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INSTABILITY OF PRODUCTION OF AGRICULTURAL PRODUCTS: ASSESSMENT AND ANALYSIS FEATURES

DMITRI M. PARMACLI

Comrat State University
Strada Galațana 17
Comrat, Moldova
parmad741@mail.ru

ALINA I. IANIOGLO

National Institute for Economic Research
Ion Creanga 45, Chisinau, Moldova
elcy@mail.ru

ABSTRACT: The article highlights the presence of unfavourable climatic conditions in the agricultural production of the Republic of Moldova, which adversely affect the results of crop cultivation and the economic sustainability of enterprises. As a rule, the variation indicators are not taken into account and evaluated when calculating the efficiency of crops production and sales, and accordingly, the potential values of land use efficiency in the industry are not correctly predicted. In this regard, the aim of the study is to develop methodological approaches to assess the stability of production and to justify some features of calculating potential indicators of production and sales of crops. The article shows the dynamics of yield of leading crops over the past 16 years and estimates the instability of production. For this purpose formulas are proposed, with the help of which the level of sustainability of enterprises can be predicted. The suggested interrelationships are vividly presented on graphs. The proposed approaches will allow specialists of enterprises to calculate the financial safety margin and the risk zone for each crop, to predict economic development using, above all, the moving average indicators.

KEYWORDS: crop yield, stability, unfavourable climatic conditions, financial safety margin, operating leverage

Production in agriculture is subject to the cyclical development of economic systems. Stability and sustainability should be considered as difficult economic categories of the reproduction process in industry development. They have their own distinctive features, which include soil and climatic, biological,

ecological and other factors. Ensuring the phase of stable and sustainable development of crop and livestock production becomes the decisive basis for the effective agricultural production in general. Climatic conditions create a serious problem in ensuring economic sustainability. Often, adverse weather conditions not only affect the quality, but also make it impossible to produce the planned volume of production, and as a result to receive the necessary profit.

A system of indicators is used when calculating the economic efficiency of production and sales of crop products at agricultural enterprises. However, both in training and in real production conditions, as a rule, indicators of the variation in production are not taken into account and are not evaluated. Therefore the potential values of land use efficiency in the industry are not adequately predicted.

The purpose of the study is to develop methodological approaches to assess production stability, to justify some features in calculating potential indicators of crop production and sales and to develop practical recommendations for their direct use, both for educational purposes and in real production conditions.

REVIEW OF RECENT LITERATURE

Studies on the problems of economic sustainability of agricultural production, including innovative development, aimed at increasing the land productivity in crop production, were carried out by such scientists as P.T. Sabluk, V.Ya. Messel-Veselyak, M.V. Prisyazhnyuk [Присяжнюк et al. 2011], V. Ambrosov [Амбросов 2003], V.I. Nechaev [Нечаев et al. 2012] and others. N. V. Ambrosov, the correspondent of Ukrainian Academy of Agrarian Sciences, noted in his works that the growth of production is not a guarantee of the economic well-being of the commodity producer. The need to ensure the livelihoods of agricultural enterprises is the reason of the transformation processes in the industry. According to V.I. Nechaev and other scientists, the technical and technological potential of agricultural production represents the maximum possible production result in the current climatic conditions, which can be obtained using the available resources within the framework of new technologies and forms of production organization. This approach will allow to objectively assess the stability of agricultural production and to identify real reserves of efficiency growth in the industry.

Modern agricultural science is looking for new ways to improve the sustainability of agricultural production. In this sense, the studies of A. Stratan [Stratan 2014: 622–626] are of great interest, in which methods for assessing the stability of crop production and substantiating reserves for increasing field productivity were proposed. The studies of L. Todorici [Parmacli and Todorici 2013: 116–124] and T. Dudoglo [Дудогло 2017: 88–100] are also important, in which the authors explored the modern approach to assessing the effectiveness and sustainability of production and the rationale for stability growth factors was given.

REPUBLIC OF MOLDOVA AND ITS AGRICULTURE

Basic concepts and information about the Republic of Moldova

The Republic of Moldova is located in South-Eastern Europe. It borders with Ukraine and Romania (Figure 1). The area of the territory is 33,846 km², but de facto about 12.3% of the territory (the unrecognized Pridnestrovian Moldavian Republic-Transnistria) is not controlled by the authorities. On January 1, 2017, the population was 3,550,900 people; the population density was 111.4 people per km². The capital is Chisinau.

