

# *Problems and measures of innovative activity support in the system of economic security of the Volgograd region*

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**Abstract** — The article analyses theoretical studies of the notion “economic security” and the methodology of its assessment in practice using the regional economic system as an example. On the basis of the comparative analysis of threshold values which characterize the sustainability of the regional economy to external and internal challenges and threats, the study of indicators (economic, social, innovative and ecological ones) in comparison with real values of a region of the Russian Federation (Volgograd region) was carried out. The discrepancies of the threshold values calculated for the Volgograd region determined the necessity of the analysis of factors of economic and institutional character having a significant impact on the constituents mentioned above including the aspect of the encouragement of innovations’ development. Besides the study allowed finding a number of legal, infrastructural, social and cultural problems the solution of which will allow increasing the level of economic security of the Volgograd region.

**Keywords** — *economic security; innovations; institutional mechanism; encouragement; regional economics*

## I. INTRODUCTION

At the modern stage of world economy development the issue of the economic security of a country is extremely important. Herewith the sustainability of the economic system of a nation depends in the whole on the susceptibility of the regions to external and internal threats. Such an obstacle determines a heightened interest of the scientific community to the research directed on the search of measures of the growth of the mentioned characteristic.

One of the most important factors creating the potential for the growth of regional security is innovations as they in particular create necessary conditions for the strengthening its competitiveness in domestic and international markets. That’s why the promotion of innovative activity of economic agents is the priority goal of the regional economic policy. It is worth mentioning that when implementing the policy it is important to improve the institutions within the innovative system of territories of the Russian Federation as their incompetence or

poor development may lead to the elimination of the positive effect from the use of economic measures.

## II. MATERIALS AND METHODS (MODEL)

In order to develop the measures for economic security growth of the country as a whole and its regions in particular it is necessary to carry out the analysis of the existing institutional frames influencing the most important factors of a sustainable regional economy.

The reliability and completeness of the study is determined by the use of statistical and comparative methods confirming the credibility of the results.

The empirical basis of the study were the data of the Federal Service for State Statistics of the Russian Federation, expert assessments and calculations of researchers published in the scientific journals included into the list of the Higher Attestation Commission of the Russian Federation and Scopus Database and also regulatory documents of federal and regional levels of government.

## III. RESULTS AND DISCUSSION

In the beginning it is important to study the basic definitions of the notion “economic security”.

One of the domestic founders of fundamental theoretical studies of economic security is V.K. Senchagov. He understands this term as a “state of the economy and institutions of power, in which the protection of national interests, social orientation of the policy, sufficient defense potential even under unfavorable conditions for the development of internal and external processes are ensured” [1].

Another domestic scientist G.S. Vechkanov has another opinion and clarifies that “economic security is an essential component of national security, its foundation” [2].

The analyzed concept is considered by L.I. Abalkin in a different aspect i.e. from the point of view of “factors and

conditions that ensure the independence, stability and sustainability of the national economy” [3].

The above definitions in a complex form the author's position on the phenomenon under consideration as a combination of economic and institutional factors and conditions that ensure the independence, sustainability and stable development of the national economic system as a whole (or regional economy as a particular case).

One of such significant factor components that have a significant impact on the state of the economy is innovation.

As part of this study, the regional aspect of the relationship between the institutional component of the innovation system and the state of the economy of a single subject of the country (on the example of the Volgograd region) will be proposed.

Initially, we will consider a list of indicators characterizing the level of economic security of the region, and then we will correlate them with the level of development of the institutional framework in the field of innovative activity in the specified subject of the Russian Federation.

There are many methods for the assessment of the economic security of a region. However, according to the authors' opinion, in this context, it is most advisable to use the technique proposed by Russian researchers S.N. Mityakov, E.S. Mityakov, N.A. Romanova [4].

This methodology includes a list of indicators (20 ratios). Their threshold values if they coincide with actual values, characterize the sustainable, secure and competitive development of the regional economy. It is also worth noting that the list of indicators given below is divided into four groups (projections): economic development; social development; innovative development and environmental development [4].

The indicators characterizing the economic security of the region are given below. They are compared with actual indicators of the Volgograd region (TABLE I).

From the data of the table it follows that the Volgograd region for most of the actual indicators [5,6,7] for the period under consideration does not correspond to the threshold values what undoubtedly indicates a low level of economic security in the region.

Thus, for example, the GRP indicator for 2017 was 1.4 times lower than the permissible threshold value. Also the ratio of the average income per capita of the population to the subsistence minimum does not correspond to the threshold value (this indicator is 1.1 times less than required). A similar negative situation is also demonstrated in terms of the indicator “the ratio of the average pension to the average wage,” and the desired indicator is 4.8% less than the allowable one.

