ATLANTIS PRESS

Advances in Economics, Business and Management Research, volume 90

International Scientific-Practical Conference on Business Cooperation (ISPCBS 2019)

Evaluation of the regional potential

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***Abstract*—The authors of the article prove the necessity for continuous monitoring of socio-economic development of a particular region to take timely effective measures aimed not only at maintaining the achieved position in the ranking of regions, but also to improve the competitiveness and investment attractiveness of the region. The developed method was tested in the regions of the North-Western Federal district. The obtained potential values clearly illustrate the presence of significant differentiation of the regions of the North-Western Federal district in terms of their competitiveness and opportunities for further development.**

Keywords—regional potential; evaluation; socio-economic development; North-Western Federal district; development.

I. URGENCY OF THE STUDY

In the scientific literature there is a significant number of publications devoted to the assessment of socio-economic development of countries and individual regions. Various techniques are applied, each distinguished by a set of statistics and indicators, and ways of handling numeric values. The choice of method is determined, in particular, by the purpose of the study.

Thus, A.A. Satibaldin and N.K Nurlanova suppose that for comparison of economic development of regions the most acceptable indicators are per capita and specific since they level influence of such factors as population, the size of the territory, etc. [18]. K.B. Asylbayev in order to assess the socio-economic development of the Kazakhstan region calculates two derived indicators from the generalized indicators – the level of prosperity, reflecting the economic condition, and the indicator of social satisfaction [2]. E. B. Zhailauov in the process of studying the spatial and structural heterogeneity of the regions of Kazakhstan analyzes such indicators as the volume and dynamics of the gross regional product, the dynamics of the index of physical volume of industrial production and the innovative potential of the regions [8].

However, it should be noted that, despite of the close relationship between socio-economic development indicators and the potential of the territories, insufficient attention is paid to the integrated assessment of the potential of the territory.

Among foreign studies is an interest of consideration of U.A. Gerneg's triad of the potential for sustainable development of enterprises, proposed by A.I. Burda [20], in relation to the region. The triad includes such components as economic, environmental and social. The economic component of the authors includes production, financial, marketing, strategic and information potential. The environmental component includes innovative, scientific and technical potential. The social component includes social, labor and motivational potentials [7].

The work of scientists from Kazakhstan is also devoted to the sustainable development of the country [15]. The authors used a set of factors identified in three broad groups to conduct a comprehensive assessment of the territories of the country regions :

1) Social development;

2) Economic increase;

3) Environmental protection.

According to the authors, the results of such comprehensive assessment can be used to determine the effectiveness of the implementation of state strategic programs.

Russian and foreign scientists mainly consider the assessment and use of certain types of potential of the territory.

The most attention is paid to the innovative potential due to the special importance of innovation to improve the competitiveness of the country. Thus, O. V. Avdey and U. V. Chaikovskaya analyze the innovative potential of the Republic of Belarus, using such indicators as the number of subjects of innovative infrastructure, the number of residents of techno parks and the results of their activities, the volume of research and development, the number of innovative industrial enterprises, the degree of innovative activity of production, the degree of science-intensive products, the volume of exports of science-intensive and high-tech products, the cost of research and development. Y. A. Gernego understands innovation as a result of the interaction of the scientific and technical prerequisites and resource capabilities, which, with successful management, organization and control, form the perspectives of development of production and non-production sphere. E. B. Zhaylauov assesses the state of innovative potential of the regions of the Republic of Kazakhstan on the basis of indicators of the level of innovative activity of enterprises, the share of innovative products in the GRP of the region, the cost of technological innovation and research, the number of staff engaged in research [8].

Domestic scientists are also actively participated in the study of theoretical and practical aspects of the innovative potential of the territory [5, 6, 10, 12, etc.].

Also, one of the most important conditions for the socio-economic development of the regions, domestic and foreign scientists consider the financial and budgetary potential. It should be noted that in the domestic scientific literature there is a significant number of articles devoted to the topic of budget potential, while foreign scientists consider, mainly, the financial potential of the territory.

