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THE METHODOLOGY OF ACCOMPLISHING OF ASSESSMENT OF EFFICIENCY OF REGIONAL INVESTMENT POLITICS OF THE AGRICULTURE FORMATION

The methodic approaches to the estimation of the efficiency of regional investment politics of the agriculture formation were determined. The algorithm of determination of the estimation of efficiency of the regional investment politics influence on the development of agriculture of Ukraine was suggested.

Keywords: *investments, investment politics, region, efficiency, agriculture.*

Relevance of the research topic. There is no common approach concerning the determination of the factors, which have the biggest influence on the formation and usage of the investment potential of the agriculture. The scholars offer different methodologies of determination of the estimation of investment appeal of the sector, but not accounted are regional peculiarities, natural, ecological and other significant components of the investment potential, which considerably influence the competitiveness of the agrarian sphere (Tanklevs'ka, N., Kyrylov, YU, Zaytseva, O., Kovbasyuk, O.)

Formulation of the problem. The aim and goals of investment politics have to be real, have strategic perspective, be oriented to more rational usage of financial-economic, social, natural-resource and industrial opportunities while meeting current and long-term challenges of the social-economic development.

Analysis of recent researches and publications. To the determination of efficiency of the investment politics influence on the development of agriculture were dedicated many scientific works of such prominent scholars as: V.T. Andrijchuk,

S.O. Hutkevych, M.V. Zubetsj, M.I. Kisiľj, M.J. Kodensjka, P.T. Sabluk, V.P. Sytnyk and others. Taking into account particular relevance of investment resources in the development of separate branches and the improvement of their investment appeal, V.M. Grynjova, V.O. Kojuda, T.I. Lepejko, O.P. Kojuda offered to estimate the investment potential, applying the level of perceptivity that displays the significance of field in economy, sustainability of the industry to the decline of production, security of prospects of growth of its own financial resources and degrees of state support of the development of the branch.

While the assessment of investment appeal of the branch V.I. Poljshakov and N.V. Tkachenko recommend to estimate market factors, technological factors, the level of competitiveness, raw base, social level of the branch development, barriers of input and output of the enterprise in the industry. But the Conclusion made by them relate mostly to economic and social problems. There is no modern methodology, which could give an opportunity to estimate the efficiency of agrarian investment politics depending on the cumulative impact of economic, social and ecological factors, which makes the implementation of rational management of investment processes impossible in the agrarian sector of economy.

Problem statement. There is the necessity in determination and justifying methodical approaches to comprehensive assessment of efficiency of investment politics in the agriculture.

Presenting main material. The harmony of influence of regional investment politics of the agriculture development on the formation of economic, social and ecological potentials will determine its effectiveness (performance). Based on the fact that the formation of investment potentials takes place on the background of threats and opportunities, and their physical indexes of measurement have different meanings and need the transfer to one-dimensional, the estimation of efficiency of regional investment politics of the agriculture development requires such sequence of tasks performance: the analysis of economic, social and ecological state of the branch; the transfer to physical meanings of indexes of investment potentials in standardization; the division of investment potential to «stimulants», namely those that stimulate the development of agriculture and «destimulants», which throughout many years reduce their activity and are the threat for the agriculture development. The average meanings of these indexes (points) during the years of research are lower than those which were on the initial stage of researches (2010); the rating assessment of the influence of investment politics of the agriculture development on every factor of economic, social and ecological development; the determination of integral assessments of the efficiency of investment politics influence on the formation of investment potential and investment climate in the agriculture.

Taking into account the above mentioned, the assessment of the efficiency of regional investment politics influence on the agriculture development will be carried out on the base of build algorithm (fig. 1), and also the combination of methodic of the

rating assessment of investment potential of the branch, methodic SWOT – the analysis (for detection of opportunities of the formation of investment potential and the reduction of the level of threats) and mathematically – the geometric model of determination of integral assessments of the efficiency of regional investment politics influence on the formation of investment potential and appeal of investment climate of the agriculture. The rating assessment of every factor – is its complex characteristics, which is carried out by the analysis of components of economic, social and ecological state of the branch and can be estimated, using actual standardized meanings of every separate factor by ten points scale (Borovik, L.V.).

