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Assessment Process of Economic Expediency for the Interregional Cooperation: Ukrainian-Polish Content

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ABSTRACT

The urgency of the research problems is determined by several main factors: firstly, in the conditions of intensification of the scientific and technological development processes and increase the innovations influence on the modern perspective state of the world economic system, no country is able to successfully develop alone, outside the process of interaction between countries and regions; secondly, the emphasis in the deployment of such interaction is shifting to the interregional level, is particularly noticeable against the backdrop of the modern European economic space. These aspects cause an increase in the scientific interest in interregional cooperation, especially with regard to their economic expediency assessment. It should be noted that most of the existing conclusions are based on a theoretical overview of interregional cooperation, because Ukraine doesn't have a single methodological support for justifying and assessing the economic expediency of interregional cooperation, causing contradictions in the studying issue. In this regard, the problem of developing scientific and methodological provisions for assessing the economic expediency of interregional cooperation is very relevant and timely, which is the purpose of this article.

JEL Classification: F02, F23, F63.

Keywords: assessment, interregional (cross-border) cooperation, L'viv Region, Subcarpathian Voivodeship, economic expediency, development.

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1. INTRODUCTION

One of the priorities of the state policy of many countries is to ensure sustainable regional development, and the general approaches to its achievement in Ukraine and European countries are almost identical. This concerns issues such as overcoming regional disproportions, the application of certain norms and principles and so on. However, interregional cooperation is one of the most important forms of regional development in modern conditions, which is confirmed by the provisions of the Agreement on the Association of Ukraine with the EU. A significant number of scientists who have researched this issue argue that the interregional cooperation concept is much broader than cross-border, that it is part of interregional cooperation. Another group of scientists argues that the notion of interregional and cross-border cooperation is synonymous. However, despite the significant contribution of scientists to determine the essence of these concepts, it should be noted that in this context, there are disagreements in both the scientific literature and in legal documents. Considering the essence of the notion of "interregional cooperation", it should be noted that three approaches can be distinguished for its definition:

- supporters of the first approach understand interregional cooperation between the regions of different countries (partnerships), are not immediate neighbors, but have common interests at the bilateral level (Bielen'kiy, 2011) [1];
- supporters of the second approach understand any mutually agreed activities aimed at establishing relations between territorial communities or authorities of two or more contracting parties (Čiegis, 2001) [2];
- supporters of the third approach with interregional cooperation understand the coordinated actions of state authorities, authorities of administrative and territorial units (including united territorial communities), legal entities, public organizations, carried out within the framework of the current legislation of the participating countries, both inside and outside the states and which are aimed at strengthening the comprehensive relations of neighboring states (and addressing the issues of sustainable development of the regions, welfare of the population, ensuring the safety of society, protection of the environment and mutual assistance in emergency situations, strengthening friendship and good neighborliness of the participating countries, Pavlenko, 2006; Tsvetkov, 2013) [3; 4].

Currently, there is no definition of "interregional cooperation" at the legislative level in Ukraine. However, in order to determine the cooperation relations on the border regions territory of neighboring countries in the modern scientific literature and the practice of interregional relations, two concepts are used almost synonymously: border and cross-border cooperation. Such cooperation, as a rule, is understood as general actions aimed at strengthening and developing good-neighborly relations between territorial communities or authorities of several states, are realized through the conclusion of interregional agreements and arrangements (Hänggi, 2006) [5]. However, the Law of Ukraine "On Cross-Border Cooperation" determines that these are joint actions aimed at establishing and deepening economic, social, scientific, technical, environmental, cultural and other relations between territorial communities, their representative bodies, local executive bodies of Ukraine, the relevant authorities of other states within the limits of competence defined by their national legislation (The Verkhovna Rada of Ukraine, 2004) [6]. Complementing this definition, some scientists (Cyrek, 2014; Doidge, 2014) [7; 8] note that cross-border cooperation should

be applied to identify those links between adjacent regions of countries that are designed to promote and enhance the expediency of economic, environmental, cultural and other cooperation.

Thus, interregional cooperation includes not only cooperation between regions within one country, but also the concept of cross-border cooperation, but each of these forms has its own peculiarities. In the framework of this article, interregional cooperation includes the concept of cross-border cooperation and is defined as coordinated actions of participants within the competence established by national legislation and the conclusions of agreements necessary for achieving economic and social progress of regions both within one country and between regions of different countries.

