD.

Ing. Jana Prevužňáková

Slovak University of Agriculture in Nitra

Faculty of Economics and Management

Department of Finance

Tr. A. Hlinku 2, 949 76 Nitra, Slovakia

e-mail: zuzana.cierna@uniag.sk, 29362@is.uniag.sk