



---

## COST RECOVERY IN THE AGRICULTURE

O. Milev\*

Department of Economics, Faculty of Economics, Trakia University, Stara Zagora, Bulgaria

### ABSTRACT

The PURPOSE of the present development is to analyze and evaluate costs by branch in agriculture and to propose approaches for their minimization in order to increase the financial results in the sector. On the basis of available statistical information and applied theoretical statements, a METHOD was chosen for the analysis of the return on costs related to the level and dynamics of cost-type profitability. The RESULTS of the analysis make it possible to determine the most efficient production on the basis of an optimal "profit-cost" ratio, with a focus on minimizing costs in the separate areas in agriculture. The CONCLUSION is related to finding a cause-and-effect relationship between the components of cost profitability, which is the basis for specific recommendations and opportunities to increase its level. In this regard, profit is considered as the main, but not the only factor for the growth of profitability in the agriculture.

**Key words:** expenses, cost-type profitability, factor analysis, agriculture.

### INTRODUCTION

Agriculture is one of the most important economic sectors in Bulgaria. Its strategic value is multi-componential and is related to the realized production contributing to food security, the maintenance of biodiversity, the supply of raw materials for many other sectors of the national economy, the support for viable rural regions through provision of employment and income for a considerable part of the population. The most important agricultural sectors for the economy are crop growing, that includes grain and oil plants, fruit and vegetable production, and the animal husbandry sector, which comprises the production and processing of milk, pork, poultry, beef and lamb, eggs and secondary products.

In 2021 Bulgaria produced a greater quantity of grain and oil crops than required for satisfying the needs of the country. For these reasons, these were the leading product groups in the structure of agricultural export. According to statistical data, the gross value added created in the agricultural sector formed 4.3% of the total

GVA for the national economy and in reality it marked a raise of 6.1% versus the previous year (1).

The aim of the Agricultural Policy introduced by the EU is to assist agricultural farmers in dealing with new challenges and respond to the changing attitudes and expectations of people. This policy encompasses a wide circle of issues, including food quality, traceability, trade and advertising agricultural products. The EU provides financial subsidies to farmers and encourages sustainable and environmentally sound practices, by concurrently investing in the development of agricultural regions (2).

According to the Classification of Economic Activities, the agricultural sector with its two main branches - crop growing and animal husbandry – is part of Sector A “Agriculture, forestry and fisheries” (3).

Cost is one of the most important factors, because it facilitates the performance of economic activity in the enterprise and is directly related to the formation of the product price. A key element of the effective management in agriculture is the correct accounting of expenditures, their classification and systemizing by type and place of incurrance (4). Cost formation in the agricultural sector is influenced by the adopted technology for

---

\*Correspondence to: *Oleg Milev, Department of Economics, Faculty of Economics, Trakia University, Stara Zagora, Bulgaria, Student campus, e-mail: oleg.milev@trakia-uni.bg, authors phone: +359 42 699 431*

growing and yield of agricultural produce under certain natural conditions.

Production costs recovery is a necessary management tool for measuring the efficiency of the complete activity or of separate processes in the enterprises which fulfill agricultural tasks. This instrument is also known as Rate of Return (Rate of Profit) of costs. Production costs recovery refers to the increase of financial result as a consequence of proportional rise of all costs from the activity.

## METHODS

Profitability is the most important indicator for the enterprise and occupies a major place in the financial accounting analysis, because it provides information about the degree of efficiency of a firm. It is directly linked to financial result. Therefore, profit takes an active role in the calculation of the different types of profitability. The presence of a positive financial result signifies a prevalence of revenue over costs. The aim of every firm is to increase profit and minimize costs. Measured as an absolute value, it does not show the degree of efficiency, so profitability needs to be calculated as a relative indicator.

During the analysis of profitability, it is important to take into consideration the type of profit (gross, net), which will be used, as well as the cost type (total costs, costs for the activity). This is an important condition for receiving an objective evaluation.

For the purposes of the present study, we shall use cost profitability. This indicator is major for the evaluation of efficiency of the enterprise and refers to the ratio of profit to the incurred costs which agricultural enterprises make to realize their activity. Calculated as a percentile ratio, it shows the profit that each 100 BGN of incurred and accounted expenditures provides, or the pure return of 100 BGN of costs (5).

The calculation of the cost profitability is performed on the basis of summarized statistical data from the financial and accounting reports of agricultural firms. This excerpt represents 7% of stratified information from the firms operating in the agricultural sector in Bulgaria. For greater detail, the two main branches of the agrarian sector: crop growing and animal husbandry, are analyzed with individual comparative methods. The data used covers a period of five years, respectively from 2017.

Through comparing the cost profitability during different periods we can determine the relative change and dynamics related to the fluctuations of cost recovery in agriculture. This is a prime reference for the force and direction of the complex impact of the factors which determine cost profitability. The importance of this analysis arises from the fact that profit and costs are external factors, which each agricultural producer strives to change into a positive direction.