Defining the essence of the category "economic expediency" in the context of interregional cooperation, as one of the most comprehensive in economic science, it should be noted that the definition of "expediency" is used in assessing global systems and specific cases, activities, logistical, human and other resources. In this regard, economists treat this category in different ways, depending on the object of expediency. Investigating the scientific literature one can see that there is no single approach to the essence of such a complex category as "expediency". Some scientists associate it with the economic effect, others regard it as a ratio of the result (in the form of an economic effect) and costs. But most scientists identify the concepts of "expediency" and "resultness". Thus, one can meet the definition of economic expediency, which is defined as "the resultness of economic activities in the implementation of programs and activities, is characterized by the ratio of the resulting economic effect (result) to the resource costs that led to this result" (Chuzhykov, 2008) [9].

The analysis of the above definitions allows us to note that the majority of authors proceed from the traditional definition of economic expediency, it is defined by them as the ratio of the final result and the resources used (manpower, means, objects of labor, etc.). Partly agreeing with the majority of scientists, we can assume that the assessment of the economic expediency of interregional cooperation depends on the time interval, but has a more complex nature and another calculation methodology, which may include an analysis of the socio-economic status of selected regions. Thus, the economic expediency of interregional cooperation - is a reflection of the final results of interaction between the subjects of such cooperation at the lowest cost for a certain period of time. However, this approach requires the existence of a unified interregional statistics, the formation of which in Ukraine has just begun.

2. METHOD

To analyze the regional development, scientists use a large number of indicators and scientific approaches. For example, some economists (Börzel and van Hüllen, 2014) [10] believe that it is necessary to make regional diagnostics based on the analysis of two or more regions in three blocks of indicators (natural resource, demographic and economic), but this method is more suitable for an integrated analysis of socio-economic development to regions located in the territory of one country. The task is significantly complicated in assessing the economic expediency of interregional cooperation on the example of a cross-border region (when the regions will be on the territory of different countries). Therefore, in order to conduct such an assessment, it is proposed to use a methodical approach based on the example of a cross-border region, taking into account complex indicators of interregional cooperation (indices, coefficients, etc.), (Figure 1).

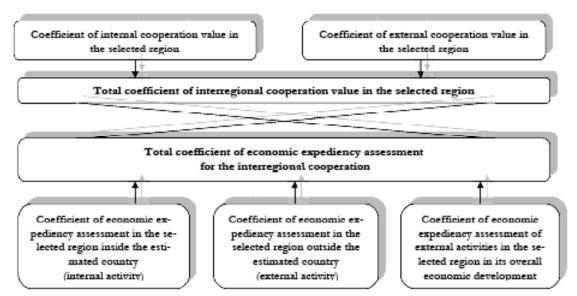


Figure 1: Methodical approach for assessing the economic expediency of interregional cooperation

The peculiarity of assessing the economic expediency of interregional cooperation on the cross-border region is the determination of the share of foreign trade within each component of the selected region for the selected period of time, which makes it possible to compare the expediency of such cooperation with the indicator of the interregional cooperation importance and do it more objectively and in dynamics.

The formula for calculating the total coefficient of interregional cooperation value (*Kval*) will look like:

$$Kval = K(int) \ val \times K(ext) \ val \tag{1}$$

where, K(int) val – coefficient of internal cooperation value in the selected cross-border region;

K(ext) val – coefficient of external cooperation value in the selected cross-border region.

In turn, the components of the total coefficient of interregional cooperation value of the cross-border region are calculated, respectively, according to the following formulas:

$$K(int) val = \frac{V ftt^{AB}}{V ftt^{A}}$$
(2)

where, Vftt^{AB} – volume of foreign trade turnover of regions A (the region of Ukraine) and B (the region of another state) participating in interregional cooperation for a certain period of time, units;

Vftt^A – volume of foreign trade turnover of region A for a certain period of time, units.

$$K(ext) val = \frac{Vftt^{AB}}{Vftt^{B}}$$
(3)

where, Vftt^{AB} – volume of foreign trade turnover of regions A (region of Ukraine) and B (region of other state), participating in interregional cooperation for a certain period of time, units;

Vftt^B – volume of foreign trade turnover of region B for a certain period of time, units.

