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# CHARACTERISTICS OF DAIRY COW FARMS WITH POSITIVE ECONOMIC RESULTS

GABRIELA-DALILA STOICA<sup>1</sup>

## Abstract

*The paper presents the analysis of synthetic economic indicators from 2018-2020 for a number of 30 dairy farms in various areas of the country, which were the subject of case studies. The purpose of analyzing the indicators is to know the essence of the elements that contributed to obtaining positive economic results for the dairy farms analyzed. The average size of the analyzed farms is 104.16 heads, being between 5-568.33 heads. The average milk production per cow head was 5709.44 liters, with a minimum of 3100 l / head and a maximum of 9,633, 3 l / head. By capitalizing the milk productions obtained at an average price of 1.69 lei / l, registered for the analyzed farms, an average profit of 0.13 lei / liter was achieved, as well as a profit rate between 0 .09% and 27.25%. Although they registered positive economic results, at the level of all 30 economic entities, there was, on average, an exploitation risk rate of 82.8%. But the diversity of the products obtained, the capitalization of the fodder and their transformation into high quality animal products contribute to the development of the sector from a sustainable point of view.*

**Keywords:** indicators, farms, milk, economic

**JEL classification:**Q10, Q12

## INTRODUCTION

The paper is part of the research carried out within the ADER Project 24.1.2 - Stage 3: Economic efficiency of cattle and buffalo farms of different sizes, located in different geographical regions and landforms, funded by MADR.

Grigoraș M.A., in the paper "Research on trends in animal production in the last decade in Romania" claims that after Romania's accession to the European Union, agriculture has changed, especially the livestock sector, both in terms of structures and technologies applied, keeping up with the new challenges. Also in the same study it is assumed that the modernization and application of new technologies, diversification of production and application of efficient management could contribute to the development of agriculture. The livestock sector is facing significant changes in terms of the number of farms, the average size of farms, the diversification of production, the yields obtained, the yield, etc.

Cattle farming is a key branch of national and world agriculture, due to the values of production obtained as well as the diversity of products obtained. In the paper "Handbook of good practices in cattle breeding", Maciuc V., Leonte C. and Radu-Rusu R., argue that cattle provide about 95% of the total amount of milk consumed globally.

In this context, this paper aimed at analyzing the synthesis indicators of farms from case studies necessary to achieve stages 3 of the ADER 24.1.2 project, which contributed to the knowledge of the elements of obtaining positive economic results for dairy farms.

## MATERIAL AND METHOD

The data used to conduct the study are part of a series of 30 case studies conducted on dairy farms, located in different development regions and different forms of relief. Thus, these data were analyzed using the quantitative and qualitative method, by calculating and analyzing the main indicators of economic efficiency. Statistical indicators such as: minimum, maximum and average were also calculated.

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The arithmetic mean or mean value of a series of values is the ratio of the sum of the values of the series to their number.

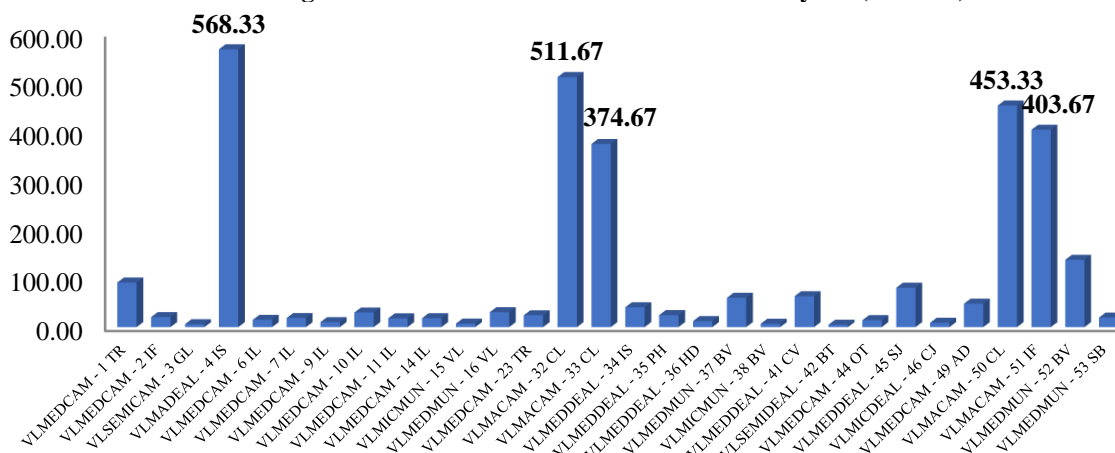
$$\bar{X} = \frac{x_1 + x_2 + \dots + x_n}{n} = m$$

For the calculation of the technical-economic indicators (minimum, maximum and arithmetic mean), the established relations from the specialized economic literature were used.