Cost profitability is calculated as a ratio of profit to costs, which the firms in the agricultural sector have made to realize their activity. For the purposes of this analysis it is more appropriate to use net (balance) profit and calculate it using the formula (6):

$$CP = \frac{NP}{TC} \cdot 100 \quad (1)$$

where: CP – Cost profitability; NP – Net (balance) profit; TC – Total costs

For a deeper analysis, it is necessary to calculate the absolute change, conditional coefficient of cost profitability, and the effects of the changes in revenues and costs on the changes in cost profitability (7).

The conditional coefficient of costs profitability (CCP<sub>cond</sub>) expresses the ratio of the profit from the previous year ( $NP_0$ ) to the total costs from the current year ( $TC_1$ ) is calculated with the formula:

$$CCP_{(cond)} = \frac{NP_0}{TC_1} \quad (2)$$

The influence of the changes in the size of the costs (infTC) on the absolute change of cost profitability is calculated as the difference between the conditional coefficient of cost profitability (CCP<sub>cond</sub>) and the cost profitability of the previous year ( $CP_0$ ).

$$infTC = CCP_{(cond)} - CP_0 \quad (3)$$

The influence of the changes in the size of the revenue (infTR) on the absolute change of cost profitability is calculated as the difference between the cost profitability from the current year ( $CP_1$ ) and the conditional coefficient of cost profitability (CCP<sub>cond</sub>).

$$infTR = CP_1 - CCP_{(cond)} \quad (4)$$

## RESULTS

The results from the cost profitability for the crop growing sector are summarized in **Table 1**, where the values of the main factors having an impact on it, such as net profit and total costs are presented. For greater detail, the absolute

changes for the period are calculated, as well as the effect of the changes in costs and revenues. (Table 1)

**Table 1.** Cost profitability in the crop growing sector over the period 2017-2021

CROP GROWING SECTOR	Years					
	2017	2018	2019	2020	2021	
Net (balance) profit (NP)	124176	118331	104209	122766	295415	
Total costs (TC)	757529	768353	802365	813069	876944	
Cost profitability (CP)	16,3922	15,4006	12,9877	15,0991	33,6869	21/17
Absolute change ( $\Delta$ CP)		<b>-0,9916</b>	<b>-2,4129</b>	<b>2,1114</b>	<b>18,5878</b>	<b>17,2946</b>
Conditional coefficient of costs profitability (CCPcond)		0,1616	0,1475	0,1282	0,1400	0,1416
Influence of the cost (infTC)		-16,231	-15,2531	-12,8596	-14,9591	-16,2506
Influence of the revenue (infTR)		15,2390	12,8403	14,9709	33,5469	33,5253

It is apparent in **Table 1** that the values of the cost profitability vary from 12,9877 in 2019 to their highest value in 2021 – 33,6869. In calculating the absolute change versus the previous year it is notable that the values are negative until the middle of the studied period, while towards its end they reach positive levels, with the highest value of 18,5878. Looking closely, we find that the negative absolute change of the cost profitability at the beginning of the period is due to the fact that the effect of the cost changes is bigger than the effect of the revenue changes. At the end of the period, the logically positive values are a consequence of the greater impact of the revenue, compared to the costs.

During the calculation of the absolute change in cost profitability at the end of the period versus the beginning taken as baseline, we find that the crop growing sector marks a positive value of 17,2946 BGN, meaning that at each 100 BGN of costs, the revenue increases by approximately 17,29 BGN.

The results of the cost profitability for the animal husbandry sector are presented in **Table 2**, which shows that cost profitability is very unstable, because the values for the period vary without permanent trend for either an increase, or a decrease. The highest values are measured in 2017 – 13,3648, and the lowest in 2021 – 8,1352.

During the analysis of the absolute change in cost profitability over the larger part of the period, negative values are found, except for 2019 versus 2018. The greatest negative impact is noted during the first period – 4,3368, which means that for each 100 BGN of costs, the revenues drop by approximately 4,34 BGN. This negative result is due to the greater impact of the cost changes with - 13,2407 compared to the impact of the revenue changes with 8,9038. The period with positive absolute change of cost profitability in 2019 versus 2018 amounts to 1,4879, where it is apparent that revenues prevail over costs.

In the animal husbandry sector the absolute change of cost profitability at the end of the period versus the beginning taken as a baseline, has a negative value and amounts to -5,2295, meaning that for each 100 BGN of costs, revenues decrease by approximately 5,23.