Thus, V.G. Boronos and I.I. Plikus note that the financial potential of the territory is a quantitative criterion of the state of its financial independence and represents a territorial opportunity to attract, create and use financial resources to ensure effective functioning and development. The authors emphasize that self-development of the territory is impossible without the growth of financial potential [4].

Russian scientists E.U. Kolesov, N.M. Zubarev distinguish two components as part of the financial potential of the region– the investment potential and the potential of financial support. According to the authors, the investment potential is manifested in the form of concentration of financial resources in the development projects of the region, and the essence of the potential of financial support is tax and grant business support [11].

One of the components of the financial potential of the territory A.A. Kuklin and K.S. Naslunga consider the budget potential, which is a set of financial resources of the territory, which can be used for the implementation of budgetary functions in the framework of achieving strategic and tactical development goals of the region. The proposed method of assessing the level of use of the budget potential of the regions includes the ranking of indicators in five groups [14]:

1. sustainability, financial independence of the regional budget;

2. quality of planning and execution of the regional budget;

3. the state of debt obligations of the regional budget;

4. focus of the regional budget;

5. the impact of budget indicators on the main economic indicators.

Foreign scientists consider the social potential as another important component of the territory's development potential. According to S. U. Solodovnikov, no state can ensure its sustainable development without the continuous growth of the social potential of society, and the effective functioning of labor relations is impossible without the use of social capital [19]. A.V. Rublevsky argues that within the framework of public education, social capital is the socio-economic potential of the country [17].

A. M. Ismailakhunova believes that the main factor of social development is human potential, and its study is a necessary condition for the using of a strategic approach to reforming of the country's economy, since it is the formation and rational use of human potential that is the basis for any socio-economic reforms [9]. U.V. Krutin identifies the intellectual component as a set of information, knowledge, skills and activities possessed by the population of the region. The author proposes to calculate a composite index of the intellectual component of human potential as the sum of four indices – educational, scientific, professional qualification and research [13].

Also, domestic scientists study the issues of labor potential of the regions. As noted by G.R. Baymurzina and F. I. Mirzabalayeva, the problems of the level and quality of labor potential are currently one of the most urgent strategic tasks. At the same time it is necessary to consider not only its qualitative and quantitative characteristics, but also to analyze the set of conditions for its implementation, the quality of the social and labor environment [3].

V. P. Raskovalov emphasizes the special importance of transport infrastructure for the development of tourism and for the rating and typology of the Perm regions uses such components of the transport potential of the territory as the provision of a transport network, the quality and level of development of the transport network, the availability of territories [16].

Thus, it can be concluded that the domestic and foreign scientific literature presents various methodological approaches to assessing the potential of the regions.

II. PURPOSE AND CONCEPTUAL APPARATUS

In our understanding, the potential of the region is a component of its national wealth, which can be used for its development. The purpose of the study is to assess the economic potential of the regions of the North-Western Federal district for further determination of a set of measures aimed at finding reserves for increasing the attractiveness of the territory and enhancing their use. To achieve the stated target, the method of calculating the integral indicator of the region's development potential was used, which involves the definition of production, innovation, financial, human, infrastructure potential, and entrepreneurial activity.

Assessment of the territory potential includes the assessment of the following components: production, innovation, financial, human, infrastructure potential, and entrepreneurial activity.

To assess the potential of the territory, an integral indicator is used, the calculation of which is proposed to be carried out according to the author's method, which includes the following stages:

1. Presentation as a matrix of indicators calculated for each region. The columns of the matrix specify the number of regions (1...m), the rows are the numbers of indices (1...n).

2. Determination of the maximum value for each indicator and entering it into the column of the conditional reference region.

3. Calculation for each initial indicator of the standardized indicator by the formula:

$$X_{ig} = a_{ig} / max^{a_{ig}} \quad (1)$$

Where: a_{ig} is the actual value of the i-th indicator for the g-th region,

$max^{a_{ig}}$ is the maximum value of the i-th indicator in the aggregate m regions.

To measure the potential of the region, the authors propose to use the following indicators:

1. The industrial potential, including the calculation of the resource potential of the industry, the susceptibility of the industry to innovation, efficiency evaluation. Efficient use of resources (capital productivity indicator), improvement and growth of production development rates, firstly, will ensure economic growth of all branches of material production, and secondly, will satisfy the population's demand for technically complex consumer goods, including through import substitution, and thirdly, will make it possible to create competitive export products.