At the first stage of our research we will apply the methodic of rating assessment of investment potential of the branch and investment threats, it provides the formation of the system of indexes according to the main directions of mission of agrarian investment politics; the mathematical processing of estimating factorial indexes; the formation of scale of determination of rating estimation of every factor of assessment; evaluation of factorial indexes for every year and for the whole term of research. While conducting of the rating assessment we will use only quantitative statistical indexes, which give the opportunity to apply the method of standardization, suggested by V.E. Shvets.

Each index of standardized meaning will be estimated as low, medium and high in accordance to the determined parameters and points, which will be received by the results of conducted analytical calculations. By the analogical method, namely the method of standardization, the assessment of investment risks will be accomplished.

The point of this method consists in that at first the arithmetic mean of factorial index is found – \bar{x} , and further the root-mean-square deviation of indexes is determined – $(x_i - \bar{x})^2$, where x_i – the actual meaning of i -factorial index (in our case the meaning of one of investment potentials). Afterwards the standardized deviation of index of the formation of investment potential usage is calculated according to the formula:

$$S = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n}}, \quad (2.1)$$

where S – the standardized deviation of index;

n – the quantity of researched objects (potentials).

While determining the standardized meaning of i -factorial index (x^1_i), it is necessary to use the formula:

$$x^1_i = \frac{X_i}{S}. \quad (2.2)$$

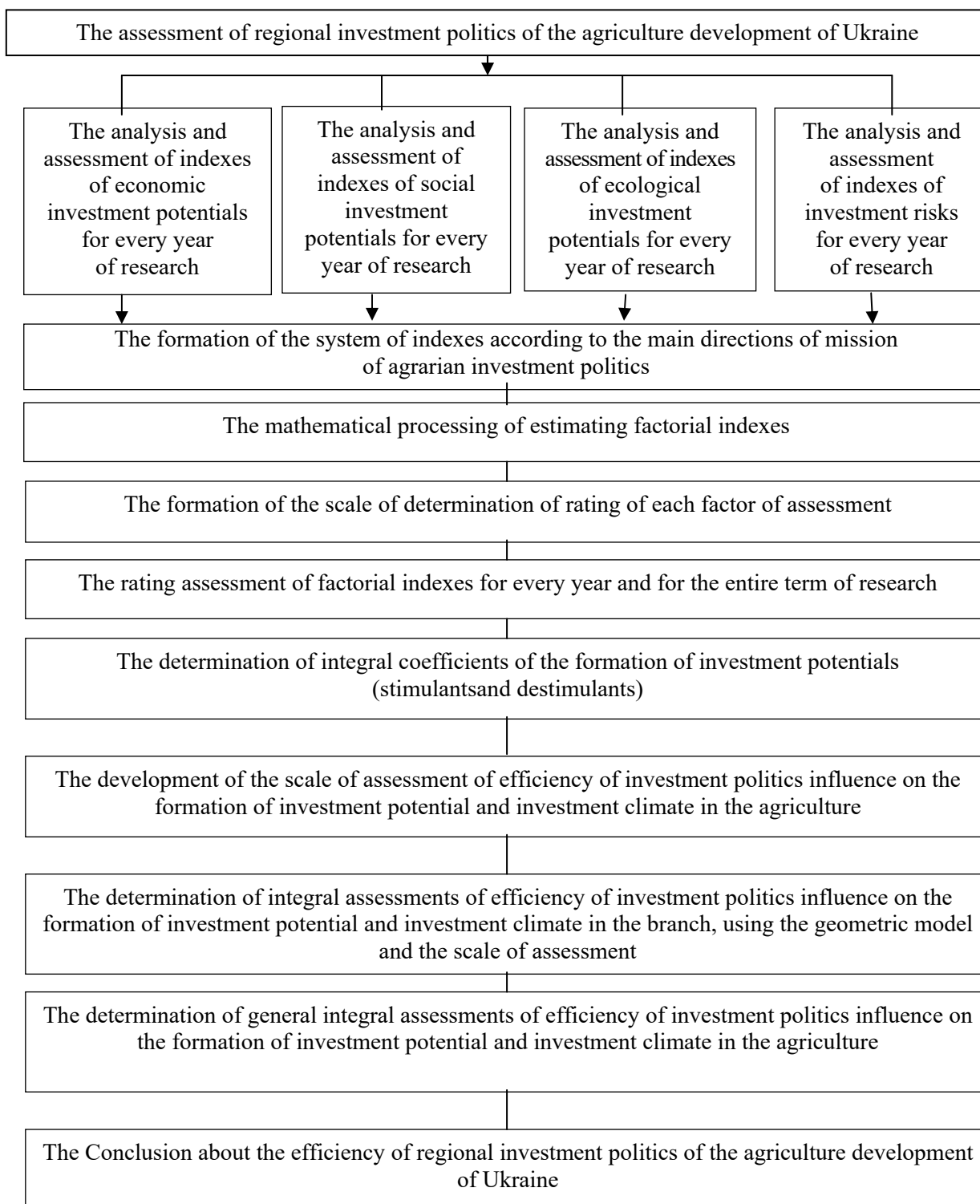


Fig. 1. The algorithm of determination of assessment of efficiency of regional investment politics influence on the agriculture development of Ukraine

**Developed by the author*

Substituting the formula (2.1) in the formula (2.2) we will receive the final formula for determination of the standardized meaning of *i*-factorial index of the formation (usage) of investment potential:

$$X_i^1 = \frac{x_i}{\sqrt{\frac{\sum (x_i - \bar{x})^2}{n}}}. \quad (2.3)$$

The meaning of analytical index for each separate factor of the formation (usage) of investment potential will be determined as the arithmetic mean of standardized factorial indexes. Here with, the weight of indexes will not be considered, which is going to enable to prioritize and introduce to the calculations those indexes, which are necessary for the conduction of research

