

UDK 005.934:33

THE ROLE OF FINANCIAL SAFETY MARGIN IN DETERMINING LEVEL OF ECONOMIC SECURITY

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***Summary.** This article reveals the essence and features of calculating the break-even point and the financial safety margin. There has been presented the methodology of determining the level of economic security, depending on the values of considered indicators. This dependence is shown in the graph for ease of application. There has been calculated and determined the level of security on the example of a certain agricultural enterprise of the ATU Gagauzia.*

***Key words:** financial safety margin, profitability, productivity, break-even point, economic security.*

Introductin. The economic security of an enterprise is a condition of the most efficient use of resources and business opportunities to ensure stable functioning and development. An important indicator of sustainability and economic security of an enterprise serves financial safety margin. Analysis of its values can help administrator in making right management decisions. Thereby, the study of break-even point calculation features and financial safety margin indicators in determining the level of economic security becomes more actual.

Analysis of the latest researches. D. Parmakli's research lays the methodological basis of the analysis of break-even level of production for agricultural enterprises [1]. In some publications it is considered the break-even point calculation [2] and in particular on the example of production of crops [3]. However, it remains unexplored aspect of the impact of the break-even equal to the economic security of the enterprise, which requires additional applied research.

The purpose of the article is to present a method of determining break-even point and financial safety margin as an indicators of the level of enterprise economic security.

The results of research. The notion "economic security" is closely related to the concepts of "efficiency" and "profitability". In crop production obtaining high productivity rates is an important condition for profitable production. This justifies the necessity of break-even point calculation at each enterprise, what means the determination of crop yield which ensures equality between the sales revenue and total cost of production. If the actual crop yield is below the minimum one, the production becomes unprofitable, but if the opposite, the enterprise will get a profit. The minimum level of crop yield (q_{min}) can be determined by the formula:

$$q_{min} = \frac{FC}{p - AVC}, \text{ q/ha} \quad (1)$$

where: FC – costuri fixe /stands for fixed costs, lei/ha;

p – prețul de vânzare / stands for price per unit, lei/q;

AVC – costuri variabile calculate pe 1 q de producție / stands for variable costs per unit, lei/q.

Break-even point is different for every enterprise. Thus, the analysis of financial safety margin gives us more objective assessment of the sustainability and economic security of enterprise. The financial safety margin shows the actual production relative to its critical value. A relative indicator of financial safety margin (D) is calculated as follows:

$$D = \frac{q - q_{min}}{q} * 100, \% \quad (2)$$

where: q – nivelul real al randamentului / stands for the actual level of the crop yield.

This indicator shows how many percent can decrease the sales so that the enterprise avoids losses. It indicates how far an enterprise is from break-even point. A high financial safety margin ensures more opportunities to preserve profits in case of revenue decrease, which positively affects the economic security of the enterprise.

We shall analyze the relationship between the value of break-even point and the level of enterprise economic security. The graph of break-even point may indicate in what area of economic security the production of certain cultures is. In Figure 1 the graph of break-even point in the production of sunflower on the example of "Ekinnik Yeri" SRL is shown.

We'll note that the produce of sunflower is characterized by the following indicators:

fixed costs (FC)	3225,25 lei/ha
price (p)	295,2 lei/q
variable costs per unit (AVC)	123,55 lei/q
actual level of the crop yield (q)	14,18 q