2. Innovation potential, determined by the following set of indicators: the number of personnel engaged in research and development, the proportion of employed people with different levels of education in the total number of employed, basic research and development tools per employed research and development, internal research and development costs per 1000 rubles.

3. The financial potential of the territory assesses the degree of priority tasks of scientific and innovative development through the calculation of the share of investment in fixed capital of industry in GRP, strategic objectives of industrial development of the region, the integration of the region into the world economy by calculating the volume of foreign investment per capita, the level of financial support of strategic objectives of industry areas.

Financial independence of the territory is determined by the formula:

$$S_{fin} = D_{reg}/R_{reg} \quad (2)$$

Where S_{fin} is financial independence, D_{reg} is own budget and extra-budgetary revenues of the region (with the exception of Federal funds allocated to support the region), R_{reg} is budgetary and extra-budgetary expenses of the region.

Financial independence can be reached when $D_{reg}/R_{reg} \geq 1$.

If this inequality is not met, it can be argued that the region is depressed and that it is necessary to find additional opportunities to develop its own revenue base of the regional budget, as well as budget savings.

The financial independence of the territory is closely linked to social autonomy, which is characterized by the standard of living of the population.

4. Human potential, including the assessment of the intellectual resource of the territory through the indicator of the share of workers with higher education and the share of workers with secondary vocational education in the total number of employees, the degree of attractiveness of the scientific and innovative sphere for the workforce, which reflects the figure of the number of personnel engaged in research and development, for 100 thousands citizens.

5. Business activity, determined by the share of the gross product of the analyzed region in the gross domestic product, production of goods and services per one business structure of the region, the total number of business structures in the region, the average profit per one business structure of the region, the average amount employed per one business structure of the region.

6. Infrastructure potential as an important prerequisite for the development of production and innovation potential, as well as entrepreneurial activity, considered through the parameters of the density of transport infrastructure and the provision of industry and the population with electricity.

7. The human development index measures the region's achievements in terms of health, education and actual income of citizens.

III. RESULTS

Table 1 shows the results of the rating assessment of the regions of the North-Western Federal district, reflecting the place of each region for each of the seven potentials.

The resource potential of the region reflects the indicator of the capital-to-capital ratio. The leader in this indicator is the Republic of Komi, significantly leaving behind the Murmansk region and exceeding the value of the Kaliningrad region by 36 times. The most efficient use of production resources is in the Arkhangelsk region. In the Pskov region, this figure is almost 8 times lower. The industry of the Novgorod region is not sufficiently susceptible to innovation in the region, as this figure is only 2.4%. In the rating of measurement of industrial potential of the regions of the NWFO of the Russian Federation the leader is the Arkhangelsk region, closes the list of Kaliningrad and Pskov regions.

TABLE I. RANKING OF REGIONS OF THE NORTH-WESTERN FEDERAL DISTRICT

Region	The rate of the NWFR for potentials						
	industrial	innovative	financial	human	business	infrastructure	HDI
1. Saint-Petersburg	2	1	1	4	1	1	2
2. Leningrad region	5	5	2	1	3	2	8
3. Vologda region	7	10	3	10	6	7	5
4. Novgorod region	8	6	5	9	8	9	6
5. The republic of Komi	3	9	4	5	9	5	1
6. Arhangelsk region	1	7	8	8	7	6	3
7. Kaliningrad region	9	3	6	2	2	3	7
8. Pskov region	10	4	10	7	4	8	10
9. The republic of Karelia	6	8	9	6	10	4	9
10. Murmansk region	4	2	7	3	5	10	4

According to the innovative potential of the Vologda region among the regions of the northwestern Federal district is the last place that determines the risk zone. Leaders identified: St. Petersburg (1st place), Murmansk region (2nd place), Kaliningrad region (3rd place). One of the strategic directions of socio-economic development of the Vologda region is the development of industry in the region, in connection with which the regional government implements an active investment policy. The Vologda region with the value of investments in fixed capital of the industry is 70.1% inferiors only to St. Petersburg. At the same time, in terms of financial support for this task, the Vologda region with a value of 49.51 rubles/person takes only 8th place among the regions of the northwestern Federal district, here the Republic of Komi comes first.