Also a number of inconsistencies with threshold values is observed in terms of the amount of internal costs for research and development (the lag is 1.8% of the recommended value).

TABLE I. INDICATORS OF THE ECONOMIC SECURITY OF THE VOLGOGRAD REGION IN 2017

№	Indicator	Threshold values	Volgograd region
<b>Economic development</b>			
1.	Gross regional product (GRP) per capita, thousand rubles	≥413,2	292,6
2.	Annual inflation rate, %	≤6	-2,6
3.	Investment into fixed capita, % from GRP	≥25	40,2
4.	Wear of fixed assets of industrial enterprises, %	≤50	48,8
5.	Foreign trade balance, % from GRP	≥ -4 и ≤ 8	5,2*
6.	Balance of the consolidated budget of the region, % from GRP	≥ -3 и ≤ 4	-0,9*
<b>Social development</b>			
7.	Ratio of average income per capita to poverty line, times	≥3,5	2,4
8.	Ratio of average pension to average wage, %	≥40	35,2
9.	Unemployment rate, % (ILO methodology)	≤4	5,4
10.	Life expectancy at birth, years	≥80	72*
11.	Size of dwelling unit, m <sup>2</sup>	≥25	24
12.	Healthcare, education and social policy allocations, % from GRP	≥15	8,5
<b>Innovative development</b>			
13.	Share of innovative production in the shipped industrial production, %	≥30	6,7
14.	Number of people involved into R&D per 10 000 of employed population	≥120	-
15.	Domestic expenditures on R&D, % from GRP	≥2,2	0,4
16.	Share of expenditures per technological innovations in the total volume of the shipped goods, labours and services, %	≥3,2	0,3
17.	Number of patents and utility models applications per 10 000 of population	≥15	1,9
<b>Environmental development</b>			
18.	Discharge of sewage waters, thousand m <sup>3</sup> /km <sup>2</sup>	≤0,3	-
19.	Emissions of pollutants into the atmospheric air from stationary sources, ton/ km <sup>2</sup>	≤0,5	1,2
20.	Forest restoration (share of regenerated forests, %)	≥0,15	-

<sup>a</sup> Mityakov S.N., Mityakov E.S., Romanova N.A. Economic security of regions // Economy of a region. – 2015. - № 3. – Available at: [http://www.uiec.ru/zhurnal\\_yekonomika\\_regiona/](http://www.uiec.ru/zhurnal_yekonomika_regiona/)

<sup>b</sup> United interdepartmental informational and statistical system. National statistics. Available at: <https://fedstat.ru/indicator/58537>

<sup>c</sup> Federal Service for State Statistics in the Volgograd region. Available at: <http://volgastat.gks.ru>

<sup>d</sup> \*The indices for year 2016 are given (the statistical data for 2017 is not available)

The disappointing data in the analyzed region are observed in turn in terms of the share of expenditures on technological innovations (a lag of 2.9%). In this aspect it seems logical also to see the existing difference between the number of applications for utility models and inventions and the threshold value (13 ranks less in comparison with the previous year) [5, 6, 7].

The deviations shown above are reflected in the economic, social and innovative groups of indicators.

The environmental indicators suggested for the analysis upon a number of indices do not meet the threshold minimum levels in the presented assessment methodology of the economic security of a region.

However, within the framework of this study, it is more expedient to focus attention on the third group of indices as “innovative development” is one of the basic components of the economic security of a region of the country and analyze the institutional and economic components in their interconnection which determine the situation described above.

Further, it is advisable to present the ranking positions of the region under analysis in terms of its innovative activity (TABLE II).

TABLE II. RANKS OF THE VOLGOGRAD REGION UPON INNOVATIVE ACTIVITY

Year	2010	2011	2012	2013	2014	2015	2016	2017
Rank	55	38	32	35	45	55	51	53

<sup>e</sup> Association of innovative regions of Russia. – Available at: <http://www.i-regions.org/images/files/airr17.pdf> (reference date: 13.02.2019).

On the basis of the data provided in the table, we should note that during the period under analysis, the Volgograd region demonstrated an ambiguous dynamics of rating positions. So along with the positive changes from 2011 to 2013, there is a decrease in positions from 2014 to 2017.

However, the comparability of ratings raises certain questions. The region had the 53 rd rank and it is characterized as a region with a medium innovative activity. This position does not comply with the criteria (threshold values) of economic security indices in the innovative sphere.