## RESULTS AND DISCUSSIONS

The main synthesis indicators of the farms from the case studies necessary for the realization of stage 3 of the ADER 24.1.2 project were analyzed. Therefore, at the level of the 30 analyzed farms that obtained positive economic results, from the point of view of the size of dairy farms, it was found that on the average of the period there were 104.16 heads, respectively between 568.33 heads in Iași county area and 5 heads in the western part of Moldova, in Botoșani county. It is also observed that the farms in Călărași also have a considerable number of dairy cows. At the opposite pole, there are farms in Botosani, Galati and Brasov with a number of numbers between 5 and 7.33 heads. (Figure 1.)

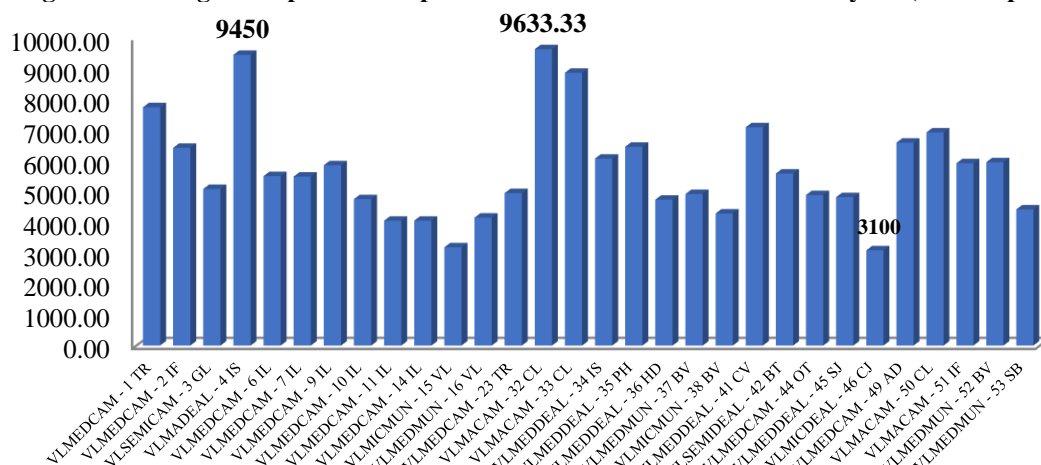
Figure 1. Size of farms in the case studies analyzed (number)



In general, individual milk production is influenced by a number of factors, such as cow breed, age, body shape, etc. Thus, the average milk production per animal, in the case of the analyzed farms, was 5709.44 liters.

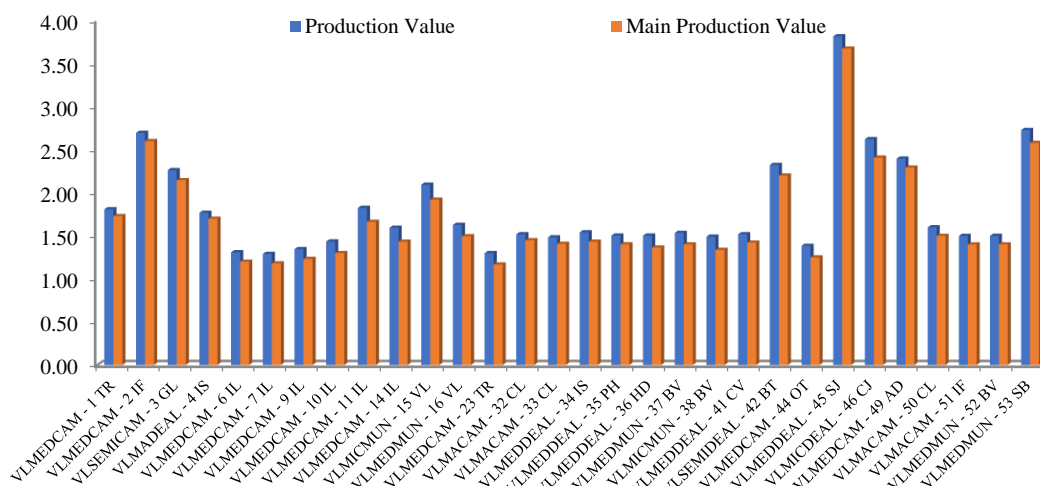
The most productive cows are found in Călărași County, where the maximum value of the period of 9633.3 liters / head of animal was registered, while the minimum milk / animal head productions were obtained in Cluj and Vâlcea counties, these being 3100 liters / animal head respectively 3200 l / animal head. (Figure 2)