It is a unitary parliamentary republic, administratively divided into 32 districts, 5 municipalities, 1 autonomous territorial unit (Gagauzia) and administrative-territorial units of the left bank of the Dniester river. Most believers (about 93% of the population, according to the 2004 census) profess Orthodoxy. The volume of GDP for 2017 amounted to 150.4 billion MDL. The monetary unit is the Moldovan Leu (as of January 1, 2018, 18 Moldovan Lei = 1 US dollar).

Climatically, Moldova is located in the moderately continental zone of impact of the Mediterranean moderate winds. Large temperature variations are rare. Precipitations are present at all times of the year. Winter is mild and short, summer is hot and long. The average temperature in January is -4 °C, July +21 °C. The absolute minimum is -36 °C, maximum +41 °C. Average annual precipitation varies between 380–550 mm.



Figure 1. Map of the Republic of Moldova

Representatives of several nations and ethnic groups live in the Republic of Moldova, out of which: 64.5% are Moldovans, 13.8% are Ukrainians, 13% are Russians, other ethnic groups (Gagauz, Bulgarians, Jews, Belarusians, Germans, etc.). Most of the population lives in rural areas; the urban population constitutes 45%. The largest cities of the Republic of Moldova are its capital Chisinau (more than 700 thousand inhabitants); Tiraspol (approx. 200 thousand); Balti (160 thousand); Bender (140 thousand).

Currently, the total land area of the country is 2.8 million hectares, out of which the agricultural land area is 2.5 million hectares (including 1.8 hayfields and 0.4 million hectares pastures).

Agriculture in the Republic of Moldova

In the structure of agricultural production in the Republic of Moldova, crop production prevails and constitutes 68%, livestock production 32%. Compared with 1991, the share of crop production has increased, and livestock production has decreased (in 1991, respectively, 66 and 34%). In agriculture there are several branches of specialization: viticulture, fruit growing, cultivation of industrial crops, among which sugar beet and sunflower are especially important, and vegetable growing. Cattle breeding, pig breeding, sheep breeding, and poultry farming are traditional in animal husbandry.

A variety of agro-climatic conditions determines the identification of the main agricultural zones of the country. North zone represents the main area of growing technical (sugar beet, sunflower, tobacco), as well as grain crops. In its animal husbandry dominates the meat and dairy direction. Central is the area of development of viticulture, fruit growing, and dairy farming. South zone specializes in viticulture, grain farming, meat and dairy cattle breeding. Southeast stands out for fruit growing, viticulture, dairy farming.

Viticulture occupies a special place in the structure of the agricultural sector and has two main areas:

- cultivation of table grapes for fresh consumption;
- cultivation of grapes for the manufacture of light and fine table wines, champagne, dessert wines and brandies. There are known Aligote, Pinot, Feteasca, Riesling, Sauvignon, Cabernet and other wine varieties.

The Republic of Moldova is located in a zone of unsustainable farming. In the country there is an insignificant level of afforestation, water resources are limited, and part of the land is subject to water and wind erosion of the soil. Difficult weather conditions, such as heat and prolonged periods of lack of precipitation, often lead to crop losses. Moreover, experts, assessing the current trend of climate change, come to the conclusion of the coming warming. Problems of desertification in such conditions do not seem idle now. According to estimations of researchers from the American University of Notre Dame, Moldova is one of the 25 countries with an average level of global warming influence. Agriculture will be hit first [ND-GAIN Country Index. University of Notre Dame, 2017].

For the Republic of Moldova, drought is one of the most dangerous natural phenomena. The extent of drought coverage in the country is presented in Figure 2.



Figure 2. Estimation of the area of territories covered by drought in the Republic of Moldova by seasons, for 1966–2016 (%)

Source: Developed on the basis of data [Боян 2014]

As I. Boyan noted, in the last two decades droughts are more frequent and more intense [Боян 2014]. In the period 1990–2016, 11 cases of droughts of varying intensity (1990, 1992, 1994, 1996, 1999, 2000, 2001, 2003, 2007, 2011, and 2012) were recorded in the territory of the Republic of Moldova, which lead to a decrease in the yield of most cultivated crops. In 1990, 1992, 2003, drought was observed during the whole growing season from April to September, in other years - only in summer.