In terms of financial potential, the leaders are St. Petersburg (1st place) and Leningrad region (2nd place). In addition, among the regions under consideration, only St. Petersburg is financially independent. The rest of the regions can be called depressed, and therefore it is necessary to seek additional opportunities for the development of its own revenue base of the regional budget, as well as budget savings.

The leader of scientific and innovative sphere is St. Petersburg with a value of 16700 people. Vologda region closes the list with a value of 640 people. It should be noted that the Vologda region has a significant intellectual resource, since almost every third resident of the region has a higher education. For comparison: in the Novgorod region – every fifth.

The first group of regions is characterized by a very high potential and does not require any corrective actions on the part of the subject of management.

The second and third groups may accumulate factors that reduce the potential of the territories, so the impact of the subjects should be aimed at reducing the impact of these factors.

In the fourth group of regions from the control of the subject requires the adoption of complex of measures on search of reserves and the intensification of their use.

The fifth group of regions is a risk zone. The impact of the subject of management should be directed to the adoption of urgent anti-crisis measures.

IV. CONCLUSION

Assessment of the economic potential of the region is aimed at identifying a set of measures aimed not only at maintaining the achieved position in the ranking of regions, but also to improve the competitiveness and investment attractiveness of the region. The results of the study suggest the presence and, moreover, the accumulation of factors that reduce the potential of the territories. The summary analysis showed that for a number of regions (the Republic of Karelia and the Republic of Komi) at risk, it is not so much the adoption of a set of measures aimed at finding reserves and enhancing their use, as the strengthening of the attention of the regional government to the components of the potential and the adoption of additional anti-crisis measures.

TABLE III. INTERPRETATION OF THE THRESHOLD VALUES OF THE INTEGRAL INDICATOR OF MEASURING THE POTENTIAL OF TERRITORIES

Interval	Potential's level	the boundaries of the interval
1	high	$0.8<I<1$
2	Above the average	$0.6<I<0.79$
3	average	$0.4<I<0.59$
4	Below the average	$0.2<I<0.39$
5	low	$0<I<0.19$

TABLE II. VALUE OF POTENTIAL MEASUREMENT OF THE NORTH-WESTERN FEDERAL DISTRICT REGIONS

Region	Significance of the potentials						
	industrial	innovative	financial	human	business	infrastructure	HDI
1.Saint-Petersburg	0.84866	0.84321	0.5973	0.93939	0.93264	0.77899	0.90
2.Leningrad region	0.56515	0.75832	0.5558	0.67845	0.36740	0.59790	0.823
3.Vologda region	0.36521	0.22788	0.5060	0.55282	0.27621	0.22185	0.833
4.Novgorod region	0.21664	0.42338	0.4278	0.49509	0.24214	0.19775	0.821
5.The republic of Komi	0.54218	0.35277	0.5120	0.52881	0.37372	0.35898	0.864
6.Arhangelsk region	0.73180	0.41386	0.3062	0.52862	0.29422	0.32196	0.848
7.Kaliningrad region	0.15113	0.47800	0.3418	0.46450	0.35951	0.36574	0.835
8.Pskov region	0.26676	0.35681	0.2541	0.49682	0.18739	0.19531	0.797
9.The Republic of Karelia	0.32019	0.20244	0.2859	0.56678	0.29949	0.34416	0.825
10.Murmansk region	0.58186	0.54201	0.3542	0.54245	0.39093	0.18015	0.834

To interpret the integrated assessment of the potential of the region, the threshold values of the integrated assessment indicator are set, which can be in the range from 0 to 1 (table 3).

The Vologda region, Arkhangelsk region, Kaliningrad region and Murmansk region are characterized by significant fluctuations in the rating of regions by potentials. To equalize the situation, we can recommend the activation of a set of measures to support small business, the development of appropriate infrastructure for working with investors.

Thus, it can be argued that all the regions of the North Federal district have sufficient opportunities to enhance innovation and investment activities, business development, improve the competitiveness of the region.

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