**Figure 2. Average milk production per head of animals on the farms analyzed (l / head per animal)**



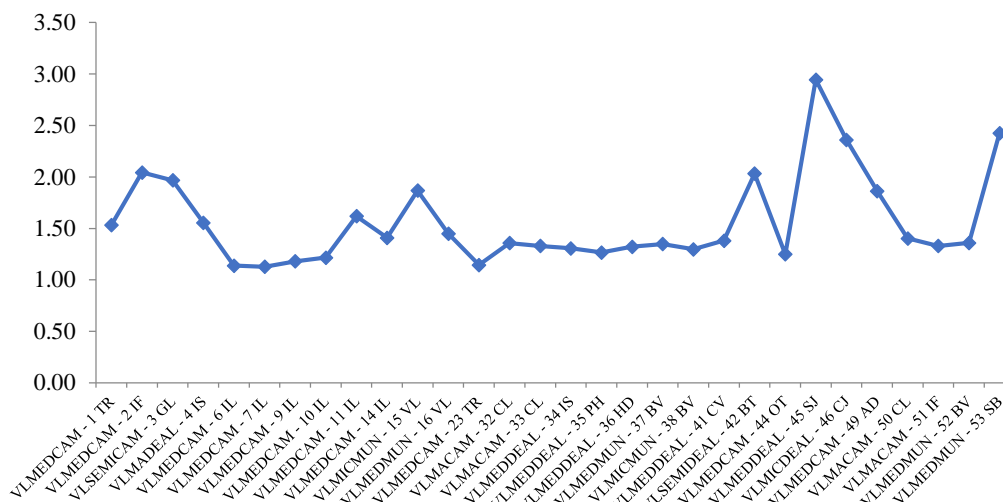
The value of production is the value expression of the volume of animal products obtained on the farms analyzed. Therefore, on average, the value of production is 1.81 lei / liter, registering minimum values within a farm in Ialomița County, 1.29 lei / liter and maximum values within a farm in Sălaj County, 3, 81 lei / liter, while the value of the main production has limits between 1.17 lei / liter and 3.81 lei / liter (Figure. 3).

**Figure 3. The value of the product (lei / l)**



There were significant differences between farm expenditure, so that, on average, expenditure on main production represents around 92.7% of total resources consumed. The highest expenses are registered in the northwest of the country, in Sălaj county, in the hill area, these being 3.09 lei / liter and the lowest expenses being 1.24 lei / liter registered in Ialomița county (Figure 4).