Along with droughts in the country, there are also such adverse natural phenomena as hail, which falls in the steppe zone due to its proximity to the Black Sea; frosts - in the period of spring, mainly from April 10 to May 1; frazil is mainly present from November to December and from February to March [Вронских 2011: 52–53].

The direct dependence of agriculture on climatic conditions necessitates the creation, if possible, of natural and monetary insurance and reserve funds in case of force majeure. Agricultural enterprises should, first of all, protect themselves from possible risks and increase the sustainability of their business. This is especially relevant in the conditions of volatility of market prices and insufficient development of production infrastructure. At the same time, if

economic processes are manageable with the help of legislative and regulatory acts and other measures, then the natural conditions cannot be directly influenced by a person. Thus, the problem of sustainability of agriculture should be solved, above all, in regards to the natural conditions.

INSTABILITY OF AGRICULTURAL PRODUCTION

The land is the main means of agricultural production, an important productive force. The use of agricultural land resources without increasing their fertility leads to land degradation. The results of agricultural enterprises activity depends on the state of land resources, their rational and effective use. Consequently, the quality of land use plays an important role in the economy of agriculture and the country as a whole [Ianioglo 2017: 48].

Under the conditions of risky (unsustainable) farming, the use of land resources in time has an unstable, cyclical nature, which reflects the feature of the natural resources potential. In this regard, the gross harvest and crops yield are cyclical in nature with characteristic downturns and rises. Thus, for 2001-2016 in agriculture there were significant fluctuations in crop production.

Taking into account the decisive importance of the efficiency of land use in agriculture as the main means of production, we consider the dynamics of the yield of major crops in the Republic of Moldova over the past 16 years. It is important to note that crops of wheat, corn and sunflower in the country occupy $\frac{3}{4}$ of the total cultivated area. That is why it is very important to analyse the production of these crops for 2001–2016 and at the same time to identify the level of their sustainability and the dynamics of changes. It is also important to determine indicators' trends for the specified years. It is necessary to recognize that in agriculture, unlike other industries, the production cycle is very long. For example, it is more than 300 days when cultivating winter crops. However, given the significant share of work in progress in the industry, associated with the presence of young perennial plantings in crop production (introduction period in fruiting reaches 4–7 years) and young livestock in animal husbandry (introduction period to the main herd is about two years), besides annual, in the analysis it is legitimate to use also average annual indicators of economic activity, for example, average over 3 years.

For this purpose, it is necessary to carry out calculations of the moving average indicators, i.e. besides the indicators of the current year, to use data for the last 3–5 years. The moving average indicators make it possible to more objectively evaluate obtained results, to a certain extent neutralize the influence of climatic conditions and other environmental factors on the achieved results. In other words, indicators of the calendar year cannot reflect the influence of factors of the internal and external environment as moving average indicators can.

In this regard, we will make calculations of a four-year moving average on winter wheat, corn and sunflower, which have been obtained in the Republic of Moldova over the past 16 years (Table 1).

Table 1. Yield of wheat, corn and sunflower in the Republic of Moldova for 2001–2016 (q/ha)

Year	Wheat		Corn		Sunflower	
	actual	moving average	actual	moving average	actual	moving average
2001.	27.2	–	23.7	–	13.4	–
2002.	25.1	–	26.7	–	12.4	–
2003.	5	–	25.5	–	11.1	–
2004.	27.5	23.4	30.7	26.9	12.4	12.09
2005.	26	23.0	33.0	28.9	12.1	11.87
2006.	23.2	22.8	29.1	29.5	13.3	12.11
2007.	13.2	23.3	8.6	26.0	6.9	11.35
2008.	31.2	24.7	34.9	26.6	16.5	12.26
2009.	21	23.3	28.9	25.4	12.7	12.41
2010.	22.9	22.7	34.5	26.7	15.3	12.91
2011.	26	25.6	32.5	32.7	15.6	15.06
2012.	15.8	21.4	12.3	26.7	10.0	13.32
2013.	27.6	23.2	31.0	27.3	18.3	14.70
2014.	31.7	25.5	33.5	27.3	17.7	15.37
2015.	26.7	25.7	22.0	26.0	14.7	15.14
2016.	34.9	30.3	29.9	30.6	18.7	17.34
Average	25.0	24.3	27.7	27.7	13.8	13.5
Standard deviation	7.47	2.2	7.59	2.1	3.17	1.8
Coefficient of variation, %	29.8	9.2	27.4	7.7	22.95	13.3

Source: [Statistical Yearbook of the Republic of Moldova 2016: 244]

As the data in Table 1 show, the production of leading crops is distinguished by low stability. The variation coefficient of the yields of wheat, corn and sunflower for the analysed 16 years was 29.8%, 27.4% and 23.0%, respectively, which relates the area of cultivation to the zones of unstable (risky) agriculture. The decline in yields in 2007 and 2012 is especially noticeable, and in 2003, the wheat yield was catastrophically low – just above the seeding rate.

