

# Financial Situation of Crop and Animal Farms in Slovakia

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**Abstract:** *This paper deal with financial situation of crop and animal production based on an analysis of a unique set of agricultural farms operating in Slovak Republic. Slovakia is perceived as a leader among the European countries due to its size of farms as up to 90 of the utilized agricultural land is farmed by large farms. We can observe the irregular nature of Slovak agriculture, where a minority of farms (14.98%) cultivates the majority (80.23%) of the agricultural land. In our paper farms are divided in our research to two groups (according to the share in sales of crop or animal production) and each is characterized by descriptive statistics for selected ratios of financial analysis. In the long run, crop farms are profitable and profit from crop production is used to cover the losses from animal production. 50% of animal farms with low profitability generate higher loss than the 50% of animal farms with better ROE results. Results also show, that 25% of best performing crop and animal farms are able to generate profit. . In the paper we use the evaluation of indebtiness by using costs of debt capital (CoDC) with basic earning power (BEP) ratio. Costs of debt capital is relatively high. In average only 26.6% of farms satisfies the condition „BEP>CoDC“ and from these are more than 60% crop farm. For these farms we recommend to increase the debt ratio as it will increase the return on equity (ROE).*

**Key words:** Financial situation · Agriculture · Financial analysis

**JEL Classification:** Q14 · Q18

## 1 Introduction

The primary mission of agriculture, which is an integral part of each national economy is to ensure food security for the population. Supporting role in this case is held by the State and the European Union. But even this support is not always a guarantee of profitability or position on the market. Part of efforts to ensure the competitiveness is also the knowledge of the environment in which the company operates. For correct management, decisions and risk elimination manager needs to gain information about financial performance of the company, about financial performance of the competitive company, about the financial health and position of the company within the industry. The role of financial analysis, as well as other modern performance measurement indicators is the provision of such information.

Financial health and financial performance of the company, which is an essential prerequisite for financial condition of enterprises are subject to the ability to create added value respectively profit, as described Nývltová, R., & Marinič, P. (2010). Financial performance also assumes an optimal capital structure and adequate debt, which means that the company has a substantial amount of capital is adequately liquid and eligible to pay their financial commitments.

Rajčániová, M. – Sudzina, F. (2002) argue that the current problems, which persist for a longer period, it is precisely the issue of measuring business performance. Comparing the performance of the company expressed with other businesses that have the same line of business can point out many weaknesses and help its subsequent development. And this is one reason why economists effort to constantly develop newer methods of dealing with the assessment of efficiency of businesses.

According to the essential literature, there are many ways, how the economic performance, profitability and risk can be assessed (Váryová et al., 2015). In the recent period, there has been higher attention paid to the topic of risk and return of Slovak agricultural companies (Tóth et al., 2014, Serenčěš et al., 2016).

To increase the efficiency of farms is also an adequate so called benchmarking. Constantly reviewing of own performance in the enterprise and their subsequent comparison with the performance of the enterprises, which recorded the best results, are comparable in size and also the production specification. This modern method gives businesses the opportunity to examine and continuously improve critical processes, identifying and assessing the strengths and weaknesses of the company set aside less effective activities, detect threats and opportunities, and thanks to the objectives and strategies to positive growth of competitiveness, says Chrastinová, Z. (2012).

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## 2 Methods

The data used for the analysis are from the database of Ministry of Agriculture and Rural Development of the Slovak Republic, over the period 2009 - 2014. For our analysis, data were selected according to the production orientation to the subset of crop farms and animal farms. The selecting criterion was the share of animal production based on sales. We created 2 groups of farms. When the farm generated more than 50% of revenues from crop production, it was determined to be crop farm. Analogically, the selection was done for animal farms. The decision to focus on the classification by production is clear from results of scientific studies, authors dealing with differing experiences of the financial situation of agricultural enterprises. From the dataset the following farms were excluded: farms with negative equity (liabilities exceeding total assets) and farms, where is not possible to calculate the ratios (f. e. denominator equal zero) over the observed period. Last criterion was to exclude the outliers for every ratio. The minimum and maximum values of ratios (our outlier) are stated in results. The number of farms in our sample after excluding the outliers are presented in the Table 1. In each period we used the data of 37% of all farms on average.