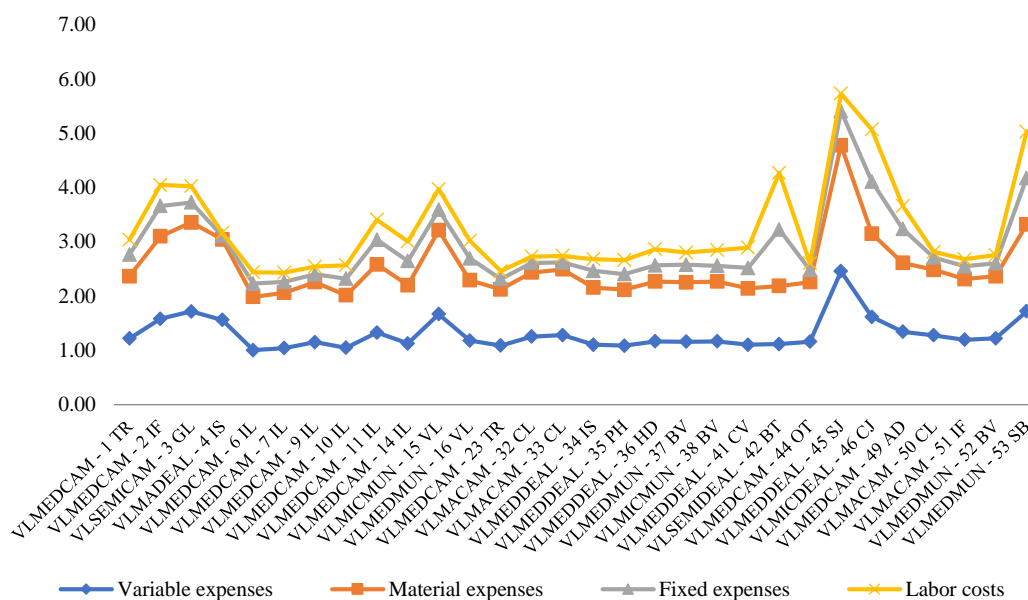
**Figure 4. Expenditure on main production (lei / l)**



Material costs account for 93% to 98% of total variable costs for the farms analyzed. On average, the variable expenses amount to 1.30 lei / liter while the material expenses are 1.24 lei / liter, with variations from 0.97 lei / l and 2.32 lei / l. (Figure 5)

From the structure of fixed expenses, the expenses with permanent labor are noticed, these rising on average to the value of 0.31 lei / l, representing approximately 82% of the total fixed expenses. Fixed expenses per unit of product decrease with increasing volume of activity and increase simultaneously with reduced activity. (Figure 5)

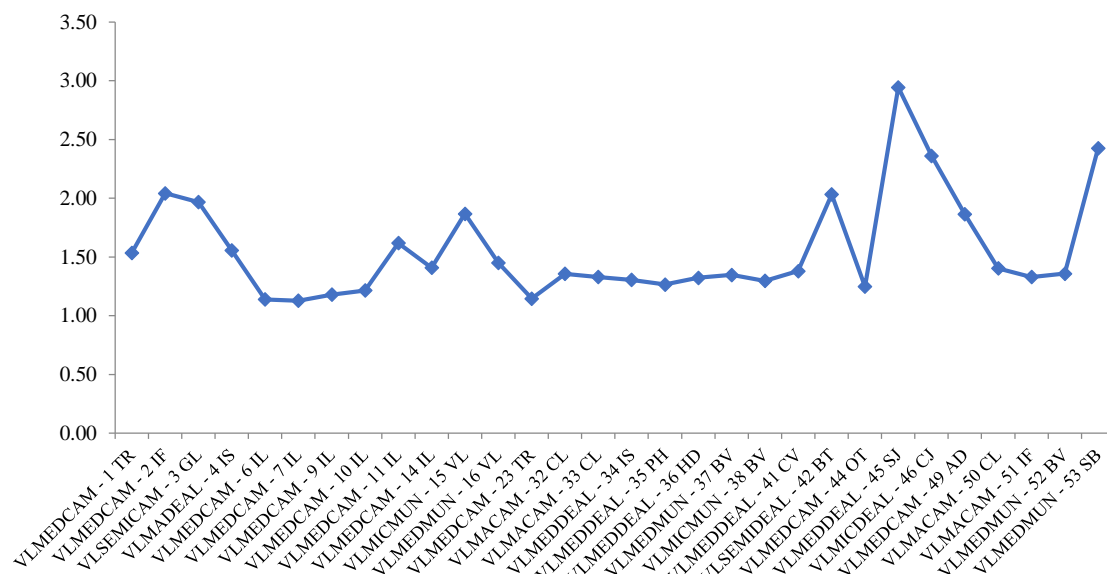
**Figure 5. Categories of expenses (lei / l)**



The unit cost, in this situation, is on average 1.56 lei / l while the capitalization of a liter of milk is made with an average price of 1.69 lei / liter which determines a profit of 0.13 lei / l. (Figure 6)