With annual indicators of wheat yield, the coefficient of variation for 2001–2016 was 29.8%, while using the four-year moving average, it was equal to 9.2% or 3.2 times lower. At the same time, the sustainability of corn and sunflower production increased by about 3.6 and 1.7 times respectively. This trend can be clearly represented in the graphs (Figure 3, 4 and 5).

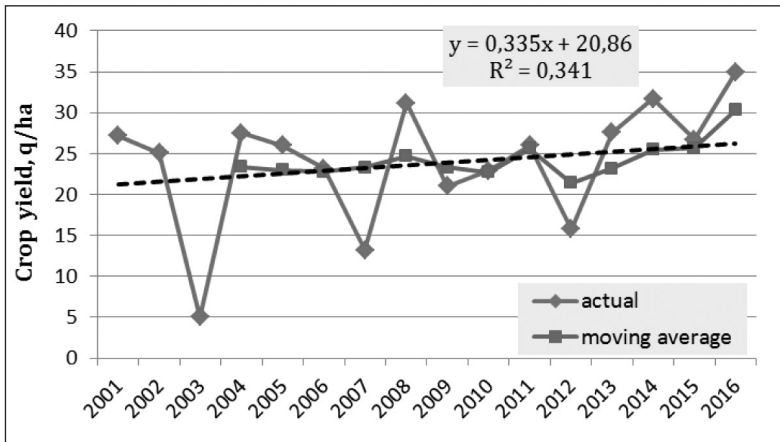


Figure 3. Dynamics of wheat yield in the Republic of Moldova for 2001–2016

Source: Developed based on the Table 1.

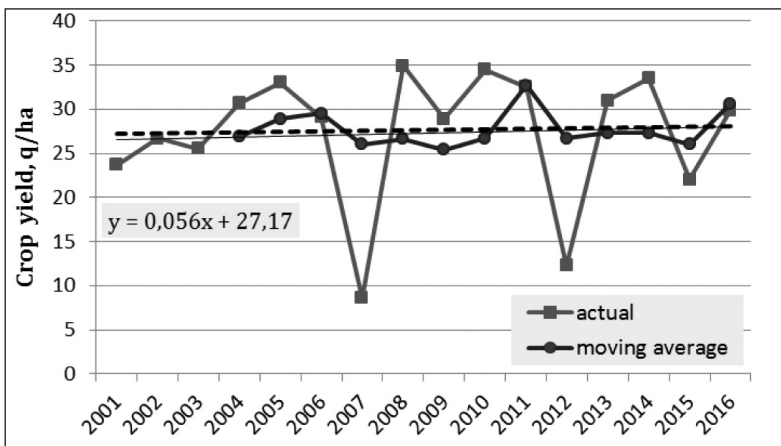


Figure 4. Dynamics of corn yield in the Republic of Moldova for 2001–2016

Source: Developed based on the Table 1.

On the basis of the trend equations presented in Figures 3-5, it can be concluded that there is a positive trend in the growth of land productivity in wheat, corn and sunflower production in the country. In annual average terms, the increase in yields of these crops amounted to 0.335, 0.056 and 0.412 q/ha respectively. As it could be seen from the Figure 4, the yield of corn grew slightly during the analysed 16 years.

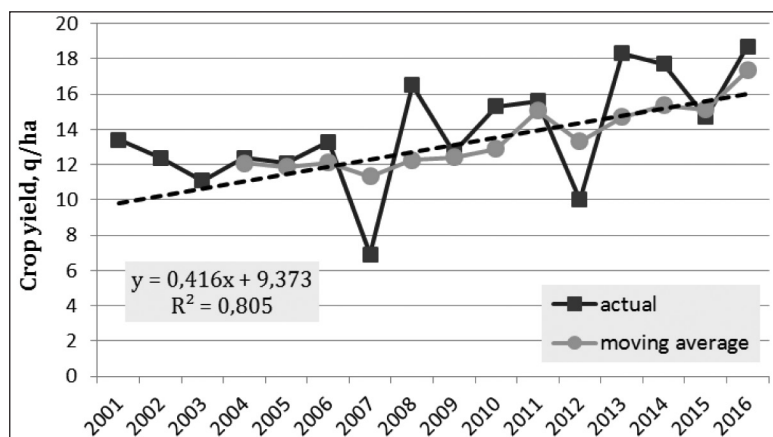


Figure 5. Dynamics of sunflower yield in the Republic of Moldova for 2001–2016
Source: Developed based on the Table 1.