After accomplishing of the assessment of formation of investment potential and reduction of the threat level, we will determine the efficiency of formation of economic, social and ecological potentials of the branch in the background of real opportunities and threats of the agriculture development. We will determine the efficiency of formation of investment potential of the branch, using the methodic SWOT – the analysis, which can be applied either on the level of separate regions or branches, creating the appropriate matrix (L.V. Petina, T.G. Vermienko). Carrying out the analysis of efficiency of formation of investment potential of the agriculture we will characterize strong points (strength), weak points (weaknesses), possibilities (opportunities) and threats (threats).

The obtained results of research give an opportunity to determine the efficiency of formation of economic, social and ecological investment potentials of the agriculture according to the formula:

$$C_{eff.} = \frac{\sum^n I_n}{\sum^n I_3},$$

where $C_{eff.}$ – the coefficient of efficiency of the formation of investment potentials of the branch;

$\sum^n I_n$ – the sum of points of factorial indexes of investment potentials (stimulants) of the branch;

$\sum^n I_3$ – the sum of points of indexes of investment threats (destimulants) of the branch.

The parameters of assessment of the efficiency of formation of investment potential of the branch have to be:

- high level ($K_{in} > 1$);
- medium level ($K_{in} = 1$);
- low level ($K_{in} < 1$).

At the second phase of research accomplishing, using the geometrical model and the scale of estimation, we will determine the integral assessment of the level of efficiency of the regional investment politics influence on the formation of the investment potential and investment climate of the branch in such sequence:

1. We will determine the integral coefficients of economic, social and ecological investment potentials [stimulants and destimulants (threats):

$$C = \sqrt{Pp}, \quad (2.4)$$

where C – the integral coefficient of factorial potential;

Pp – the index of rating assessment of factorial potentials.

2. We will accomplish the assessment of efficiency of investment politics influence on the formation of social, economic and ecological factorial potentials [stimulants and destimulants (threats):

$$I_{eff} = \frac{\sqrt{CP_1 \times CP_2 \times \dots \times CP_n}}{CT_1 \times CT_2 \times \dots \times CT_n}, \quad (2.5)$$

where I_{eff} – the integral index of the assessment of efficiency of investment politics influence on the formation of, separately, economic, social and ecological potentials;

CP – the coefficient of investment potentials – stimulants;

CT – the coefficient of investment potentials – destimulants (threats).

3. The average meaning of integral index of efficiency of investment politics influence on the formation of investment potential of the agriculture will be determined according to the formula:

$$I_{c.eff} = \sqrt[3]{I_{ec.eff} \times I_{soc.eff} \times I_{ecol.eff}}, \quad (2.6)$$

where $I_{c.eff}$ – the average integral index of efficiency of investment politics influence on the formation of investment potential;

$I_{ec.eff}$ – the integral index of economic efficiency;

$I_{soc.eff}$ – the integral index of social efficiency;

$I_{ecol.eff}$ – the integral index of ecologic efficiency.