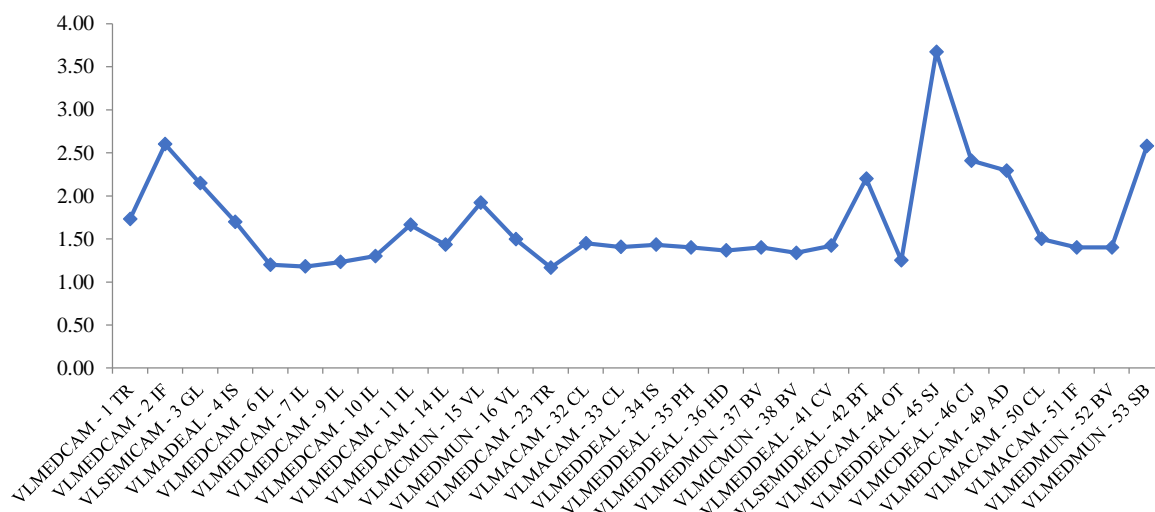
Higher unit cost values generally correspond to lower average milk production, or with lower production and a lower number of herds.

**Figure 6. Unit cost (lei/l)**



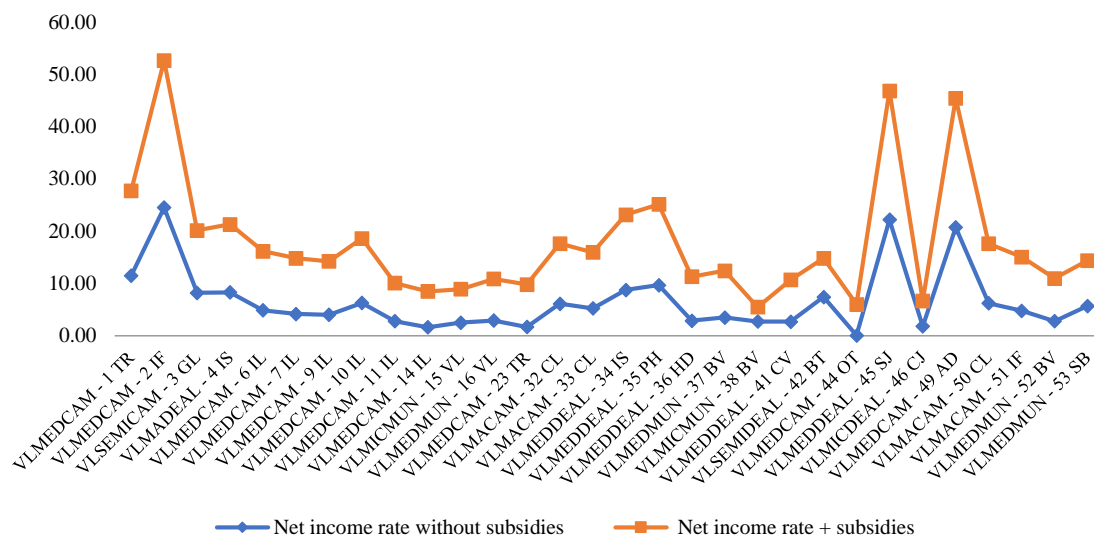
The highest profit registered is 0.73 lei / l within a farm in Sălaj County, with a cost per unit of product of 2.94 lei and a milk recovery price of 3.67 lei / l. The highest values of the capitalization price are registered in the farms in the hill and mountain area with small exceptions in the plain area. (Figure 7)

**Figure 7. Capitalization price (lei / l)**



By capitalizing the milk productions obtained at a capitalization price, on average of 1.69 lei/ l, registered for the analyzed farms, a profit of 0.13 lei / liter is achieved, as well as a profit rate between 0.09 % and 27.25%.

