

INDUSTRY DEPENDENCE IN ASSESSING THE LEVEL OF ECONOMIC SECURITY OF REGIONS: ANALYSIS OF FIVE REGIONS OF THE RUSSIAN FEDERATION

Snezhanna V. POPOVA

Anna A. GUSEVA

Olga I. MARKOVA*

Abstract. It is important to have into account the sectoral composition of economic activities at regional level, with particular emphasis on the role of Industry. There are some interesting studies for regions of Western Europe and other areas, but this question in Russia has not been yet fully studies. The sectoral specialization of regions is a universal factor and certainly affects the socio-economic situation of region. The development of such a methodology will make it possible to timely prevent the threat of negative impact on the economic security of the region. That will ensure its sustainable and efficient functioning, as well as form prospects for development in the future. This is the reason for the relevance of this work. The factor-integral assessment of the economic security of the regions of the Russian Federation, the features and algorithm of its application on the example of the extractive industry are used in this work. The regions were grouped by industry to increase the accuracy of the estimate. For the assessment, 31 regions were selected, for which mining is one of the main types of economic activity, and the share of the total GRP exceeds 1-5%. Factor analysis was carried out on 19 socio-economic indicators. The indicators are provided by the Economic Security Strategy of the Russian Federation until 2030 to assess the state of economic security. From a logical and mathematical point of view, integral assessments make it possible to move from a vector of homogeneous assessments of individual indicators to a single scalar indicator. The results obtained for perception and clarity are displayed on the graphs of membership functions.

Keywords: level of economic security, assessment, research, mining, impact, regions, factor analysis, socio-economic, indicator.

JEL Codes:: R11, O18, Z13.

1. Introduction

The competitiveness of the Russian Federation in the world market, as a rule, is formed by several conditions for the functioning of the state. Among the current international economic integration and the development of foreign economic relations, the economic security of the state as a whole has become an important element of the overall system of national security.

Ensuring the economic security of the country is determined by the fact that it minimizes the consequences of critical situations that can lead to a crisis, or vice versa, contributes to the development of existing material values that can achieve positive economic results.

Snezhanna V. Popova (ORCID ID 0000-0003-0129-5405). E-mail: snezhha.popova@yandex.ru.
Anna A. Guseva (ORCID ID 0000-0001-8915-1670), E-mail: nyushtsar@mail.ru.

Olga I. Markova. Corresponding author (ORCID ID 0000-0003-2908-4407). Corresponding author. E-mail: markovaolgatusur@gmail.com. Authors' institution: Tomsk State University of Control Systems and Radioelectronics, 40, Lenin Avenue, Tomsk, 634050, Russia

The basis of the economic security of the state is the sustainable development of individual business entities and their close interdependence, so the economic security of the regions should be considered. But due to the existing differences between the regions, there is no single generally recognized scientific and practical approach to assessing the economic security of the constituent entities of the Russian Federation.

Many scientists and economists study the problems of economic security, among them there are L.I. Abalkina, A.I. Tatarkina, V.K. Senchagov, A.A. Kuklina, S.V. Kazantsev, A.I. Mityakov and others. They call economic security a fundamental part of the economic system, which determines the ability to provide decent living conditions for the population, the continuous supply of economic entities with resources and the implementation of national-state plans. The concept of economic security is multi-level and is evaluated relative to the country, region, industry, person.

To date, there are various methods for assessing the economic security of regions. Doctor of Military Sciences D.V. Gordienko assessed the economic security of the eastern regions of the Russian Federation using the methodology for calculating private and integral indicators; in order to identify the most significant socio-economic indicators for the regions, a comparison was made with indicators for the country. However, he considered the assessment of the economic security of only the eastern regions of Russia, respectively, the main emphasis in this methodology was directed precisely at the socio-economic situation and development of only individual regions, which means that applying this methodology to any region is erroneous and inappropriate.

Ural scientists: A.I. Tatarkina, A.A. Kuklina, D.S. Lvov have used the methodology for assessing the economic security of the region, based on the method of expert assessments and ranking territories according to the degree of threat. But at the same time, they failed to achieve the universality of the methodology, since in these methods there is territorial attachment, which is one of the main properties that prevent the unification of the studied regions in these methods.

S.P. Volkov proposed to give a score based on indicators to assess the level of economic security of the regions. The set of indicators proposed by the author is very narrow, and it is also not clear what this scoring is based on. The main problem of the indicative method today is the choice of actual indicators, the comparison of which with threshold values will make it possible to obtain a general assessment of the state of the country's economy.