In addition, the calculation of economic expediency indicators of interregional cooperation in the selected cross-border region and its components should take into account three most important factors:

- 1. the role of the components of the cross-border region within the country is assessed;
- 2. the role of the components of the cross-border region in the country's foreign activities;
- 3. the importance of external activities of the constituent parts of the cross-border region in its overall economic development.

Accounting for these factors allows us to assess not only the volume of trade turnover between the components of the selected region, but also the expediency of interregional cooperation for the economy of each country for their economic growth.

Thus, the next step is to calculate the total coefficient of economic expediency assessment for the interregional cooperation of the selected cross-border region inside the country (Kexp), it is calculated by the formula:

$$K \exp = K \operatorname{regV} \times K \operatorname{regVZ}$$
 (4)

where, KregV – coefficient of economic expediency assessment in the selected region inside the estimated country (internal activity);

KregZ – coefficient of economic expediency assessment in the selected region outside the estimated country (external activity);

KregVZ – coefficient of economic expediency assessment of external activities in the selected region in its overall economic development.

Below are the formulas for calculating each of the components of the overall coefficient of economic expediency assessment of interregional cooperation (*Kexp*).

Coefficient of economic expediency assessment in the selected region inside the estimated country (internal activity) shows the share of the gross regional product (hereinafter - GRP) of the region in the total gross domestic product (hereinafter - GDP) of the country:

$$K_{reg}V = \frac{V_{grp}^{AB}}{V_{gdp}^{U}}$$
 (5)

where, Vgrp^{AB} – volume of GRP of the cross-border region, units;

Vgdp^U – volume of GDP of the selected county, units.

Coefficient of economic expediency assessment in the selected region outside the estimated country (external activity) (KregZ) shows the share of foreign trade turnover of the region in the total foreign trade turnover of the country:

$$K_{reg}Z = \frac{V fit^{AB}}{V fit^{U}}$$
(6)

where, Vftt^{AB} – volume of foreign trade turnover of regions A (region of Ukraine) and B (region of other state), participating in interregional cooperation for a certain period of time, units;

Vftt^U – volume of Foreign Trade Turnover of selected country, units.

Coefficient of economic expediency assessment of external activities in the selected region in its overall economic development (KregVZ) shows the share of foreign trade turnover of the region in the total volume of its GRP:

$$KregVZ = \frac{Vftr^{AB}}{Vgrp^{AB}}$$
 (7)

where, Vftt^{AB} – volume of foreign trade turnover of regions A (region of Ukraine) and B (region of other state), participating in interregional cooperation for a certain period of time, units;

Vgrp^{AB} – volume of GRP of the cross-border region, units.

To consider the total coefficient of economic expediency assessment of interregional cooperation, it is necessary to pay attention to its components. Then it becomes obvious that the coefficients KregV, KregZ, KregVZ can take values from 0 to (+1). Accordingly, the coefficient of economic expediency assessment of interregional cooperation (Kexp) can also take values from 0 to (1): the closer its value to 1, the more expedient it will be to develop the selected cross-border region. If the result will tend to zero, then it is necessary to revise the conditions of this interregional cooperation.

3. RESULTS

Modern Ukraine has a fairly wide network of interregional (cross-border) cooperation with many EU countries, but the historical and geographical proximity to Poland makes the Ukrainian-Polish relations more developed (European Bank for Reconstruction and Development, 2014) [11]. So, almost all regions of Ukraine concluded Agreements on interregional cooperation with the voivodeships of Poland, and all 16 voivodeships of Poland have a partner in Ukraine at the regional level.

Most of all Ukrainian partners have Subcarpathian, Lublin, Lodz, Silesian and Mazowieckie voivodeships. On the Ukrainian side, more L'viv, Odessa, Kiev, Vinnytsia and Volyn' regions have more Polish partners. At the regional and local levels between Ukraine and Poland, about 450 agreements on interregional cooperation have been signed, within which an infrastructure and institutional basis has been built between these parties that serves the development of interregional contacts between Ukraine and Poland (Partnership agreement, 2013) [12].