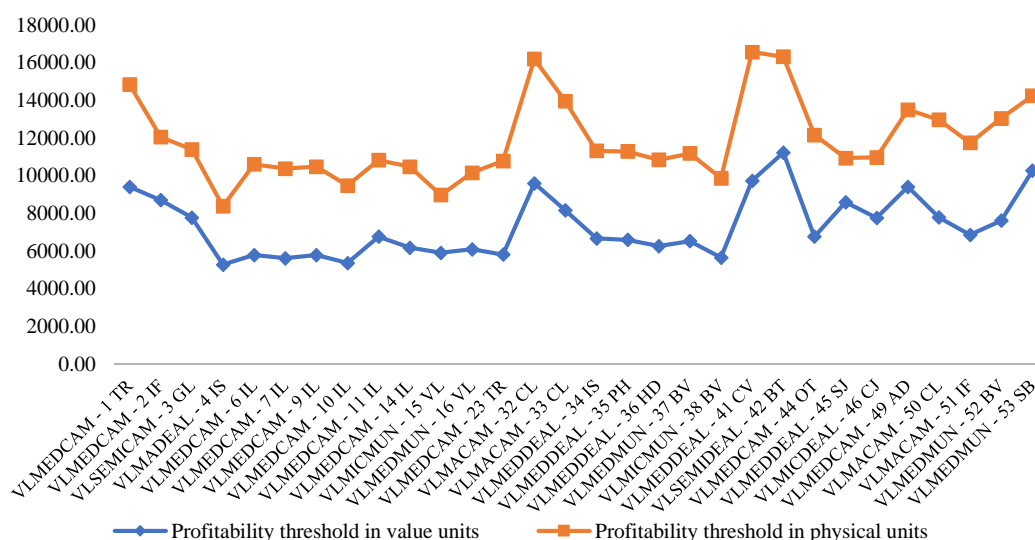
**Figure 8. Net income rate (%)**



The situation is changing as subsidies are also taken into account. Thus, by granting subsidies, an average net income rate of 11.22% is obtained, with approximately 71.29% higher compared to the income rate without the subsidies granted. (Figure 8)

The break-even point is the volume of activity for which the expenses incurred are equal to the income obtained from the capitalization of production. Thus, in the case of the 30 farms analyzed, the profitability threshold is, on average, 7320.82 lei expressed in value units and 4533.40 liters expressed in physical units. (Figure 9)