S.Yu. Glazyev developed a methodology for assessing economic security by analyzing economic security indicators and comparing them with threshold values. Firstly, this technique is valid only on a national scale, since at the regional level most of the criteria will have identical values with the all-Russian ones due to the fact that the region does not have such powers and means to significantly influence their level. Secondly, in this method, just like in the previous one, there is no assessment of the influence of any significant factor on the socio-economic situation of the subject being assessed.

The problem of ensuring economic security has not been fully studied. There are several factors that contribute to this situation. Firstly, the regional economic

development in the Russian Federation is distinguished by certain specifics, which influence the solution of problems in the field of ensuring the economic security of the regions and also involves a certain transformation of the socio-economic indicators used, which characterize the economic security of the regions in modern conditions. Secondly, versatile methodological approaches, which in most cases contradict each other, are a problematic aspect of assessing the economic security of regions. Thirdly, it is often difficult to bring statistical indicators that characterize the assessment of the level of economic security of regions into a single system.

All the problems described above are an obstacle to the achievement of a unified system for assessing the level of economic security of the regions of the Russian Federation.

2. Materials and Methods

The purpose of the work is to study the level of economic security of regions dependent on the extractive industry.

The object of the study is the level of economic security of the regions of the Russian Federation. The following tasks are defined:

- to select regions that are dependent on the extractive industry;
- to describe the current state of the studied regions;
- to collect socio-economic indicators of the studied regions;
- to conduct factor analysis: to convert absolute indicators into relative ones, to calculate normalized values, to determine weight coefficients, to calculate sub-integral and integral indicators;
- to substantiate the results of factor analysis using graphs of the membership function.

It should be noted that the process of socio-economic development, including on a regional scale, is characterized by the complexity and inseparability of the connection between two principles - social and economic. This is especially evident at the present stage. The relationship between the social and the economic takes many forms. Its generalizing indicators are the growth of production efficiency, on the one hand, and the improvement of the living standards of the population, on the other hand.

To conduct a factor analysis, 19 indicators that can most fully and accurately characterize the socio-economic situation of the region were selected, and this list also includes indicators characterizing innovative activity in the region. The values of the indicators were collected from the websites of the Federal State Statistics Service (Rosstat) and the Unified Interdepartmental Statistical Information System (UniSIS).

- Financial and economic (gross regional product (GRP), inflation rate (according to the consumer price index (CPI)), balanced financial result, turnover of organizations, investments in fixed assets);
- Social (unemployment rate, the share of the number of employees whose wages (W) are below the subsistence minimum (SM), the level of employment in the Russian Federation, the demographic load factor (there are persons of disabled age per 1,000 people of working age));

- Indicators of budget expenditures (health care expenditures, R&D expenditures, education expenditures, environmental expenditures);
- Indicators characterizing economic activity (the volume of shipped goods of own production, work performed and services performed on their own, industrial production index (IPI), energy intensity of GRP (kg of standard fuel / 10 thousand rubles), Depreciation of fixed assets, share of imports of fuel and energy resources, share of unprofitable organizations).

Then the basic indicator was transformed and normalized using the normalization method and the maximum and minimum method.

Normalization of indicators - Calculation of the ratio of the value of the indicator to the average / maximum (that is, the selected reference) for the group of objects under consideration or, conversely, the ratio of the average value for the group of objects to the value of the indicator of the object.

Maximum-minimum (maximum) method - Equating the minimum and maximum values for all particular indicators in order to eliminate differences in the spread of indicator values.

The use of this method makes it possible to preserve the scale of interregional differences.

Next, sub-integral indicators were calculated by multiplying the previously calculated normalized values by weight coefficients.

When analyzing complex socio-economic phenomena, it becomes necessary to apply integral estimates. This need, as a rule, is expressed in the presence of a large amount of information that needs to be researched and structured. Also, the use of integral indicator allows to establish the presence of cause-and-effect relationships, if they exist.

The integral assessment of each region is the sum of its sub-integral indicators, on the basis of which the level of economic security of the regions of the extractive industry was subsequently determined.

3. Results

Table 1 presents the results of factor analysis of five Russian regions. Three regions (Khanty-Mansi Autonomous Area – Yugra, Sakhalin Region and the Republic of Tyva) were selected from 31 constituent entities of the Russian Federation, where mining is one of the main activities. In addition to the above regions, two subjects of the Russian Federation (Moscow and the Krasnodar Territory) in which the mining industry is not the main one, were also chosen as an experiment. For greater clarity, the table included the initial absolute values (abs. values) of social, economic and economic performance indicators of the regions, as well as the values of sub-integral and integral indicators (SI and II, respectively) obtained as a result of factor analysis.