**Table 1** Definition of the sample of the farms

Year	2009	2010	2011	2012	2013	2014	Average
Number of the enterprises in a basic group	1383	1305	1412	1480	1483	1490	1425.5
Number of the enterprises in our sample	517	517	530	532	528	520	524
Sample/Basic Group in %	37,4%	39,6%	37,5%	35,9%	35,6%	34,9%	36,8%

Source: Database of Ministry of Agriculture and Rural Development of the Slovak Republic, own processing

We used these selected ratios of financial analyses for rating of financial situation of crop and animal production in our sample

$$ROE = \frac{\text{Earnings After Taxes}}{\text{Shareholders Equity}} \quad (1)$$

$$\text{Debt Ratio} = \frac{\text{Total Debt}}{\text{Total Assets}} \quad (2)$$

$$\text{Cost of Debt Capital} = \frac{\text{Interest Expense}}{\text{Long - Short Term Bank Credits and Financial Assistance}} \quad (3)$$

$$\text{Basic Earning Power} = \frac{\text{EBIT}}{\text{Total Assets}} \quad (4)$$

Achieved values of selected ratios - in particular indicators of ex-post financial analysis are characterized by selected descriptive statistics (quantiles, median, average). The results are demonstrated by Box plot charts, which shows the median, upper and lower quartile. The length of the box represents interquartile range (IQR), i.e. central 50% of values file. Right comma is 75 percentile and left comma 25 percentile.

## 3 Research results

Since 1989 the former socialist cooperatives and state-owned farms have been transformed into private business companies and cooperatives. In the year 2014 in Slovakia there were 2087 private companies (1968 Ltd. and 119 JSC.), and only 566 cooperatives. We can observe the irregular nature of Slovak agriculture, where a minority of farms (14.98%) cultivates the majority (80,23%) of the agricultural land (Table 2). In absolute terms, 2653 agricultural holdings farmed 1,5 million hectares of agricultural land in 2014. This phenomenon was also observed in the Czech Republic, although in Slovakia it was more prominent. Distribution of land, with many small farms sharing a low percentage of agricultural land and a few large holdings farming the vast majority of the UAA, explains the very high average area per farm in Slovakia. Large farms generally rent the land and therefore significantly influence the rent and land price.

**Table 2** Size structure of Slovak farms

Legal form	Number of farms		UAA 2014		
	2014	Share on all farms (%)	Land (ha)	Share on all land (%)	Land per farm
Joint stock company	119	0.67%	132 472.01	7.03%	1113.21
Cooperative	566	3.20%	691 054.33	36.7%	1 220.94
Small – family farm	9 785	55.26%	53 291.14	2.83%	5.45
Ltd.	1 968	11.11%	687 429.45	36.5%	349.30
Farmers	5 046	28.50%	303 866.73	16.14%	60.22
Other	224	1.26%	15106. 39	0.80%	n.a
Total	17 644	100%	1 883 220	100.00%	n.a

Source: Data of the Agricultural Paying Agency of Slovakia (2015), own processing

### 3.1 Return on ekvity (ROE)

Our first analysed ratio is Return on equity (ROE). It is the amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. We can conclude that overall profitability in the Slovak agricultural sector is at the low level. From the comparison of crop and animal farms it is obvious that the differences in ROE is small in each observed period. Animal and crop production is very closely related, and therefore their development trends are similar as well. However, the return of crop farms in each period is positive, while the animal farms are suffering loss. Median values of animal farms are higher than the average (except for 2014). This means that 50% of animal farms with low profitability generate higher loss than the 50% of animal farms with better ROE results. Results also show, that 25% of best performing crop and animal farms are able to generate profit.

