

# Innovative Activity as an Indicator of the Economic Health of the Region

Matyugina E.G.

National Research Tomsk State University, Tomsk, Russia  
Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia

Gayduk E.A.

Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia

Radionova E.S.

Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia

Vaganova E.V.

National Research Tomsk State University, Tomsk, Russia

Yemelyanova N.V.

National Research Tomsk State University, Tomsk, Russia  
e-mail: emk512542@mail.ru

**Abstract**—The article is to study the problem of maintaining the economic health of the territory by providing the relevant dynamics of its innovative component. Innovative activity of the region, as a key indicator, reflecting the efficiency of distribution and use of different resources, contributes to the competitive advantages, implemented at the regional, national (and even international) levels. It is also a tool of smoothing threats. Formation and development of economic regional and sectoral interactions determine a variability of the forms of the results obtained. The hierarchy of the economic health is based on the differentiation of the parameters of innovation activity regarding the entities of different levels of management and their mutual influence. Therefore the criteria of economic health have been detailed taking into account innovation activity and its most significant interdependencies. National and international experience of forming the conditions for intensification of innovative activity has been considered, tools of implementation have been classified. The dynamics of innovative activity of the regions of the Siberian Federal District has been analyzed. Federal State Statistics Service (five year period) and the activity of innovative clusters have been used as a source of a fact-based official data.

**Keywords**—*Innovation activity, regional security, cluster.*

## I. INTRODUCTION

Dynamically changing state of the economic environment, due to the disharmonization of the interests of economic entities, generates the emergence and development of threats of a different origin and the intensity of impact, characterized by the changeability. This requires identifying ways of opposition of immediate/current and strategic/preventive nature, reflecting the content of the policy of economic security. The problems of revealing the criteria and approaches to assessing the latter are investigated in the work of S. Glazyev, A.I. Tatarikina, V.P. Chichkanova, A.I. Kuklina, V.V. Karpova, Korablevoj AA, S.V. Kazantsev and many others. etc. [4, 5, 7, 17, 20, etc.]. Tough competition, being an imputed condition of man-

agement, belongs to the significant threats. Smoothing of its influence is possible only through continuous improvement of approaches to the organization of the economy. It is about innovation, not only in the context of its positioning, but also in the context of its intensification, maintaining the required dynamics of the generation and commercialization of innovations (innovation activity) and providing competitive ability of the territory. This approach allows to interpret innovative activity as 1) an integral component of reproduction processes, quantitative and qualitative parameters of which reflect the level of sustainable growth of social and economic indicators, 2) effectiveness of meeting the needs, 3) protection of the region's and the country's interests.

In other words, innovation activity is an indicator of economic security [2, 9, 10, 16, etc.]. This has been reflected by enlisting to the state economic security such criteria as: 1) share of innovative goods, works and services in the total volume of goods, 2) share of hi-tech goods in GDP, 3) share of organizations involved in technological innovation, 4) share of innovative goods, works and services in the total volume of exported goods, works and services [18].

Using the data of official statistics [12], the dynamics of a number of indicators of innovation activity in the regions of Siberian Federal District are shown in Figure 1. The number of applications filed and patents issued was compared in order to assess the intensity of innovation generation and recognition at the state level (without taking into account the influence of the cost factor).

According to the data received, most of the territories show an excess of the average indicator (for the Russian Federation in general). In 2013, all regions showed a high level of activity with its further differentiation.

Particular attention should be paid to the following regions:

- demonstrating an extremely erratic dynamic (the Republic of Khakassia, the Trans-Baikal Territory);
- occupying consistently leading positions (Tomsk region, Krasnoyarsk region);
- having low indicators in comparison with other regions of the Siberian Federal District (Republic of Buryatia).

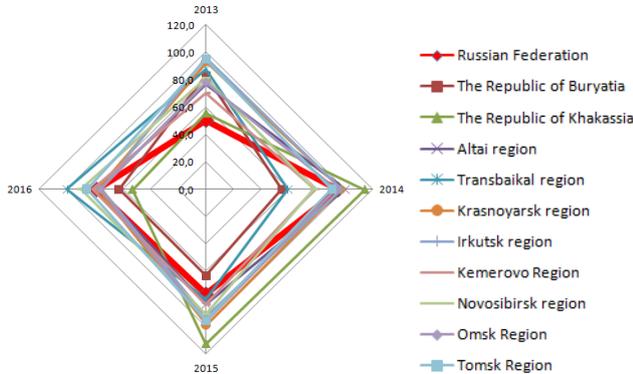


Fig. 1. Dynamics of the ratio of filed applications and issued patents in the regions of the Siberian Federal District in 2013-2016.

The investment climate of the selected areas, the share of costs for technological innovation in the Gross Regional Product and the volume of innovative goods and services in Gross Regional Product were compared based on the data of the rating agency [14], (see Figure 2).