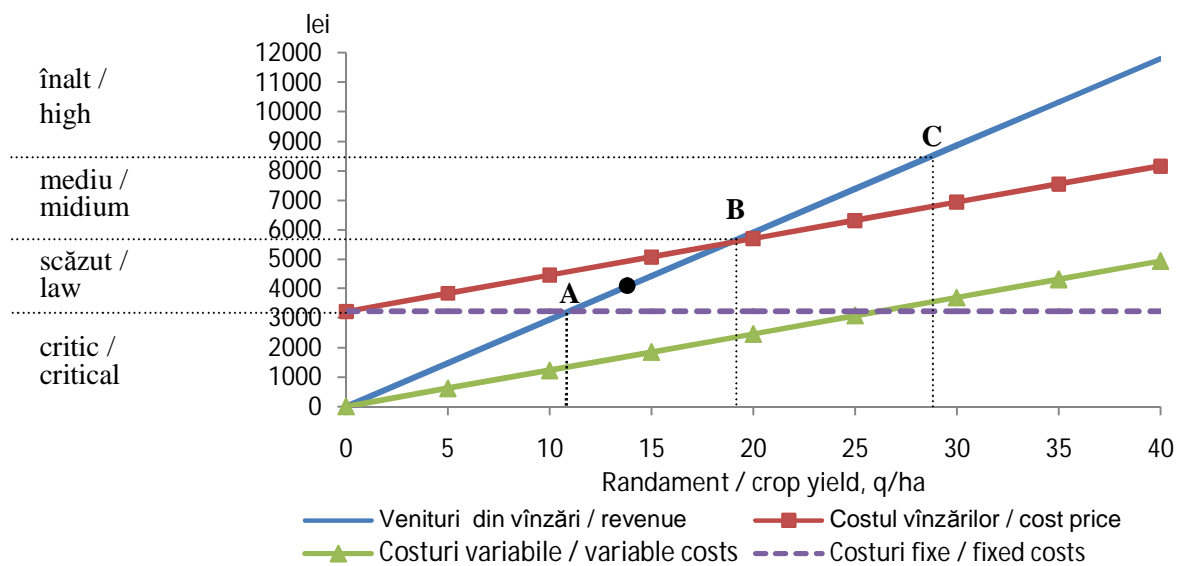


Fig. 1. Indicators of break-even point in the production of sunflower in agricultural enterprises (on the basis of "Ekinnik Yeri" SRL, 2013)

Source: developed by the author

We distinguish between 4 levels of production security: critical, low, medium and high. At the *critical level*, the revenue received from the sale of products does not cover total costs of the enterprise. The enterprise is characterized by a *low level* of security, when it reaches the intersection point of the curves of revenues and fixed

costs (point "A"). The enterprise receives revenues from sales that cover fixed costs, while variable costs remain uncovered, and therefore the enterprise incurs losses. Point "A" on the graph is determined by the following formula:

$$N = FC, \quad (3)$$

where: N – venituri din vânzări / stands for product sales revenue, lei.

It follows from this that crop yield at the point "A", i.e. the critical crop yield (q_{cr}) can be calculated:

$$q_{cr} \cdot p = FC$$

$$q_{cr} = \frac{FC}{p}, q/ha \quad (4)$$

At "Ekinnik Yeri" SRL the crop yield at the point "A" is 10,93 q/ha, which provides a low level of enterprise security. Point «B» on the graph represents the break-even point (Formula 1) and is 18,79q/ha. The enterprise covers all of its costs, but it still does not receive any profit. After reaching the break-even point, the enterprise begins to make profit with each subsequent unit of production. The range of the graph between points "B" and "C" represents the *medium level* of security.

Reaching the point "C" ensures a high level of security for the enterprise. This is the level to which enterprises should strive. The enterprises make profit necessary for further development, i.e. receive return on sales. Accordingly, we suggest to define point "C" on the basis of return on sales (R):

$$R = \frac{Pr}{N} = \frac{q \cdot p - AVC \cdot q - FC}{q \cdot p} = 1 - \frac{AVC \cdot q + FC}{q \cdot p}$$

$$q \cdot p \cdot (1 - R) - AVC \cdot q = FC$$

where: Pr - profit brut / gross profit.

It follows that the formula for crop yield can take the form as follows:

$$q = \frac{FC}{q(1-R) - AVC}, q/ha \quad (5)$$

It is considered that the normative value of return on sales is 0.2. Thus, the volume of production and sales at the point "C" can be determined by the formula:

$$q_o = \frac{FC}{0.8 \cdot p - AVC}, q/ha \quad (6)$$

where: q_o – randament optim / stand for optimal volume of production.