The Khanty-Mansi Autonomous Area – Yugra occupies the leading position among regions with a developed extractive industry. The Khanty-Mansi Autonomous Area – Yugra is one of the oil and gas bearing regions of the country and one of the largest oil-producing regions in the world. The Autonomous Area accounts for almost half of the country's oil production. In the sectoral structure of industry, respectively, the

oil and gas industry occupies a dominant position. The extraction of minerals in the region occupies 2/3 of the total GRP, the level of manufacturing industries is 1.8%. In the structure of the manufacturing sector, the dominant positions are occupied by organizations producing petroleum products (83.3%).

The second place among the producing regions in table 1 is occupied by the Sakhalin Region. The dominant position in the economy of the region is occupied by the oil and gas sector, which accounts for more than 80% of the total industrial production. 5% of the world's liquefied natural gas is produced. Hydrocarbon fuel is the most demanded fossil produced in the region. However, it is worth noting the shortcomings in the socio-economic development of the region, which impede the development of the main industry and reaching higher positions.

The Sakhalin Region has a poorly developed infrastructure that allows investment in new markets compared to other regions of the Far Eastern Federal District. The lack of competencies necessary for the transit and development of new technologies, as well as the lack of specialists - carriers of relevant knowledge significantly reduces the potential for renewal of the Sakhalin Region.

Table 1. Calculation of integral indicators of the studied regions

Indicators	Regions related to the mining industry						Regions outside the mining industry			
	Khanty-Mansi Autonomous Area – Yugra		Sakhalin Region		Republic of Tyva		Moscow		Krasnodar Territory	
	Abs. value	SI	Abs. value	SI	Abs. value	SI	Abs. value	SI	Abs. value	SI
Financial group										
Gross regional product	3 206	0,90	757,37	0,21	13,69	0,00	0,00	0,00	11,72	0,20
Inflation (Consumer Price Index)	102,3	010	103,5	0,10	103,3	0,10	103,4	0,10	102,6	0,10
Balanced financial result	486 076	0,41	8 460	0,01	4 228	0,00	208 362	0,15	6 299	0,00
Turnover of organizations	4 546 ,6	0,41	949,8	0,08	23,1	0,00	732,80	0,09	34,6	0,00
Investments in fixed assets	953 516	0,09	231 701	0,02	17 493	0,00	2 856 935	0,03	439 635	0,01
Social group										
Unemployment rate	22,44	0,04	14,29	0,03	14,44	0,03	99,5	0,05	135,7	0,06
Employment	892,2	0,0	258,86	0,0	102,3	0,0	7 196,1	0,0	2 665,1	0,0

t rate		3		1	7	0	9	3	6	1
Number of employees with W below the SM	8,9	0,0 2	8,2	0,0 2	34,1	0,0 9	6,6	0,0 3	10,7	0,0 5
Dependency ratio	637	0,0 2	740	0,0 3	825	0,0 3	736	0,0 3	798	0,0 3
Group of expenses of the regional budget										
R&D spending	31 319	0,1 0	66 821 ,6	0,2 1	2 302	0,0 1	515 945 ,9	0,1 0	28 211, 2	0,0 1
Health care costs	50 190	0,1 3	23 665	0,0 6	1 991 ,6	0,0 1	240 412 ,7	0,0 5	30 597, 94	0,0 1
Education costs	85 750	0,0 1	37 406	0,0 1	12 50 7	0,0 0	341 710 ,1	0,0 1	91 920, 54	0,0 0
Environmental costs	771,3 7	0,0 4	326,59	0,0 2	65,18	0,0 0	9 209,9 1	0,0 4	402,87	0,0 0
Group of indicators of economic activity										
Energy intensity of GRP	89,99	0,2 7	28,41	0,0 8	43,43	0,1 3	0,00	0,0 0	0,66	0,1 9
Industrial production index	100,1	0,0 5	102,4	0,0 5	93,2	0,0 5	0,00	0,0 0	89,1	0,1 1
The degree of depreciation of fixed assets	69,2	0,0 7	62,3	0,0 6	37,8	0,0 4	53,1	0,0 5	64,7	0,0 6
The volume of goods of own production shipped for export	3 8461 60	0,1 8	983 894	0,0 5	20 757	0,0 0	1 760 325	0,0 4	64 341	0,0 0
Share of imports of fuel and energy resources	0,2	0,0 0	23,4	0,0 5	0,00	0,0 0	759,7	0,1 8	17	0,0 0
Share of unprofitable organizations	22,5	0,0 5	26,3	0,0 6	14,3	0,0 3	52	0,0 9	43,5	0,0 7
II		9,7 7		8,2 9		7,6 3		8,0 2		7,7 8

Compiled by the authors.