4. The average meaning of integral index of the influence of regional investment politics of the agriculture development on the reduction of investment threats will be determined according to the formula:

$$Ia.t. = \sqrt[3]{Iec.t. \times Isoc.t. \times Iecol.t.}, \quad (2.7)$$

where *Ia.t.* – the average integral index of investment politics influence on the reduction of investment threats;

Iec.t. – the integral index of economic threats;

Isoc.t. – the integral index of social threats;

Iecol.t. – the integral index of ecologic threats.

5. The significant index of assessment of efficiency of investment politics of regional development of the agriculture is the level of the formation of investment climate. Taking into account that on the formation of investment climate influence the cumulative investment potential of economic, social and ecological factors (stimulants) and ecological threats (destimulants), we will determine this index according to the formula:

$$IC = \sqrt{Ic.eff.} - \sqrt{Ic.t.}, \quad (2.8)$$

where *Ic* – the integral index of the formation of investment climate;

Ic.eff. – the average integral index of investment politics influence on the formation of investment potential;

Ic.t. – the average integral index of investment politics influence on the level of investment threats.

The level of the efficiency of regional investment politics influence on the formation of investment appealing climate in the agriculture during 2010–2017 we will determine according to such scale of assessment (1):

Table 1

The scale of assessment of the level of efficiency of regional investment politics influence on the formation of investment appealing climate in the agriculture

N/o	The level of efficiency	The average meaning of integral index (<i>Ic.eff.</i>)
1.	High	> 0,80
2.	Medium	0,60–0,79
3.	Low	0,41–0,59
4.	Crisis	0,40 <

The level of efficiency of the formation of appealing investment climate is determined by:

a) high level – the integral index of the formation of investment appealing climate indicates to the reduction of the level of threats to minimal level and the growth of investment potential of the branch, which ensures high tempos of production, high level of profitability of agricultural output, competitiveness of enterprises and social standards;

b) medium level – is such a level of investment appeal of investment climate, which enables to satisfy the manufacturers' needs in investments for more than half and to ensure the steadiness of growing agriculture development of country regions, to intensify investment activity in rural area;

c) low level – is characterized by insignificant investments in the agriculture development, low competitiveness of agrarian output, insignificant capital investments in the land, low tempos of production;

d) crisis level – is characterized by insignificant volumes of floating assets of agrarian enterprises, by low level of their crediting, by the reduction of volumes of foreign investment of the agriculture, by low profitability and competitiveness of industrial structures, by low level of social standards, by considerable percentage of work force from the rural area.

6. Accomplishing separately the assessment of investment politics influence on the formation of investment potential (*Ig.eff.*) and investment climate (*IC*), we will carry out their general integral assessment:

$$I_{eff.i.i.} = \sqrt{I_{g.eff.} \cdot IC}, \quad (2.9)$$

where *I_{eff.i.i.}* – the integral index of assessment of efficiency of investment politics;

I_{g.eff.} – the average meaning of integral index of the formation of investment potential of the branch;

IC – the integral index of assessment of the formation of investment climate.

The parameters of the assessment of efficiency of investment politics have to be:

- high level (>1);
- medium level (=1);
- low level (<1).

Thus methodic-methodological sequence enables to estimate the influence of regional investment politics on the formation of investment potential and appealing investment climate in the agriculture gradually, to estimate the level of increase of social standards of population of the rural areas and to conduct the integral assessment of influence of regional investment politics on the development of agriculture, which according to the data of general Conclusion, can be effective or ineffective.

Conclusion. The suggested methodological and methodic approaches to the assessment of efficiency of regional investment politics of the agriculture development are based on the principles, which characterize the growth of branch and are

determined by the totality of economic, social and ecological factors with consideration of threats and opportunities. The methods, which will be used in the process of research, enable to estimate the influence of investment politics on the formation of investment potentials of the branch gradually, the reduction of investment threats and to accomplish the integral assessment of efficiency of the implementation of state investment politics of the agriculture development, which is going to allow to make the general conclusion to its efficiency of influence on the development of agrarian branch.

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