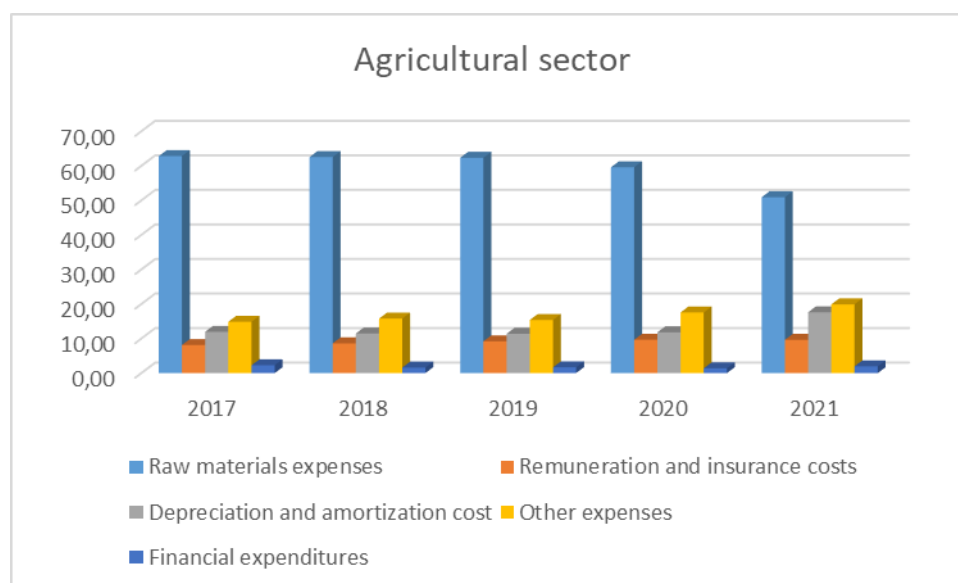
For the analysis of the cost profitability, it is very important to note the structure of expenditures. Due to the similar values of the obtained results from the analysis of the structure of the costs in the crop growing sector and the animal husbandry sector, we had to unite them into a single value for the agricultural sector.

**Table 2.** Cost profitability in the animal husbandry sector for the period 2017-2021

NIMAL HUSBANDRY SECTOR	Years					
	2017	2018	2019	2020	2021	
Net (balance) profit (NP)	40629	29558	34399	31156	29230	
Total costs (TC)	304001	327407	327117	327850	359301	
Cost profitability (CP)	13,3648	9,0279	10,5158	9,5031	8,1352	21/17
Absolute change ( $\Delta$ CP)		-4,3368	1,4879	-1,0127	-1,3679	-5,2295
Conditional coefficient of costs profitability (CCPcond)		0,1241	0,0904	0,1049	0,0867	0,1131
Influence of the cost (infTC)		-13,2407	-8,9375	-10,4109	-9,4164	-13,2517
Influence of the revenue (infTR)		8,9038	10,4255	9,3982	8,0485	8,0111

The values show graduate increase of the costs for the period of study. The structure of the total costs in the agricultural sector includes expenditures for raw and processed materials,

and external services, remuneration and insurance costs, amortization and devaluation, miscellaneous and additional financial expenditures.

**Figure 1.** Cost structure in the agricultural sector

During the analysis of the data regarding the cost structure in the agricultural sector, it is apparent from **Figure 1** that the expenditures for raw and processed materials are relatively constant at the beginning of the period. It is logical and normal that they should take up the largest relative share versus the total expenditures by approximately 62%. An exception is 2021 when they are reduced and reach 50,91%. The expenditures for remuneration and insurance gradually increase from 8.13% at the beginning of the period and reach 9.65% of the total costs for the sector in 2021. The third group of expenditures includes

amortization and devaluation costs which vary between 11.40% and 17.60%. The next group contains other expenditures, which gradually increase from 14.85% to 19.90%. The financial expenditures mark the lowest levels versus the share of total costs, and during the studied period they show a tendency to a decrease respectively from 2.27% to 1.40%.

## CONCLUSION

The agricultural sector is among the most dynamically developing with respect to modernization, robotizing, and digital transformation. It is closely related both to

climate conditions, and to green challenges on a global scale. The agricultural sector remains at the center of circular economy and bio-based societies, it preserves and develops regions, and enriches science.

The production cost recovery in the crop growing sector, calculated through cost profitability at the end of the period versus the beginning taken as a baseline, has a positive value, which shows that the growth of the financial result advances at a faster pace than the increase of production costs.

In the animal husbandry sector, the absolute change of the cost profitability at the end of the period versus the beginning taken as a baseline has a negative value. This negative result is a consequence of the bigger impact of the changes in costs, compared to the changes in revenues.

Structurally, in the agricultural sector the largest relative share is taken up by the raw and

*MILEV O.*

processed materials costs, followed by remuneration and insurance, and amortization and devaluation expenditures.

The cost profitability indicator must be approached carefully, because each change in the cost size is reflected as the same size, but with a reverse sign in the numerator of the ratio.

#### **REFERENCES**

1. Nacionalen statisticheski institut, Sofia 2022
2. Ministerstvo na zemedeliето, Obshta selskostopanska politika 2023-2027, Sofia, 2023
3. Klasifikacia na ikonomicheskite deinosti, (KID-2012), NSI, Sofia 2012
4. Kasarova, V., Dimitrova, R., Analiz na finansov otchet, Sofia, 2005
5. Todorov L., Rentabilnost i biznes risk, izd. Trakia – M, Sofia, 2003
6. Chukov, H., Finansovo-stopanski analiz na predpriatiето, izd. Trakia-M, Sofia, 2003
7. Timchev, M., Finansovo-stopanski analiz, izd. Trakia-M, Sofia, 1999