RESEARCH METHODOLOGY

Actual and potential yield

The identified yield trends are of great practical importance. By applying the trend equation, it is possible to predict fairly accurately the field productivity for the coming years. Thus, on the basis of the trend equation of sunflower yield ($y = 0.412x + 9.405$), by substituting the numbers 17, 18 and 19 for “x”, the predicted values of the yield for 2017, 2018 and 2019 could be found. They constitute 16.4; 16.8 and 17.2 q/ha respectively (Fig.).

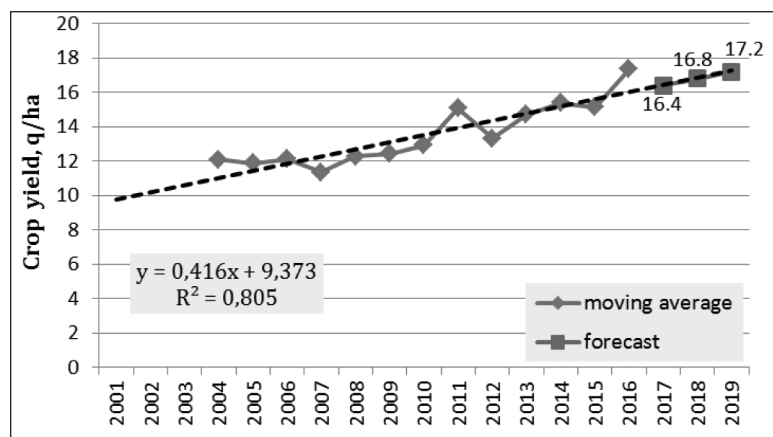


Figure 6. Actual and forecast values of sunflower yield in the Republic of Moldova for 2001–2019

Source: Developed based on the Figure 3.

During the research, it is important to substantiate the real levels of land productivity in the production of mentioned crops. It is recommended to calculate indicators of potential land productivity, characterizing the yield of certain crops per unit area for a certain period, according to the formula:

$$q_{\text{pot}} = \sqrt[k]{M}, \text{ q/ha} \quad (1)$$

where: $k = \sqrt{T}$ (T – number of years in the analysed period);
 M – multiplication of the highest values of yield for “ k ” years

When determining the indicator “ k ”, the calculated values should be rounded to the whole value. For example, from 16 analysed years there should be taken into account the highest rates of four years ($k = \sqrt{16} = 4$).

According to the formula 1, the value of the potential yield could be determined (q_{pot}):

Wheat

$$q_{\text{pot}} = \sqrt[4]{34,9 \cdot 31,7 \cdot 31,2 \cdot 27,6} = 31,2 \text{ q/ha}$$

Corn

$$q_{\text{pot}} = \sqrt[4]{34,9 \cdot 34,5 \cdot 33,5 \cdot 33,0} = 34,0 \text{ q/ha}$$

Sunflower

$$q_{\text{pot}} = \sqrt[4]{18,7 \cdot 18,3 \cdot 17,7 \cdot 16,5} = 17,8 \text{ q/ha}$$

Indicators of reserves of land productivity growth are presented in Figure 7.

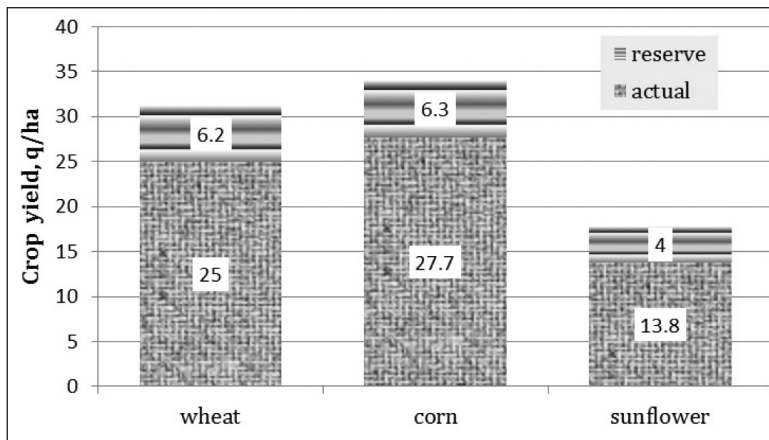


Figure 7. Indicators of reserves of land productivity growth in the production of wheat, corn and sunflower in the Republic of Moldova for 2001–2016

Source: Developed based on Table 1.

