

Substantiation of the methodological approach to the assessment of the investment climate of the regions

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Abstract. Substantiation of sustainable development of the country's economy should be based on following the principle of regional differentiation in the planning and implementation of management decisions at the meso-level. The principle postulates the need to take into account territorial differences in the development of the structural elements of the economic system. The authors suggest assessing the differences on the basis of clustering of regions by the level of investment attractiveness. The purpose of this study is to substantiate the methodological approach to the assessment of the investment climate in the region. The paper analyzes the criteria for assessing the social and economic situation of the regions, the methodology for rating the regions is proposed, and the factors of investment attractiveness are investigated. According to the proposed methodology, the investment attractiveness of the regions of Russia and the Republic of Abkhazia was assessed.

1 Introduction

To solve the problem of ensuring sustainable development of the national economy, it is necessary to ensure conditions for the growth of investment attractiveness of the country and, accordingly, of the regions at the level of industrial management.

The priority task facing the industrial management authorities is to ensure the attractive investment climate at the federal and regional levels, which in itself is the foundation for sustainable economic development.

The attractiveness of the region for an investor depends on two components [4]: the investment attractiveness of the region itself (in terms of completeness and adequacy of investment legislation, legal protection of the investor, regional government policy, etc.) and the attractiveness of investment objects (in terms of financial position of enterprises and efficiency of projects).

Development and calculation of the investment ratings originate in foreign studies of the '60s of the 20th century. The domestic methodology for assessing the social and economic indicators with the purpose of rating is associated with the names of A.L. Weinstein, S.A. Ayvazyan, A.N. Asaul,

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G.B. Berdnikova, K.A. Guseva [1, 3, 5, 6, 7]. The methodology for allocation of financial resources from the regional development fund, the methodology for a comprehensive assessment of the level of social and economic development of the federal subjects of the Russian Federation, the methodology of the Ministry of Economic Development and others operate at the regulatory level.

It should be noted that there are numerous methods for assessment of the criteria and compilation of the rating, both Russian and foreign. However, the analysis and development of such a technique is beyond the scope of this paper. The purpose of the analysis of the ranking of regions as a part of this study is to substantiate the presence of regional differentiation by the criterion of the investment climate. It should be taken into account when planning and implementing management decisions within the frame of managing sustainable development of the economy. Therefore, we have examined only those studies that are directly related to the aspects of the assessment of the innovation climate in the Russian regions, as well as studies that contribute to the solution of the task in hand.

2 Materials and methods

In order to identify the key criteria that determine the investment climate in the region, we have done a research of existing ratings of the regions [8, 9, 10].

Classification of the main indicators, goals and results of the ratings under the study is presented in the form of a scheme (Figure 1).

As shown in the figure, the sets of criteria assessing by ratings intersect. This indicates that there is some understanding of the investment attractiveness and reliability of the region common for all ratings. Thus, any of the presented ratings can be used to determine the investment climate of the region.

Studies (Table 1) have confirmed the validity of the statement that the investment potential of the region is a conservative category, and it is extremely difficult to increase it [2]. In modern conditions, natural resources are the basis of the potential. However, in the conditions of transition to the innovative way of development, the financial, social and political stability of the region is of great importance. For example, the coefficient of pair correlation between the investment potential of the region and budget income, GRP and balanced financial result of the organizations of the region amounted to 0.9; 0.91 and 0.89, respectively.