Drawing attention to these facts, the cooperation between the L'viv Region (the Ukrainian side) and the Subcarpathian Voivodship (the Polish side) during the period of its activity from 2015 to 2017 was chosen as an example for calculating indicators of economic expediency of interregional cooperation. This L'viv-Subcarpathian cross-border region (hereinafter – LS region) at the administrative level of the border regions and voivodeships covers an area of 97,700 km, of which 43,0 thousand square km (13.8% of the territory of Poland) are in the Polish part, and in Ukrainian - 54.7 thousand square km (9.1% of the

territory of Ukraine). The structure of the settlements of the cross-border region includes 150 cities (in the Polish part - 86, but in the Ukrainian - 64). In the Polish part of the LS region, a large average population density is recorded, is 100 people per 1 square km (in Poland as a whole - 122 people/square km), but in Ukrainian - 89 people per 1 square km (in Ukraine - 80 people per 1 square km) (National Institute for Strategic Studies under the President of Ukraine, 2017) [13].

In the context of the development of Ukrainian-Polish cross-border relations, one can speak about their disproportion, which finds expression in the following factors: nationwide, socioeconomic, external economic (associated with the effectiveness of human and productive capital use) disproportions, rather low level of investment activity of the Polish side in Ukrainian market and others. However, despite these facts, cross-border cooperation between the L'viv region and the Subcarpathian voivodship has been going on for more than 20 years, and as far as it is feasible - the assessment of their economic expediency will be shown according to a certain methodical approach (Table 1, formulas 1-7).

Table 1

Baseline data for assessing the economic expediency of interregional cooperation on the LS region example

Indicator Name	Designation	Value		
		2015	2016	2017
Total volume of foreign trade turnover of the Lviv region, mln. \$ USA	Vftt ^A	2654,27	2974,98	3435,85 ¹
Total volume of foreign trade turnover of the Subcarpathian Voivodship, mln.\$ USA	Vftt ^B	9121,21	10172,51	13723,88 ¹
Volume of foreign trade turnover of the cross-border region, mln.\$ USA	Vftt ^{AB}	589,25	755,64	903,63 ¹
Volume of Gross Regional Product of the cross-border region, mln.\$ USA	Vgrp ^{AB}	$20170,62^2$	21681,90 ²	22571,33 ²
Volume of Gross Domestic Product of Ukraine, mln.\$ USA	$Vgdp^{U}$	70997 , 11 ³	85086,90 ⁴	73624,57 ⁴
Volume of Foreign Trade Turnover of Ukraine, mln.\$ USA	Vftt^U	$75643,59^3$	75611,51 ⁴	84183,70 ⁴

¹The indicator value for the period January-November 2017 on the basis of (The State Statistics Committee of Ukraine, 2017; The European Commission, 2017) [14; 15].

²Calculated by the authors on the basis of (The State Statistics Committee of Ukraine, 2017; The European Commission, 2017) [14; 15].

³The indicator value for the period January-September 2017 on the basis of (The State Statistics Committee of Ukraine, 2017) [14] without taking into account the temporarily occupied territories of Ukraine and calculated at the official exchange rate of the National Bank of Ukraine as of January 31, 2018.

⁴In the absence of official factual statistics, a forecast based indicator is used on the basis of (The State Statistics Committee of Ukraine, 2017; The European Commission, 2017) [14; 15].

The calculation of the total coefficient of interregional (in our case - cross-border) cooperation value for the LS region (*Kval*) and its components for 2015 will look like:

$$K(int)val = \frac{Vftt^{AB}}{Vftt^{A}} = \frac{589, 25}{2654, 27} \approx 0,22200$$

$$K(\text{ext})\text{val} = \frac{V \text{ftt}^{AB}}{V \text{ftt}^{B}} = \frac{589,25}{9121,21} \approx 0,06460$$

$$Kval = K(int)val \times K(ext)val = 0,22200 \times 0,06460 \approx 0,01434 \text{ (or } 1,434\%)$$

The components of the general coefficient (Kval) allow to draw conclusions about the significance of cross-border cooperation. And accordingly calculated for 2015, the significance shows that the L'viv region is carrying out more active cooperation with the Subcarpathian Voivodship. In general, the most significant in this research is not only the final result of the coefficient (Kval) itself, but the trend of its change in time, as well as its components, so further similar calculations are presented for 2016 and January-November 2017.