From figure 7 it is clear that for the analysed 16 years the potential indicators of land productivity were used in the production of wheat by 80.2%, corn and sunflower – by 81.5% and 77.6% respectively.

Economic sustainability of an enterprise

The economic sustainability of an enterprise is determined by the results of its activities over a number of years in a row and it is expressed by its ability to maintain the equilibrium and balance of all available resources necessary to ensure uninterrupted operation and reproduction. In other words, the economic sustainability of an agricultural enterprise should be viewed as a dynamic process that enables it to realize its development potential. It is important to take into account both the internal aspect (the company must remain in business) and the external one, in which the economic impact of the enterprise on society and the environment should be positive [Parmacli et al. 2015: 116].

In the process of ensuring the economic security and viability of the enterprise, special attention should be paid to the economic security of its main activity - production. When planning the production, each company calculates the volume of all types of costs, which are divided into fixed and variable. In the framework of operational analysis, there is identified the break-even point, that is, the level of yield at which the income from sales of products is equal to the total costs. If the actual yield is below the minimum, then production becomes unprofitable, sales of products bring losses.

The break-even point (q_{\min}), that is the minimum level of crop yield below which losses occur, is found by the well-known formula:

$$q_{\min} = \frac{FC}{p - AVC}, q/\text{ha} \quad (2)$$

where: FC – the fixed costs per 1 ha, lei; p – sales price, lei / q; AVC – average variable costs per 1 centner of product, lei.

The study of the ratio of the production (sales) volume with costs and profits will help the company's management in making the right management decisions.

Enterprise viability provides for sustainable development thanks to the effective use of all types of resources and entrepreneurial opportunities. An enterprise develops when the results of its activity allow it to conduct continuous reproduction at its own expense. In pursuit of maximum profit, enterprises must take into account increasing production risks. The analysis of financial safety margin gives more objective assessment of the sustainability and economic security of the cultivation of crops. The level of operational leverage is an indicator of enterprise riskiness. This explains the importance of assessing mentioned indicators when determining the level of economic security of an enterprise.

Financial safety margin (D) is one of the indicators of the financial position of the enterprise, that is, how it is financially stable. Two methods of determination are usually used. In the first method, the calculation represents the difference between the actual (planned) sales volume and the break-even point, i.e. the financial safety margin shows how many lei or tons sales of products can be reduced so that the enterprise does not incur losses. The higher the financial safety margin, the more opportunities to maintain the relative level of profitability while reducing sales revenue, which positively affects the economic security of the enterprise.

The formula for calculating the indicator in absolute terms is:

$$D = q - q_{\min}, \quad (3)$$

where: q и q_{\min} – respectively, the actual and critical level of crop yield, q/ha

Usually there is calculated the percentage of the financial safety margin to the actual (planned) volume. This indicator shows how many percents the sales can decrease so that the enterprise can avoid losses. Higher financial safety margin ensures more sustainable enterprise and less risk of losses.

The relative indicator of the financial safety margin is calculated by the formula:

$$D = \frac{q - q_{\min}}{q} \cdot 100, \% \quad (4)$$

Another indicator which reflects the state of economic security of an enterprise is operating leverage (R). Operating leverage demonstrates the percentage point change in the enterprise profit given a change in revenue by one percentage point and is determined by the formula:

$$R = 1 + \frac{FC}{p_r} \quad (5)$$

There is an inverse relationship between the financial safety margin and the operating leverage. The higher the operating leverage, the lower the financial safety margin and vice versa:

$$R = \frac{1}{D} \quad (6)$$

The operating leverage characterizes the degree of business riskiness. The profit of an enterprise with a higher operating leverage is more sensitive to changes in revenue [Damodaran, 2012: 194]. With a sharp drop in sales, such enterprise can very quickly “fall” below the break-even point. Therefore, an enterprise with a higher level of operating leverage is considered more risky.