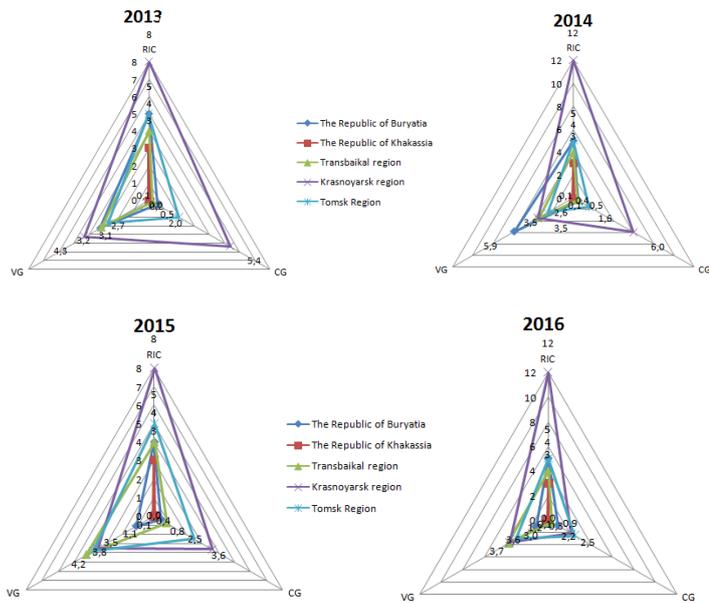


Fig. 2. Dynamics of regional indicators Siberian Federal District.

Regions of the first group demonstrate the relative stability of the indicators considered for the entire period and refer to regions with insignificant potential and moderate risk. The highest values of indicators characterize the regions with the status of the leader in terms of the ratio of filed applications and issued patents. The Republic of Buryatia maintains a low level of indicators.

Innovative component, ensures the competitiveness of the region by balancing the impact of threats of a different nature through the positioning of the innovative sector of the economy, growth of the investment attractiveness of the territory, creation of additional jobs, development of support of industries, etc. The intensification of economic interactions is accompanied by the involvement of entities of other territories and industries in the innovation process, ensuring the scale of the integration processes at the industrial, interregional and national levels. This provides the distribution of risks between a large number of entities (complication of alignment of interests and management is a kind of collateral effect generating threats of disruption of the planned results).

The strategy of economic security of the regions, based on the priorities set by the national security strategy, uses slightly different tools, related with the gap between the content of competitiveness of the region and the country. This implies stimulation of points of growth in the social and economic sphere of the region, reflecting the threats through the formation of clusters. There are many forms of the manifestation of the effect of such interactions. This study will focus on using them as a tool for economic security, highlighting the industrial and interregional aspects (Table 1) [1, 8].

TABLE I. THE TOOLS OF REGIONAL SECURITY PROVIDED BY THE FORMATION OF CLUSTER LINKS

Industrial aspects	Interregional aspects
<ul style="list-style-type: none"> <li>• expansion of the list of goods and services;</li> <li>• the prospect of entering the emerging / growing market segment;</li> <li>• formation of new sales markets;</li> <li>• increasing the efficiency of the use of production resources;</li> <li>• the possibility of targeted adaptation to markets</li> </ul>	<ul style="list-style-type: none"> <li>• mobilization of financial resources;</li> <li>• infrastructure development;</li> <li>• joint use of public and private investments;</li> <li>• reducing the level of corruption;</li> <li>• state support, inclusion in targeted development programs</li> </ul>

Thus, cluster "Pharmaceuticals, medical technology and information technologies of Tomsk region", based on the partnership of Tomsk, Kaluga, Samara, Voronezh, Penza and other regions, intends [5]:

- production of more than 2700 names of products and services (innovative medicines, medical equipment, biodegradable and composite materials, hardware and software complexes, including medical applications);
- merger of federal and regional budgets;
- creation of a Center for International Cooperation and Education in the field of medicine and pharmaceuticals;
- association of manufacturers of pharmaceuticals and medical equipment, enterprises in the field of information technology and electronics;
- to support small and medium-sized enterprises within the framework of the program of the Ministry of Economic Development of Russia

Each of the above mentioned items can be certified as an instrument for maintaining the security of the region, which in turn acts as a guarantee of national security. This interconnection is confirmed by the existence of a significant number of

regulatory and legislative acts, and stimulating measures. They have been classified taking into account national and international experience (Table 2).

TABLE II. CLASSIFICATION OF MEASURES MAINTAINING INNOVATION ACTIVITY

Measure	Performance	Example [11, 13, 15, 19]	
		National	International
Regulatory and legislative	Determining the status of innovation activity as a significant one	Federal Law On Science and State Science and Technology Policy of May 7, 2013 № 93	National programs of the USA "Program for supporting innovative research of small business", "Program for the dissemination of small business technologies"
	Defining the boundaries of activities and interaction with other entities	Establishment of a network of venture capital funds for the implementation of innovative projects by enterprises (in developed and developing countries)	
	Choosing forms of innovation activities	Creation a network of technopolises and technology parks	Creation of state. organizations to support foreign projects (USA, Japan, India, etc.)
	Determination of forms of state participation	The state program of the Rostov region "Economic development and innovative economy"	State programs to reduce risks and reimbursement of losses (USA, Japan)
	Building an Infrastructure	"Skolkovo" project is implemented by the Development Fund of the Center for Development and Commercialization of New Technologies	Establishment of innovation funds (England, Germany, France, Netherlands)
Economics	Direct financing	Federal target programs: "National technological base", "Development of electronic engineering in the Russian Federation, Development of civil aviation equipment", "Dual-purpose technologies", "Development of industrial biotechnology", etc.	Covering up to 50% of the costs for creating new products and technologies (France, USA, etc.)
	Provision of loans	Provision of non-interest loans to individual inventors and small innovative enterprises	Non-refundable subsidy to cover 50% of the costs of innovation (Germany)