Calculating the total coefficient of cross-border cooperation value for the LS region (Kval) for 2016:

K(int)val =
$$\frac{\text{Vftt}^{AB}}{\text{Vftt}^{A}} = \frac{755,64}{2974,98} \approx 0,25400$$

$$K(\text{ext})\text{val} = \frac{V \text{ftt}^{AB}}{V \text{ftt}^{B}} = \frac{755,64}{10172,51} \approx 0,07428$$

$$Kval = K(int)val \times K(ext)val = 0,25400 \times 0,07428 \approx 0,01887 \text{ (or } 1,887\%)$$

Calculating the total coefficient of cross-border cooperation value for the LS region (Kval) for 2017:

K(int)val =
$$\frac{\text{Vftt}^{AB}}{\text{Vftt}^{A}} = \frac{903,63}{3435,85} \approx 0,26300$$

$$K(\text{ext})\text{val} = \frac{V \text{ftt}^{AB}}{V \text{ftt}^{B}} = \frac{903,63}{13723.88} \approx 0,06584$$

$$Kval = K(int)val \times K(ext)val = 0.26300 \times 0.06584 \approx 0.01731 \text{ (or } 1.731\%)$$

The results obtained are presented in tabular form (Table 2).

Table 2
Results of calculating the Total coefficient of cross-border cooperation value

Indicator Name	Designation -	Value		
		2015	2016	2017
Total coefficient of cross-border cooperation value	Kval	0,01434 (1,434%)	0,01887 (1,887%)	0,01731 (1,731%)
Coefficient of internal cooperation value in LS region	K(int)val	0,22200	0,25400	0,26300
Coefficient of external cooperation	K(ext)val	0,06460	0,07428	0,06584

Analysis of the results of calculating the total coefficient of cross-border cooperation value indicates positive trends in the development of the LS region between its partners. In the period from 2015 to 2016, the coefficient of cooperation between regions significantly increases (by 0.453%), but from 2016 to 2017, the observed deterioration of the situation (by 0.156%).

As for the forming factors K(int)val and K(ext)val, the coefficient of internal cooperation value from the L'viv Region is higher than the similar index of the Subcarpathian Voivodeship, the latter tends to unstable growth in the analyzed period. The components of the total coefficient of cross-border cooperation value Kval allow to draw conclusions about the significance of the economic development of the cross-border region for the development of both countries, as well as the development of foreign economic activity of the region and its economy. Thus, the obtained data show that the role of the Subcarpathian Voivodeship in Ukraine's foreign economic activity is somewhat lower, while the significance of the foreign economic activity of the L'viv Region is quite high for the economy of the LS region, which testifies to the ability and rather high rate of its foreign economic development.

Below is the calculation of the total coefficient of economic expediency assessment for the interregional (in our case – cross-border) cooperation Kexp and its formation factors (KregV, KregZ, KregVZ) for 2015:

$$KregV = \frac{Vgrp^{AB}}{Vgdp^{U}} = \frac{20170,62}{70997,11} \approx 0,2841$$

$$KregZ = \frac{Vftt^{A}}{Vftt^{U}} = \frac{2654,27}{75643,59} \approx 0,0351$$

$$KregVZ = \frac{Vftt^{A}}{Vgrp^{AB}} = \frac{2654,27}{20170,62} \approx 0,1316$$

$$K \exp = K \operatorname{regV} \times K \operatorname{regZ} \times K \operatorname{regVZ} = 0,2841 \times 0,0351 \times 0,1316 \approx 0,00131 \text{ (or } 0,131\%)$$

The calculation of the total coefficient of economic expediency assessment for the cross-border cooperation Kexp and its formation factors (KregV, KregV, KregVZ) for 2016:

$$KregV = \frac{V_{grp}^{AB}}{V_{gdp}^{U}} = \frac{21681,90}{85086,90} \approx 0,2548$$

$$KregZ = \frac{V_{ftt}^{A}}{V_{ftt}^{U}} = \frac{2974,98}{75611,51} \approx 0,0393$$

$$KregVZ = \frac{V_{ftt}^{A}}{V_{grp}^{AB}} = \frac{2974,98}{21681,90} \approx 0,1372$$

$$K \exp = K \operatorname{regV} \times K \operatorname{regVZ} = 0.2548 \times 0.0393 \times 0.1372 \approx 0.00137 \text{ (or } 0.137\%)$$