**Table 3** Return of equity of crop farms and animal farms

ROE	Year											
	2009		2010		2011		2012		2013		2014	
	AP	CP	AP	CP	AP	CP	AP	CP	AP	CP	AP	CP
Count	251	266	270	247	248	282	224	308	232	296	228	292
Mean	-0.2%	-0.2%	0.4%	1.9%	-0.3%	5.5%	0.0%	2.7%	-0.5%	2.6%	2.4%	3.1%
Percentile 25	-3.7%	-4.5%	-2.2%	0.0%	-2.6%	1.4%	-2.2%	0.2%	-2.8%	0.2%	0.0%	0.2%
Median	0.4%	0.6%	0.2%	1.2%	0.3%	4.8%	0.2%	2.0%	0.4%	1.7%	1.5%	2.0%
Percentile 75	3.7%	4.1%	3.5%	6.1%	2.6%	9.4%	2.7%	6.7%	2.1%	5.8%	4.7%	6.7%
Minimum	-19.7%	-19.6%	-19.5%	-19.8%	-19.7%	-17.8%	-19.7%	-18.1%	-19.6%	-20.0%	-18.4%	-18.0%
Maximum	19.5%	19.8%	19.5%	19.7%	19.6%	19.8%	18.3%	19.4%	19.7%	19.2%	19.8%	19.8%

Source: Database of Ministry of Agriculture and Rural Development of the Slovak Republic, own processing

### 3.2 Debt ratio (DR)

Our second ratio is Debt ratio (DR). The debt ratio is defined as the ratio of total – long-term and short-term – debt to total assets, expressed as a decimal or percentage. It can be interpreted as the proportion of a company's assets that are financed by debt. Table 4 shows the average debt ratio of crop and animal farms which ranges from 40-46%. Financial theory states that debt capital is cheaper than equity, on the other hand we must respect issues of financial stability, of financial freedom and problems of financial distresses. In the paper we use the evaluation of indebtedness by using costs of debt capital with basic earning power ratio. The basic principle is that if earning power ratio is higher, than cost of debt capital, farm can benefit by increasing the level of debt ratio – financial leverage. Higher level of debt in this case increases return on equity.

**Table 4** Debt of ratio of crop farms and animal farms

DR	Year											
	2009		2010		2011		2012		2013		2014	
	AP	CP	AP	CP	AP	CP	AP	CP	AP	CP	AP	CP
Count	251	266	270	247	248	282	224	308	232	296	228	292
Mean	41.0%	45.5%	39.6%	42.5%	41.3%	45.0%	42.3%	45.8%	41.6%	48.0%	44.1%	46.3%
Percentile 25	26.2%	29.4%	23.6%	23.7%	24.9%	27.2%	25.5%	27.0%	25.6%	29.9%	27.2%	28.2%
Median	38.3%	44.8%	36.5%	40.2%	39.6%	42.2%	40.3%	44.2%	39.0%	46.6%	41.2%	43.8%
Percentile 75	54.5%	62.1%	53.8%	58.7%	56.1%	64.1%	58.3%	63.1%	57.6%	66.5%	58.6%	63.2%
Minimum	10.1%	10.8%	10.4%	10.2%	10.2%	10.2%	10.4%	10.5%	11.0%	10.5%	10.4%	11.9%
Maximum	89.9%	89.8%	89.4%	87.4%	89.3%	89.6%	88.1%	89.8%	88.1%	89.5%	88.2%	89.2%

Source: Database of Ministry of Agriculture and Rural Development of the Slovak Republic, own processing

### 3.3 Cost of debt capital (CoDC)

Therefore in the next step we focus on cost of debt capital. Cost of debt refers to the effective rate a company pays on its current debt. A company may use various bonds, loans and other forms of debt, so this measure is useful for giving an idea as to the overall rate being paid by the company to use debt financing. This ratio we could not adjust for the effect of timing of the loan. The problem arises due to the balance and income statement differences. Interest expenses as a part of the income statement include all paid interest to lenders over the year. On the other hand, debt as a part of the balance sheet reflect only the situation as of the 31.12. of each year. Therefore loans repaid during the year and new loans at the end of the year report not adequate interest expenses and therefore the ratio does not report correct values in these cases. Anyway the result in Table 5 show the change of cost of debt capital over the period of observed years.