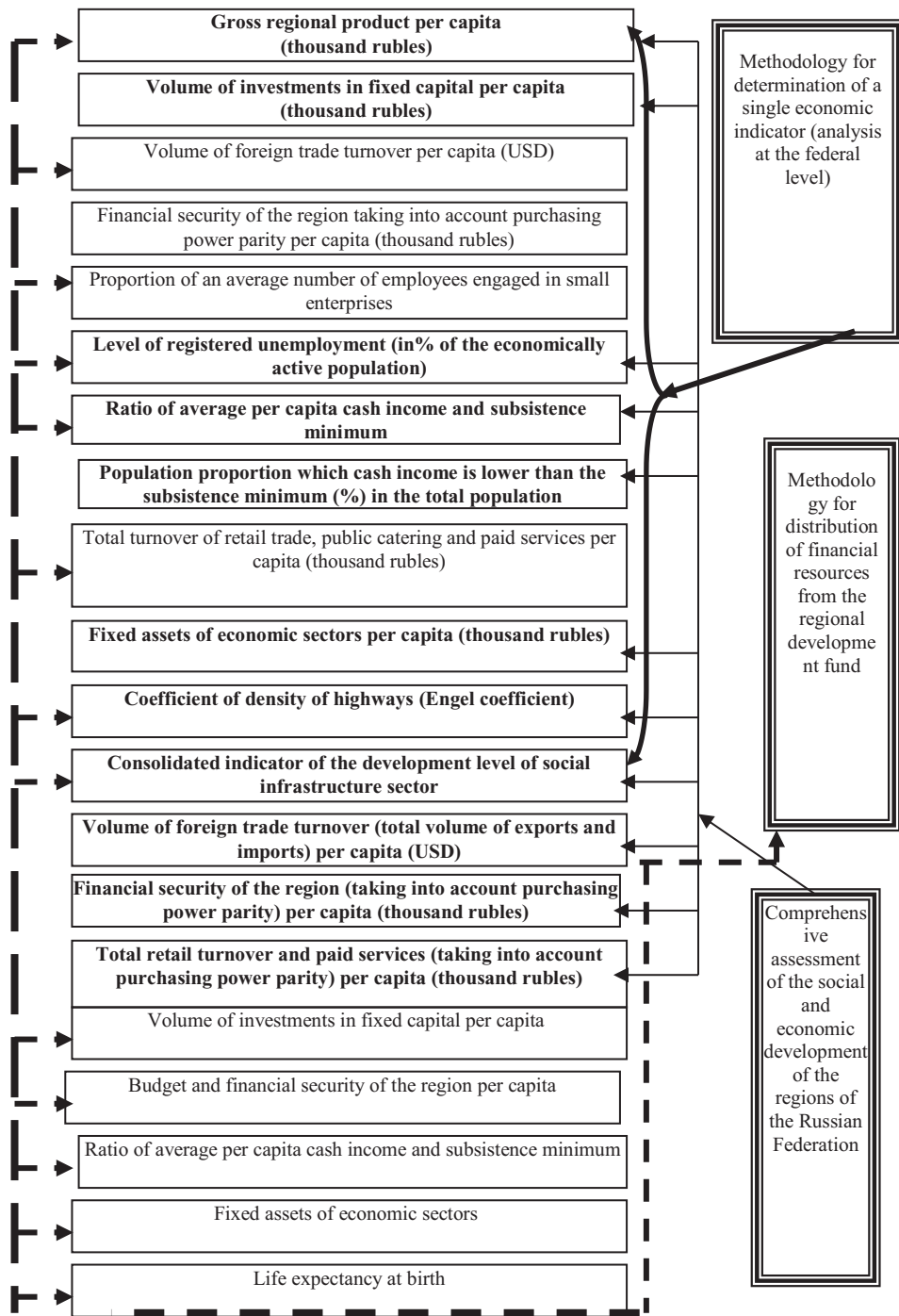


Fig. 1. Criteria for assessing the social and economic status of the regions of Russia according to the three methods.

Table 1. Results of the correlation analysis of the investment potential criteria of the region.

	gross regional product, million rubles	investment risk	investment potential
producer price index	0,01	0,04	0,05
housing price indices, percentage	0,08	-0,27	0,10
volume of investments in fixed capital,% to previous year	-0,08	-0,08	-0,16
density of railways	0,07	-0,45	0,41
density of highways	-0,01	0,02	0,27
crimes per 100,000 people	0,04	-0,10	-0,02
gross regional product, million rubles	1,00	-0,30	0,92
budget income, million rubles	0,92	-0,25	0,90
budget expenditures, million rubles	0,91	-0,25	0,90
budget surplus (deficit), million rubles	0,85	-0,11	0,81
balanced result of activities of organizations, million rubles	0,96	-0,23	0,90
per capita cash income of the population, rubles	0,70	-0,25	0,65
volume of investments in fixed capital, million rubles	0,76	-0,37	0,59
volume of construction and installation works, million rubles	0,84	-0,39	0,79
number of employees	0,92	-0,46	0,88
fixed assets, million rubles	0,91	-0,31	0,78
commissioning of objects, thousand m3	0,46	-0,49	0,59
business confidence index	0,18	-0,14	0,10
investment risk	-0,30	1,00	-0,36
investment potential	0,92	-0,36	1,00