Support of strategically important areas	"Skolkovo" Innovation Center carries out research in the following areas: energy efficiency and energy saving; nuclear, space, medical technologies; strategic computer technologies; biotechnology	State programs of financial and technical support of enterprises that carry out research and development on the subject of governmental organizations (USA, Japan, India, China)
	Benefits	Reduction of state patent fees for individual inventors; delay of payment of patent fees for resource-saving inventions; right for accelerated amortization

## II. CONCLUSION

Thus, innovative activity, reflecting the dynamism of regional economic development, is a significant tool for maintaining the competitiveness of the territory, contributing to balancing a number of threats. The development of cluster interactions provides an effect not only at the level of the region, but also at the industrial and interregional levels.

## REFERENCES

- [1] Borodin A.I., Kochugueva M.N. The strategy of the development of clusters of enterprises in the industrial regional integration // *Izvestiya Tomskogo politekhnicheskogo universiteta*. - 2012. - v.321 № 6. - P. 51-55
- [2] Volkova S.A., Volkova T.A. Transition to the innovation economy as a factor of economic security // *Sovremennaya ehkonomika: problemy i resheniya*. - 2012, - № 8. - P. 73-78
- [3] Glazyev S.Yu. The system of economic security of the country: an alternative course of reforms // *Rossijskij ehkonomicheskij zhurnal*. - 1997. - No. 1
- [4] Kazantsev S.V. Models of calculating the security of the country and its regions // *Region: ehkonomika i sociologiya*. - 2017. - No. 2. P. 32-51
- [5] The map of clusters of Russia [Electronic resource] <https://map.cluster.hse.ru/cluster/168> (access date:15.04.2018)
- [6] Klimova N.V., Larina N.V. Foreign experience of stimulating innovation activity in the industrial sector // *Fundamental'nye issledovaniya*. - 2014. - № 6-7. - p. 1442-1446.
- [7] Korableva A.A., Karpov V.V. Indicators of economic security of the region // *Vestnik Sibirskogo instituta biznesa i informacionnyh tekhnologij* - 2017. - № 3 (23). p. 36-42
- [8] Novikova I.V., Krasnikov N.I. Indicators of economic security of the region // *Ekonomika*. - 2009. №.11. - p. 132- 138.
- [9] Pecherkinina M.S. Influence of the innovative component on the economic security of Ural Federal District // *Fundamental'nye issledovaniya*. - 2015. - №. 11-6. - p. 1220-1225
- [10] Plotnikov V.A. Innovative activity of Russian industrial enterprises as a factor of economic security // *Nauchnye vedomosti. Seriya Istoriya. Politologiya. Ekonomika. Informatika*. - 2012. - № 13 (132). - p. 5-10
- [11] Resolution of September 25, 2013 № 599 On approval of the state program of the Rostov region "Economic development and innovation economy"
- [12] Regions of Russia. Socio-economic indicators [Electronic resource] [http://www.gks.ru/wps/wcm/connect/rosstat\\_main/rosstat/ru/statistics/publications/catalog/doc\\_1138623506156](http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1138623506156) (access date: 2.04.2018).
- [13] The register of funds to support scientific, scientific and technical, innovative activities [Electronic resource] <http://funds.riep.ru/>
- [14] Rating Agency Expert RA [Electronic resource] .- <https://raexpert.ru/> (access date 05.04.2018)
- [15] Skolkovo [Electronic resource] <https://www.skolcity.ru/> (access date: 15.04.2018)
- [16] Sushkov I.A. Innovative activity as a basis for ensuring economic security of Russia // *Innovacionnaya deyatel'nost'* - 2015. - № 4. - p. 55-63
- [17] Tatarkin A.I., Kuklin A.A. Changing the paradigm of the study of the economic security of the region // *Ekonomika regiona*. - 2012. - No. 2. - p. 25-39
- [18] Decree of the President of the Russian Federation № 208 On the Strategy of Economic Security of the Russian Federation for the Period until 2030 of 13.05. 2017
- [19] Federal law On Science and State Science and Technology Policy of 23.08.1996 № 127
- [20] Chichkanov V.P., Belyavskaya-Plotnik L.A. Analysis of approaches to the assessment of regional processes of social and economic security formation // *Ekonomika regiona*. - 2016. - Vol.12, №2. - p. 654-669.