**Table 5** Cost of debt capital of crop farms and animal farms

CoDC	Year											
	2009		2010		2011		2012		2013		2014	
	AP	CP	AP	CP	AP	CP	AP	CP	AP	CP	AP	CP
Count	251	266	270	247	248	282	224	308	232	296	228	292
Mean	6.8%	6.9%	6.9%	7.0%	6.4%	7.1%	7.1%	7.0%	6.0%	5.7%	5.5%	6.0%
Percentile 25	3.5%	4.2%	3.9%	3.8%	3.6%	4.0%	4.1%	3.8%	3.2%	2.8%	2.5%	3.1%
Median	5.8%	5.9%	5.8%	6.1%	5.7%	6.3%	6.5%	5.9%	5.1%	4.7%	4.4%	5.1%
Percentile 75	9.1%	8.7%	9.3%	9.7%	8.3%	9.5%	8.9%	9.3%	7.4%	7.9%	7.1%	8.4%
Minimum	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum	20.0%	19.2%	19.5%	19.6%	19.9%	19.4%	19.6%	19.7%	19.9%	19.7%	19.4%	19.9%

Source: Database of Ministry of Agriculture and Rural Development of the Slovak Republic, own processing

### 3.4 Basic earning power ratio (BEP)

Second ratio for evaluating leverage opportunities is Basic earning power ratio (BEP). The BEP ratio is simply EBIT divided by total assets. EBIT, or earnings before interest and taxes, is a measure of how much money a company makes. The advantage of using EBIT is, that it allows comparisons of companies with different capital structure and tax situation. Results in Table 6 show that BEP of crop farms is higher in each observed period when compared to animal farms.

**Table 6** Basic earning power ratio of crop farms and animal farms

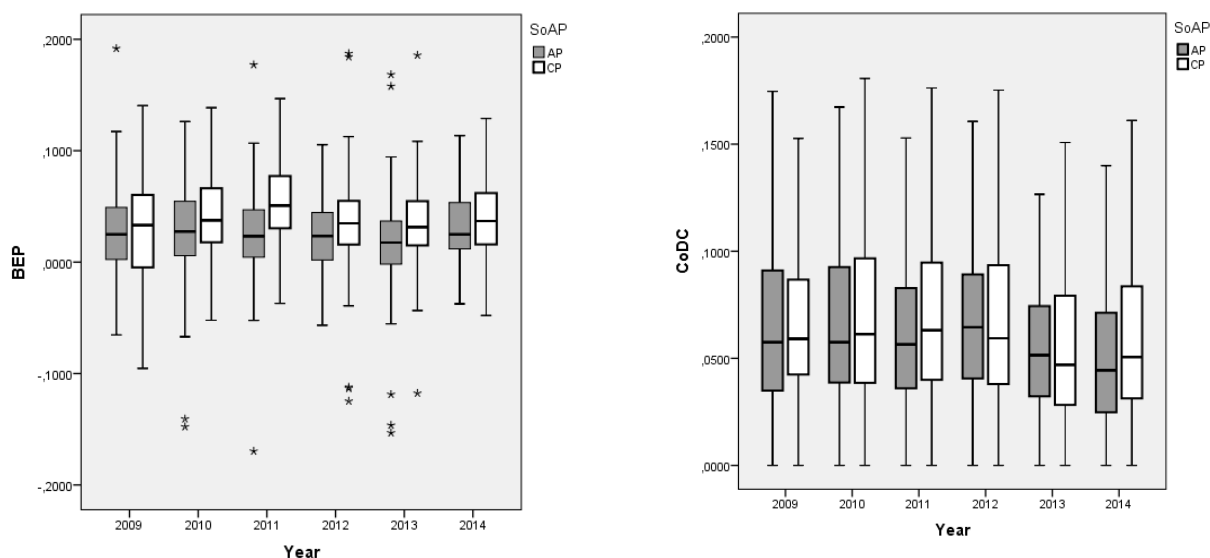
BEP	Year											
	2009		2010		2011		2012		2013		2014	
	AP	CP	AP	CP	AP	CP	AP	CP	AP	CP	AP	CP
Count	251	266	270	247	248	282	224	308	232	296	228	292
Mean	2.4%	2.6%	3.1%	4.0%	2.1%	5.5%	2.4%	3.5%	1.8%	3.5%	3.1%	3.9%
Percentile 25	0.2%	-0.5%	0.6%	1.8%	0.4%	3.0%	0.2%	1.6%	-0.2%	1.5%	1.2%	1.6%
Median	2.5%	3.3%	2.7%	3.8%	2.3%	5.1%	2.3%	3.5%	1.8%	3.1%	2.5%	3.7%
Percentile 75	4.9%	6.0%	5.5%	6.6%	4.7%	7.7%	4.5%	5.5%	3.7%	5.5%	5.3%	6.2%
Minimum	-11.8%	-15.5%	-14.8%	-10.0%	-17.0%	-10.0%	-11.0%	-12.5%	-15.3%	-11.8%	-9.0%	-10.3%
Maximum	19.2%	18.4%	15.7%	16.3%	17.7%	18.7%	15.7%	18.7%	16.8%	18.6%	16.0%	18.7%