The activity of an enterprise with a low operating leverage is associated with less risk, but also with less reward (profit).

It is known that each enterprise in the industry cultivates, as a rule, several crops. Production and sale of some crops ensures a high return on investment, others – low profitability. However, it is not always possible to abandon the production of the latest crops due to agro-technical requirements for crop rotation or other reasons, both internal and external. In other words, the structure of sales is always different in terms of profitability. In the conditions of the Republic of Moldova, primarily, depending on the prevailing weather and climatic conditions of cultivation and harvesting, the effectiveness of a particular type of product may differ significantly: from a loss ratio to a level of profitability exceeding 30%. For example, the level of profitability of sold grain in the country changed from -3.5% in 2009 to +39.9% in 2011, sunflower – from 16.6% in 2009 to 89.8% in 2010, grapes – from 6.0% in 2009 to 37.0% in 2012 [Statistical Yearbook of the Republic of Moldova, 2016]. It is important for an enterprise to know and, therefore, objectively plan that amount of costs, which will ensure the volume of production per unit area required for simple and/or extended reproduction.

Of course, ensuring a higher efficiency of investment in the production of products is, as a rule, the goal of any business entity. However, due to various reasons, the level of profitability of sunflower seeds produced and sold in agricultural enterprises of the southern zone of the Republic of Moldova was 43.8% in 2001–2012, profitability of winter rapeseed – 46.0%, grapes – 26.7%, cereals and leguminous crops without corn – 11.7%, corn – 6.1% [Statistical Yearbook of the Republic of Moldova, 2016].

EXAMPLE OF CALCULATION OF INDICATORS FOR THE ENTERPRISE

Since 2013, data on production costs in the Republic of Moldova have not been published, therefore it is not possible to determine the profitability of products sold in the industry as a whole. In this regard, in order to confirm the above proposed method of substantiating potential economic indicators, we have to limit to the data of individual enterprises, which kindly provide us with the results of their activities, including data on the cost and sales prices of marketable products.

According to Formula 2, we define the break-even point, Formula 4 - the financial safety margin, and Formula 6 – the operating leverage in the production of main crops at the enterprise “Iri-Carmen” LLC from the Cahul district for 2016. Calculations are presented in Table 2.

Thus, in order to receive profit at “Iri-Carmen” LLC it is necessary to achieve a sunflower yield of at least 11.6 q/ha, while the yield of corn should be at least 35.9 q/ha. At the analysed enterprise, there are almost identical values of operating leverage in the cultivation of sunflower and wheat: 1.68 and 1.76 respectively. Thus, a 1 percentage point increase in the volume of sales of wheat at given enterprise leads to 1.76 percentage point increase in operating

profit. At the same time, the low value of the financial safety margin in the cultivation of corn (1.4%) confirms the low efficiency of production of this crop.

Table 2. Indicators of operational analysis at “Iri-Carmen” LLC for 2016

Indicators	Wheat	Corn	Sunflower
Fixed costs, lei/ha (FC)	2670	4,135	5,996
Price, lei/q (p)	235.0	208.6	631.2
Average variable costs, lei/q (AVC)	94.86	93.30	113.49
Actual crop yield, q/ha (q)	44.2	36.4	28.7
Break even point, q/ha (q_{min})	19.1	35.9	11.6
Financial safety margin,% (D)	56.8	1.4	59.6
Operating leverage (L)	1.76	71.4	1.68

Source: Calculated based on the forms 7 and 9 AIC of “Iri-Carmen” SRL, 2016

Based on the data in Table 2, calculations were carried out and the indicators of financial safety margin and operating leverage depending on the level of wheat yield at the analysed farm are presented in Figure 8. The feature of the presented graph is that the point of intersection of the vertical dotted line with the horizontal axis is the breakeven point. Through the same point passes the curve of the financial safety margin. The values of the curves of the operating leverage tend to infinity, which is fully consistent with the formula 5.