The objective assessment of the degree of investment risk based on statistical data (Table 1) demonstrates the greatest impact on the risk of weakly formalized indicators. In general, the degree of risk is lower in the regions with favourable social and economic status [11].

3 Results

In order to ensure that territorial differences are taken into account in planning and implementing measures aimed at improving the economic stability, we propose the following methodology for determining the factors of investment attractiveness of the regions:

1. Identification of statistically significant indicators of the region:

$$r_p = \frac{cov_{xy}}{\delta_x \cdot \delta_y} > 0,6 \quad (1)$$

where r_p – correlation coefficient, cov - covariance, δ - standard deviation.

2. Identification of the key criteria for investment attractiveness of the regions according to ratings:

$$\rho_F = 1 - \frac{6 \cdot \sum d^2}{n \cdot (n^2 - 1)} > 0,7 \tag{2}$$

where ρ_F – coefficient of rank correlation, d – rank difference.

3. Clustering of the regions by a combination of factors using the K-means method:

$$D_{(i,k)} = \sqrt{\frac{1}{M} \sum_{j=1}^M (F_{ij} - \bar{F}_j^k)^2} \tag{3}$$

where F_{ij} – the value of factor i and j , \bar{F}_j^k - average value of factor j and the cluster k , M – number of factors.

4. Planning events to increase investment attractiveness.

Consequently, it is possible to highlight the following factors of investment attractiveness of the regions through their grouping on account of maximum impact on the investment climate (Figure 2). The grouping was carried out on the basis of the values of pair correlation coefficients (Table 1).