The calculation of the total coefficient of economic expediency assessment for the cross-border cooperation Kexp and its formation factors (KregV, KregV, KregVZ) for 2017:

KregV =
$$\frac{\text{Vgrp}^{AB}}{\text{Vgdp}^{U}} = \frac{22571,33}{73624,57} \approx 0,3066$$

$$KregZ = \frac{Vftt^{A}}{Vftt^{U}} = \frac{3435,85}{84183,70} \approx 0,0408$$

$$KregVZ = \frac{Vftt^{A}}{Vgrp^{AB}} = \frac{3435,85}{22571,33} \approx 0,1522$$

$$K \exp = K \operatorname{regV} \times K \operatorname{regVZ} = 0,3066 \times 0,0408 \times 0,1522 \approx 0,00190 \text{ (or } 0,190\%)$$

On the results of calculating the total coefficient of economic expediency assessment for the LS region, more significant for assessing is the dynamics of changes in its values. Below is a table of the dynamics of its results for 2015 - 2017 (Table 3).

Table 3
Results of calculating the Total coefficient of Economic Expediency assessment for the LS region

Indicator Name	Designation –	Value		
		2015	2016	2017
Total coefficient of economic expediency assessment for the LS region cooperation	Kexp	0,00131 (0,131%)	0,00137 (0,137%)	0,00190 (0,190%)
Coefficient of economic expediency assessment for the LS region cooperation inside Ukraine (internal activity)	KregV	0,2841	0,2548	0,3066
Coefficient of economic expediency assessment for the LS region cooperation outside Ukraine (external activity)	KregZ	0,0351	0,0393	0,0408
Coefficient of economic expediency assessment of external activities of LS region in its overall economic development	KregVZ	0,1316	0,1372	0,1522

Analyzing the data obtained, we can conclude that there is a positive trend in the change in the economic expediency of the LS cross-border cooperation. Estimating the value of the components of the coefficient Kexp, it can be determined that a slight decrease in the economic expediency of the LS in Ukraine (KregV) was observed in 2016, while the similar coefficient in Ukraine's foreign activity (KregZ) and the coefficient of economic expediency assessment of external activities of LS in its overall eco-nomic development (KregVZ) tend to increase noticeably in 2016 and 2017. The value of the indicator Kexp is somewhat far from the normative optimal value (+1), which indicates the insufficient expediency of cooperation between the partner regions and the inadequate use of all opportunities for the economic development of the selected cross-border region. However, the stable and gradual growth of KregZ and KregVZ indicators demonstrates LS region's ability to further develop interregional and international ties, which in turn creates the basis for further changes in the strategic development of the L'viv region, namely: taking measures to increase cooperation with the Subcarpathian Voivodeship or development of interregional (cross-border) cooperation with other regions, for example, with Lublin and Lesser Poland Voivodeship of Poland.

4. CONCLUSIONS

Thus, the article identifies and summarizes approaches to the definition of interregional, border and crossborder cooperation; it is determined that under interregional cooperation it is necessary to understand the coordinated actions of the participants within the competence established by national legislation and the conclusions of treaties and agreements necessary to achieve the economic and social progress of the regions. It was found out that interregional cooperation is of great importance in the economic development of the regions through deep integration in all spheres of the national economy and contributes to the increase of social and economic development of all regions.

It was revealed that the methodological support of the expediency assessment of interregional (cross-border) cooperation should take into account the industry specialization of the regions located on the territory of the country on both sides of the border. These studies require the use of appropriate interregional statistics, which should be comparative and consist of national statistics of adjacent territories, which requires further theoretical and methodological developments.

It is noted that at present in Ukraine there is no clear definition of a uniform methodology for assessing the expediency of interregional cooperation, since it is very difficult to calculate the costs and profits in the region, obtained from the results of this cooperation. Therefore, the article has formed a methodical approach to assessing the economic expediency of interregional (cross-border) cooperation, which makes it possible to compare the expediency of such cooperation between countries (regions) more objectively than the calculation of the volume of trade, on the basis of which some scientists form their proposals (Doidge, 2007) [16]. Thus, the indicators of economic expediency of interregional (cross-border) cooperation provided in the work are a general approach that can be used to carry out an assessment without using a complex mathematical apparatus, as evidenced by the results of such an assessment using the example of LS region.

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