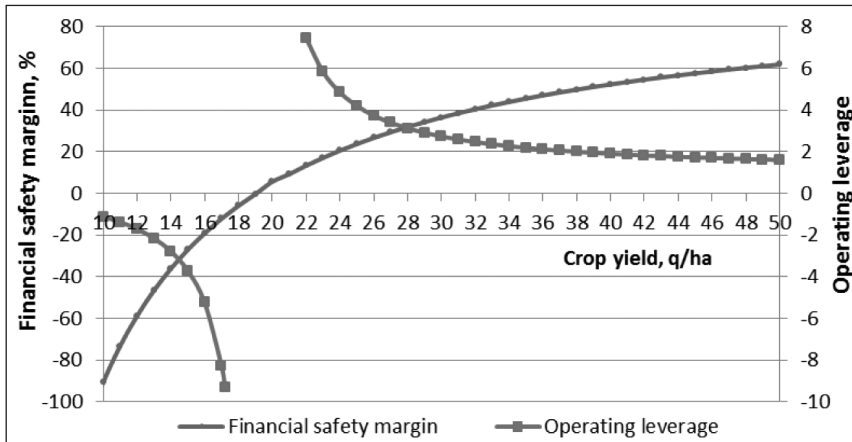


Figure 8. The dependence of the financial safety margin and operating leverage on the wheat yield at “Iri-Carmen” LLC for 2016.

Source: Developed based on the Table 2.

The data on Figure 8 show that in the production of wheat at “Iri-Carmen” LLC, the financial safety margin is equal to zero in the break-even point (19.1 q/ha). The current value of the indicators of financial safety margin and operating leverage is observed at the intersection point of corresponding curves with a vertical line with an arrow drawn from the actual yield indicator. From the graph it can be seen that, taking into account the yield of 44.2 q/ha achieved in 2016, the financial safety margin constituted 56.8%. This circumstance reveals that in the production of wheat, “Iri-Carmen” LLC is characterized by profitability of production and sustainability of activity.

CONCLUSION

The article emphasizes the strong dependence of agricultural production in the Republic of Moldova on the natural and climatic conditions, including frequent droughts, as well as hail and frost. Therefore, in addition to annual indicators, it was justified and proposed to use in the analysis the moving average indicators of economic activity, which allow a more objective assessment of the results, to a certain extent neutralization of the influence of climatic conditions, and other environmental factors on the achieved results. It was also noted that, when analysing the viability and economic security of enterprises, it is necessary to take into account operational performance indicators: break-even point, financial safety margin and operating leverage. These indicators help in determining reserves for the improvement of technology and organization of production, in achieving maximum profit. If the financial and economic position of the enterprise is favourable, then it is efficient, competitive and, therefore, is characterized by economic security.

Thus, the given methodological approaches allow specialists of enterprises to determine not only the degree of instability of the analysed indicators, but also to calculate the financial safety margin and the risk zone for each crop, as well as to carry out forecasting of economic development for the coming years, using, above all, the moving average indicators.

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ОРИГИНАЛНИ НАУЧНИ РАД

НЕСТАБИЛНОСТ У ПРОИЗВОДЊИ ПОЉОПРИВРЕДНИХ ПРОИЗВОДА: РЕЗУЛТАТИ ПРОЦЕНЕ И АНАЛИЗЕ

ДМИТРИ М. ПАРМАКЛИ
Државни универзитет у Комрату
Комрат, Република Молдавија
parmad741@mail.ru

АЛИНА И. ЈАНИОГЛО
Национални институт за економска истраживања
Јон Креанга 45, Кишињев, Република Молдавија
ellcy@mail.ru

РЕЗИМЕ: Овај чланак истиче присуство неповољних климатских услова у пољопривредној производњи Републике Молдавије, што лоше утиче на резултате узгоја усева као и на економску одрживост предузећа. По правилу, индекси одступања се не узимају у обзир и не врши се евакуација када се прорачунава ефикасност узгоја усева и продаја, и сходно томе, потенцијалне вредности ефикасности коришћења земљишта у индустрији се не предвиђају исправно. У том смислу, циљ студије је да се развију методолошки приступи за процену стабилности у производњи и да се оправдају нека својства приликом прорачунавања потенцијалних показатеља производње и продаје усева. Чланак показује динамику убирања летине водећих усева током последњих 16 година и оцењује нестабилност производње. У ову сврху предложене су

формуле уз помоћ којих предузећа могу да предвиде ниво одрживости. Предложене корелације су веома јасно приказане на графиконима. Предложени приступи ће омогућити стручњацима предузећа да прорачунају границу финансијске безбедности и зону ризика за сваки усев, да предвиде економски развој користећи пре свега покретне показатеље просека.

КЉУЧНЕ РЕЧИ: убирање летине, стабилност, неповољни климатски услови, граница финансијске сигурности, оперативно ризично улагање