At "Ekinnik Yeri" SRL crop yield, which can provide a high level of security is equal to:

$$q_o = \frac{3225,25}{0.8 \cdot 295,2 - 123,55} = 28,64 \quad q/ha$$

At the same time, the revenue will be: $N = 28,64 \cdot 295,2 = 8454,8$ lei.

Since the actual crop yield of sunflower at "Ekinnik Yeri" SRL in 2013 amounted to 14,18 q/ha, the production of this crop at the enterprise characterizes a low level of enterprise security. This suggests the need to identify reserves for increasing crop yield.

By analogy with the method of determining the level of production security based on the values of break-even point, we shall consider the indicators of financial safety margin in Figure 2. We distinguish four levels of security.

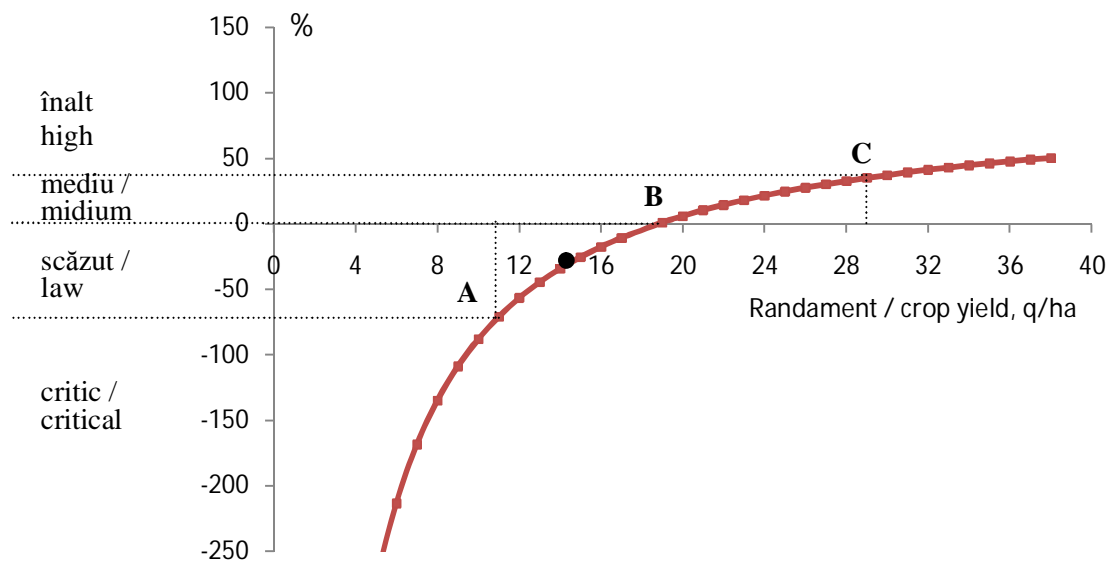


Fig. 2. Indicators of financial safety margin in the production of sunflower in agricultural enterprises (on the basis of "Ekinnik Yeri" SRL, 2013)

Source: developed by the author

Based on the formulas (1) and (4), it is proposed to identify the formula for calculating the financial safety margin at the point "A":

$$\begin{aligned}
 D &= \frac{q_{cr} - q_{min}}{q_{cr}} = \frac{\frac{FC}{p} - \frac{FC}{p - AVC}}{\frac{FC}{p}} = 1 - \frac{FC \cdot p}{FC \cdot (p - AVC)} = 1 - \frac{p}{p - AVC} \\
 &= \frac{AVC}{AVC - p} \\
 D_{cr} &= \frac{1}{1 - \frac{p}{AVC}}
 \end{aligned} \tag{7}$$

"Ekinnik Yeri" SRL financial safety margin in the production of sunflower at point "A" will be -0,72. Thus, the value of the financial safety margin below -72%, will testify to the critical level of security, and exceeding of this value – about a low level. The value of this indicator in the break-even point (point "B") is zero. We shall note that the negative values of stock of financial safety margin, i.e. until the break-even point, indicate the riskiness of the business.