The Republic of Tyva is located in last place among the regions with developed extractive industry studied in this article. The Republic of Tuva has a good mineral resource base. There is a wide variety of minerals in the region: gold, silver, aluminum, copper, lead and other metals. All conditions are being created for the development of the mining and metallurgical industries. At the same time, the level of industrial development is very low compared to the potential of the region.

Due to the transport isolation of the Republic of Tyva, the current state of affairs leads to unprofitable use of the economic potential, does not allow the region to fully use its geopolitical, economic and infrastructural potential in its development.

These processes take place with an increase in the burden on the federal budget associated with the need to maintain and develop infrastructure, from the use of which the economic and social benefits for the Russian Federation are becoming less and less. The main reasons that negatively affect the development of the extractive industry in the region, as well as its level of economic security in general, are: the lack of backup power supply capacities, poor implementation of energy and resource-saving technologies.

Next, let's consider the socio-economic situation of regions that do not belong to the extractive industry. Moscow is one of the largest metropolitan areas in the world and the largest city in Russia in terms of population, claiming the title of a promising financial center.

However, in Table 1 it cannot be attributed to the leading regions in terms of the value of the integral indicator. This is explained by the fact that the region is dominated not by mining, but by the industrial sector. The main types of industry in the region are mechanical engineering, production of machine tools, shipbuilding and instrument making.

Thus, the advantage of the Russian capital is that its economy is built on high-tech industries, information technology, trade and services. The region has developed light, food and flavor, printing industries. Of the enterprises of other industries, the metallurgical ("Sickle and Hammer" plant), chemical and oil refining industries; production of building materials stand out.

Agro-industrial, transport, resort and recreational and tourist complexes are the most important specialized sectors of the economy of the Krasnodar Territory, determining its place in the Russian economy. The Krasnodar Territory is the most fertile region of Russia. Here are some of the best chernozems in the world (more than 4% of Russian and 2% of world reserves).

The Krasnodar Territory has significant reserves of mineral resources that are able to provide not only regional, but also federal interests in certain positions, and successfully compete in the world market. However, the provision of various regions of the territory with minerals is very uneven.

The difficulty also lies in the fact that for the most part the deposits are located in densely populated areas, in arable and forest areas, in the water protection zones of rivers. At the same time, some small-scale subsoil use facilities are not in demand today because they are located in sparsely populated and inaccessible places, and their development requires large investments in the creation of infrastructure (access roads, power supply, water supply, etc.).

4. Discussion

Today, significant changes have been made to our work on determining the assessment of the level of economic security of the regions of the Russian Federation, primarily related to the analysis of previous works, the results obtained and the identification of errors and inaccuracies in them.

The first thing worth noting is the increase in the number of indicators that directly affect the formation of an integral assessment to 19, which makes it possible to consider more aspects of regional development and, as a result, to get more accurate and visual idea of the socio-economic situation of the regions.

Grouping indicators according to their semantic feature is an important innovation. Thus, the paper presents indicators that reflect the financial, economic, social and economic spheres, as well as the expenditures of the budget of the Russian Federation on its subjects.

Unlike previous works, now the calculation of factor analysis at the output gives a final assessment both for the subject of the Russian Federation as a whole and in the context of selected groups, as a result of which it is easier to determine in which area or areas of the region there are problems, and what should be paid attention to for increasing the level of economic security.

Also, the division of indicators made it possible to make the calculation of weight coefficients more correct and, accordingly, to obtain their values more correct by comparing indicators among themselves from the same group, and not comparing each indicator with all others, as was done previously.

Meanwhile, in previous articles it was said that in order to calculate the level of economic security of the regions, the subjects of the Russian Federation should be assessed within their federal districts and the industry affiliation should also be determined within the district. Today, the emphasis is on sectoral affiliation, because it is both a unifying and distinguishing link for the regions, and, as mentioned earlier, is equally of paramount importance for the socio-economic situation of the regions.

Thus, at present, the shortcomings found in early works by trial and error have been taken into account in today's work in order to carry out correct calculations and, therefore, to obtain more reliable results.

5. Conclusion

The assessment of the level of economic security of the region can become an important analytical tool in making managerial decisions on the implementation of socio-economic programs in the constituent entities of the Russian Federation. It will allow monitoring the level of economic security of the region, ranking the regions of the federal district according to the level of economic security and setting guidelines for socio-economic policy for the regions.

Based on the set of prerequisites for a stable situation in the regional economy, the problem of economic security in the region is one of the most important due to national importance.

Strategic management of the economic development of regions in modern conditions, taking into account the importance of each region and its economic potential, determines the objective needs of the region, which have their own idea of state economic security.

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