Source: Database of Ministry of Agriculture and Rural Development of the Slovak Republic, own processing

### 3.5 Comparison BEP with Costs of debt capital

Finally we compare in Figure 1 and Table 7 costs of debt capital with basic earning power ratio to find farms for which we recommend increase of debt ratio. In this farms higher debt ratio will increase return of equity which in market economy is beneficial for owners. In Figure 1 we present Box-plots for both ratios (BEP and CoDC).

**Figure 1** Comparison BEP with CoDC



Source: Tables 5, 6, Own processing

The comparison of ratios shows that in average only 26.6% of farms satisfies the condition „BEP>CoDC“, while the most farms meet the criterion in 2014 (Table 7). Group of farms is dominated by farms focused on crop production (60% of farms) as their profitability is higher. For these farms we recommend to increase the debt ratio as it will increase the return on equity (ROE). Of course the increase of debt may have negative effects on farms liquidity and financial distress. In the other group of farms with BEP lower than CoDC we recommend to decrease the debt ratio. This will increase the farms profitability (ROE).

**Table 7** Comparison Costs of debt capital with BEP

Year	BEP<CoDC						BEP>CoDC					
	Together		AP		CP		Together		AP		CP	
	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %
2009	407	78.7%	202	49.6%	205	50.4%	110	21.3%	49	44.5%	61	55.5%
2010	386	74.7%	209	54.1%	177	45.9%	131	25.3%	61	46.6%	70	53.4%
2011	375	70.8%	199	53.1%	176	46.9%	155	29.2%	49	31.6%	106	68.4%
2012	394	74.1%	178	45.2%	216	54.8%	138	25.9%	46	33.3%	92	66.7%
2013	392	74.2%	191	48.7%	201	51.3%	136	25.8%	41	30.1%	95	69.9%
2014	354	68.1%	161	45.5%	193	54.5%	166	31.9%	67	40.4%	99	59.6%
<b>Average</b>	<b>385</b>	<b>73.4%</b>	<b>190</b>	<b>49.4%</b>	<b>195</b>	<b>50.6%</b>	<b>139</b>	<b>26.6%</b>	<b>52</b>	<b>37.8%</b>	<b>87</b>	<b>62.2%</b>

Source: Tables 5, 6, Own processing

#### 4 Conclusions

In 2004 Slovakia joined the EU. The agricultural market became a part of the EU agricultural market. Farms in Slovakia are large when compared to EU average. More hectares means more financial support. EU subsidies are decoupled from production which means they are not production linked. Farmers are not motivated to produce and the intensity of support is increasing. Farmers are since 2004 continually decreasing the animal production in favor of crop production. In the long run, crop farms are profitable and profit from crop production is used to cover the losses from animal production. 50% of animal farms with low profitability generate higher loss than the 50% of animal farms with better ROE results. Results also show, that 25% of best performing crop and animal farms are able to generate profit. In the paper we use the evaluation of indebtedness by using costs of debt capital (CoDC) with basic earning power ratio (BEP). The basic principle is that if earning power ratio is higher, than cost of debt capital, farm can benefit by increasing the level of debt ratio – financial leverage. Higher level of debt in this case increases return on equity. Costs of debt capital is relatively high. In average only 26.6% of farms satisfies the condition „BEP>CoDC“ and from these are more than 60% crop farm. For these farms we recommend to increase the debt ratio as it will increase the return on equity (ROE). In the other group of farms with BEP lower than CoDC we recommend to decrease the debt ratio. This will increase the farms profitability (ROE).

#### Acknowledgments

This work was supported by the Slovak Research and Development Agency under the contract No. APVV-15-0552 with the title Impact of financial markets and agricultural policies on the agri-food sector and VEGA 1/0912/14 with the title The Common Agricultural Policy 2014-2020 and its impact on the financial situation of farms in Slovakia.

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