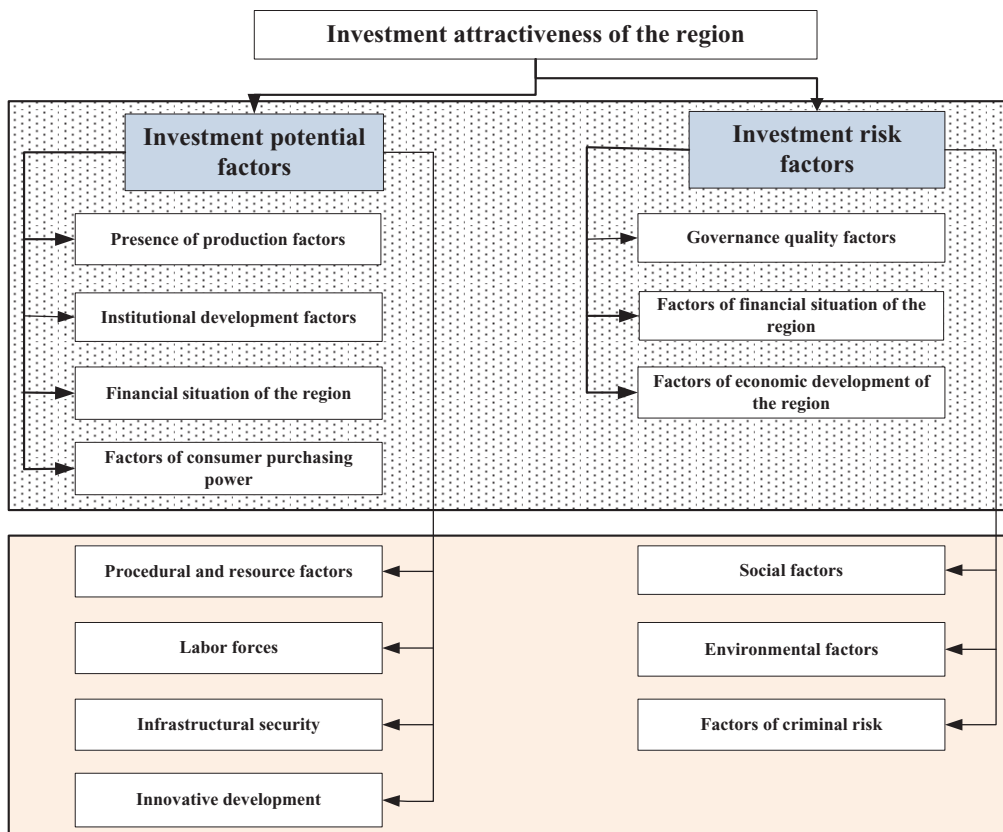


Fig. 2. Factors of investment attractiveness of the region.

Based on the definition of criteria for investment potential and risk, we have conducted the clustering of Russian regions in terms of investment attractiveness, as well as in terms of significance of the key indicators of the region's development.

The number of clusters was determined by carrying out hierarchical cluster analysis in the SPSS program. Then, the analysis was carried out by the method of k-means in terms of factors of investment potential and risk, as well as factors of investment attractiveness of the region identified earlier.

The matrix of distances between clusters is presented in Table 2. All data are characterized by a sufficiently large value of the F-criterion.

Table 2. Distances between the final cluster centers.

Cluster	1	2	3	4	5
1		782277,448	568215,547	400073,303	942033,789
2	782277,448		1335253,644	844779,118	1706757,083
3	568215,547	1335253,644		789991,586	374237,032
4	400073,303	844779,118	789991,586		1124453,064
5	942033,789	1706757,083	374237,032	1124453,064	

The results of clustering are shown in Figure 3.



Fig. 3. The result of clustering of the regions of Russia in terms of investment attractiveness.

4 Discussions

As the results of clustering show, the investment attractiveness of the regions of Russia is uneven, taking into account the characteristics of construction industry. The dividing of the Moscow and Leningrad regions, as well as the Krasnodar Territory into separate clusters is determined by the characteristics of the megacities and also by the preparation and holding of the Olympic Games in Sochi. The calculations indicate the validity of the thesis of Expert RA on the

possibility of forming an average Russian level of investment attractiveness as a result of the alignment of the regional investment climate [9].

Similarly, the assessment and clustering of the investment climate of the Republic of Abkhazia was made. In general, it should be noted that the assessment of the investment climate of the Republic of Abkhazia as an unfavorable is based on a high level of investment risk (primarily because of the unresolved conflict with Georgia and the status of partial recognition of the republic, as well as the lack of development of institutions, a large shadow economy, absence of cadastral registration of land and complexity with its registration) and lack of development of the investment potential (despite the richest natural resource factors, their impact is seasonal; at the same time, there is a shortage of qualified personnel and incomplete institutionalization of the economy; there are also problems with energy and transport infrastructure).

It should be noted that per capita GDP is similar for most regions of Russia which have the status of a moderately favourable investment climate, as well as a similar level of product competitiveness. Therefore, it can be concluded that there are growth drivers of the investment attractiveness from among the priority industries of the investment potential (tourism, agriculture, construction materials industry), on the assumption of elimination of the key investment risk factors and improving the conditions for doing business.

5 Conclusion

Therefore, despite the shrinking gap between regions in terms of investment attractiveness [10], the conditions for investment, production and economic activities are different. This leads to the need to take into account the principle of regional differentiation in the planning and implementation of measures aimed at improving the economic stability. The principle of regional differentiation postulates the need to ensure that territorial differences in the development of structural elements of the economy are taken into account in the planning and implementation of changes in the management system, ensuring that the goals are achieved. The implementation of this principle contributes not only to considering the heredity of the regions when choosing the best attractor, but will also provide an assessment of its own fluctuations, allowing the resonant management of the region.

Observance of the principle of regional differentiation along with the assessment, monitoring and targeted changes in the investment climate of the regions contribute to solving the problem of increasing the capacity of the country's investment system as a whole.

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