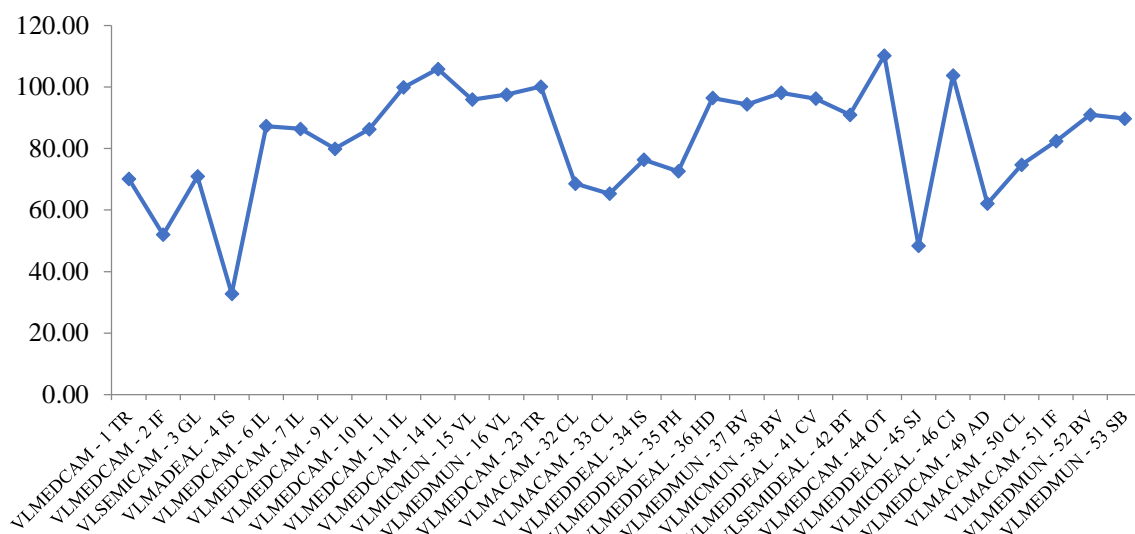
**Figure 9. Profitability threshold**



At the level of all 30 economic entities, an average risk of exploitation risk of 82.8% was registered. Exploitation risk is the ability of farms to adapt to changes that occur in the shortest possible time and at the lowest cost. The impossibility of adapting to these changes can lead to a decrease in profit. Thus, the most risky farm, from this point of view, is found in Olt County, with a rate of 110.25%, while the lowest and therefore most favorable level was registered in Iasi County

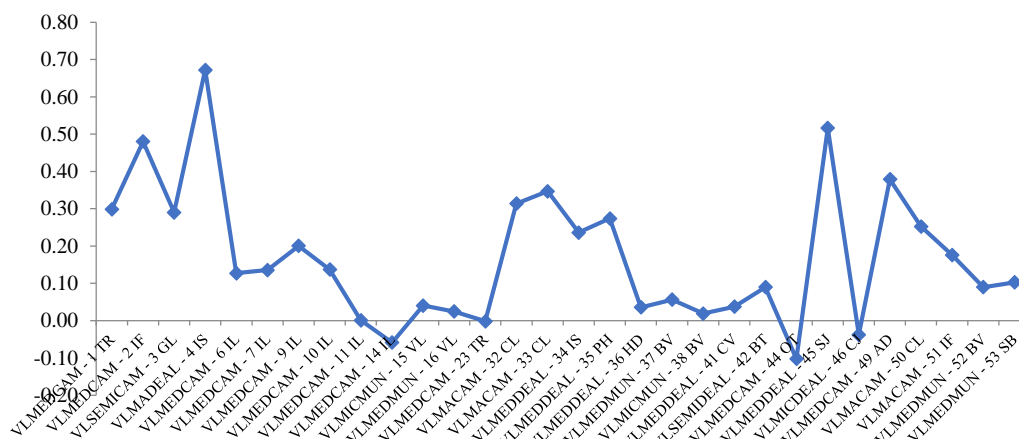
within farms which recorded a risk value of 32.81%. In general, the rate of exploitation risk is high on farms with smaller herds and lower yields. (Figure 10)

**Figure 10. Exploitation risk rate (%)**



The security index had values between -0.10 and 0.67. The most risky company, from this point of view is found in Olt County, given that the security index has the lowest level of -10%, and the most favorable farm is in Iasi County, with a security index of 67 %. Negative results were recorded in 6.7% of farms, especially in the hilly area. (Figure 11).

**Figure 11. Security index**



## CONCLUSION

Analyzing the average of the indicators calculated for the analyzed farms, it is found that the highest average production is found in the plain area (9633 l / head) while the highest value of production is found in the hill area (3.81 lei / l ). Regarding the expenses incurred, the highest total expenses including those with the main production are in the hill area (3.08 lei / l ). The highest value of the unit cost is also registered in the hill area (2.94 lei / l ) as well as the highest capitalization price of milk (3.67 lei / l ). The net income rate registers the highest value in the plain area (24.83%). The



profitability threshold expressed in value units has the highest values in the hill and mountain area (11,213.83 lei respectively 10,256.59 lei).

In conclusion, it is observed that the most profitable farms, from the point of view of the calculated indicators, are the farms in the hill area (also registering the highest profit (0.73 lei / l)) and the plain. The farms with the lowest profit are those that generally have a small number of herds, but which have a relatively high average production, with few cases where the farm has a large number of herds and a high average production.

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