The further is the actual sales in relation to critical ones, the greater is amount of profit. The higher is the value of financial safety margin, the more sustainable is the activity of the enterprise. The segment on the graph between points "B" and "C" represents the medium level, and reaching the point "C" it will indicate a high level of security.

Applying the formula (1) and (5), the financial safety margin can be calculated as follows:

$$\begin{aligned}
 D &= \frac{q - q_{min}}{q} = \frac{\frac{FC}{q \cdot (1 - R) - AVC} - \frac{FC}{p - AVC}}{\frac{FC}{q \cdot (1 - R) - AVC}} \\
 &= \frac{FC \cdot p - FC \cdot p \cdot (1 - R)}{(q \cdot (1 - R) - AVC) \cdot (p - AVC)} \cdot \frac{q \cdot (1 - R) - AVC}{FC} = \frac{p \cdot R}{p - AVC} \\
 D &= \frac{R}{1 - \frac{AVC}{p}}
 \end{aligned} \tag{8}$$

Considering that the normative value of return on sales is 0.2, the formula of the optimal financial safety margin (D_o) at the point "C" takes the form:

$$D_o = \frac{0.2}{1 - \frac{AVC}{p}} \tag{9}$$

A high level of security indicates profitability and economic security of enterprise activities, this is the level to which the enterprise should strive.

"Ekinnik Yeri" SRL financial safety margin in the production of sunflower at point "C" will be 0.34. As the actual value of this indicator in "Ekinnik Yeri" SRL in 2013 was -0.33, it follows that the sunflower production at the enterprise characterizes a low level of security. Similarly, the financial safety margin can be calculated and it can be defined in what range of economic security the production of major crops in the enterprise is.

Conclusions and recommendations for further research. In conclusion, we shall note that the method suggested for analyzing the values of break-even point and financial safety margin has a practical importance in the process of assessing the level of economic security. One or both indicators may be used as they are interconnected and equally indicate the current level of security. This method allows to determine the status of enterprise economic security and to identify directions to improve it.

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АНОТАЦІЯ

Яніогло А. Роль фінансового важеля у визначенні рівня економічної безпеки

У статті розкривається сутність і особливості розрахунку беззбитковості і запасу міцності. Представлена методика визначення рівня економічної безпеки в залежності від значень розглянутих факторів. Графічно представлено визначення рівня беззбитковості на виробництві соняшнику в одному з підприємств Республіки Гагаузія. Запропонований метод має

практичне значення в процесі оцінки рівня економічної безпеки. Один або обидва індикатора можуть бути використані, оскільки вони взаємопов'язані між собою і в рівній мірі вказують на поточний рівень безпеки. Розглянутий метод дозволяє визначити стан економічної безпеки підприємства і виявити напрями щодо його вдосконалення.

Ключові слова: *запас міцності, рентабельність, продуктивність праці, беззбитковість, економічна безпека.*

АННОТАЦІЯ

Яниогло А. Роль финансового рычага в определении уровня экономической безопасности

В статье раскрывается сущность и особенности расчета безубыточности и запаса прочности. Представлена методика определения уровня экономической безопасности в зависимости от значений рассматриваемых факторов. Графически представлено определение уровня безубыточности на производстве подсолнечника в одном из предприятий Республики Гагаузия. Предложенный метод для анализа значений точки безубыточности и запаса прочности имеет практическое значение в процессе оценки уровня экономической безопасности. Один или оба индикатора могут быть использованы, поскольку они взаимосвязаны между собой и в равной степени указывают на текущий уровень безопасности. Рассмотренный метод позволяет определить состояние экономической безопасности предприятия и выявить направления по его совершенствованию.

Ключевые слова: *запас прочности, рентабельность, производительность труда, безубыточность, экономическая безопасность.*