The discrepancy between the indicators characterizing the innovative development of the region and the threshold values (which leads to equating the regions with medium innovation activity with the regions with a reduced economic security) may be determined by a combination of not only economic (domestic expenditures for research and development, share of expenditures for technological innovations, etc.), but also institutional factors. Thus, in general, the economic and institutional mechanisms have a significant impact on the efficiency of a regional (national) economic system [8].

Further, it is advisable to clarify the structure of the institutional mechanism and present it as a system of ordered subject relationships that are governed by a set of formal norms and informal rules in order to increase the level of effectiveness of the regional (or national) economy.

Let us analyze the constituents of the institutional system that affect the region's innovativeness and the level of security of its economic system.

Thus one of the significant characteristics is a set of infrastructural components reflecting the quantitative and qualitative characteristics of the functioning of the institutional system as a whole (TABLE III).

TABLE III. INFRASTRUCTURE OF INNOVATIVE SYSTEM OF THE VOLGOGRAD REGION FOR 2017–2018

Infrastructural facilities	Number
Business incubators	1
Innovative technological centers	1
Engineering centers	2
Informational centers	1
Innovative centers	1
Budgetary funds	1

<sup>f</sup> National center for monitoring o innovative infrastructure of scientific and technological activity and regional innovative systems. Available at: [http://www.miiis.ru/regions/region\\_info.php?id=30](http://www.miiis.ru/regions/region_info.php?id=30) (reference date: 14.02.2019)

The data presented in the table characterize the existing infrastructure facilities operating within the regional innovation system.

However, it should be noted that along with the above elements, there are "gaps" in this system as the region lacks:

- federal innovation centers;
- technology platforms;
- state scientific centers;
- industrial parks;
- innovative technology centers;
- centers for nano technologies;
- associations;
- consulting centers;
- technology and innovation support centers;
- technology transfer centers;
- venture funds etc. [9]

The next necessary aspect for analyzing the effectiveness of functioning of the institutional mechanism in the field of innovation of a region is the following list of indicators characterizing the political and social sphere. They are:

- organized crime rate;
- number of complaints about violations of the rights of entrepreneurs;
- revealed facts of bribery;
- level of trust in the police and in the political system.

This list is presented as part of the calculation of the index of functioning effectiveness of an institutional system (competitiveness assessment methodology) [10] (TABLE IV).

On the basis of the data in the table, it follows that the Volgograd region during the analyzed period occupies a leading position on the fact of the revealed cases of giving a bribe which is perceived in two ways [11,12,13]. On the one hand, an advantage is the effective work of the police and the identification and suppression of such cases. On the other hand, this circumstance reflects the routinization of the informal rules of such relations and the perception by business entities of the possibility of solving the economic issues in a

similar way. This phenomenon in this regard seems to be definitely negative.

TABLE IV. INSTITUTIONAL INDICATORS OF THE VOLGOGRAD REGION, 2015-2017

Index	2015	2016	2017
Rank in the bribery rating	1	1	5
Number of crimes (per 100 000)	1630	1522	1573
Number of complaints about the violation of entrepreneurs' rights (number)	-	403	699
Trust in policy (max 100 – the best value)	46	47	-

<sup>g</sup> Federal'naya sluzhba gosudarstvennoi statistiki [Federal service for state statistics]

<sup>h</sup> Vezhegodiy doklad Upolnomochennogo po zashchite prav predprinimatelei v Volgogradskoi oblasti za 2017 g. [Annual report of the entrepreneurs' rights ombudsman in the Volgograd region for 2017]

<sup>i</sup> Ministerstvo vnutrennikh del RF [Ministry of Internal Affairs of the Russian Federation]  
<sup>j</sup> Duma of the Volgograd region

Also, it is necessary to make a comparison with the threshold value of the indicator "organized crime rate". The threshold values according to economic security indicators are set at around 1600 [13]. In the Volgograd region, this value did not significantly exceed the permissible threshold (for the analyzed period).

After analyzing the institutional characteristics of the functioning of the regional economy as a whole and the innovative aspects of development determined by them, it is advisable to proceed to the study of formal norms in the field of innovation in the Volgograd region.

So in the region from 2015 to 2017 a number of legislative documents characterizing the institutional changes in the innovation sphere were adopted. They are:

- Law «On state support of innovation activity in the Volgograd region» (with amendments in 2015);
- Decree «On approval of the procedure for subsidizing a part of the costs of small and medium-sized businesses associated with the creation and (or) support of the activities of youth centers for innovation creativity» (2017)[14].

Also, it is worth noting that in general the analysis of regulatory acts revealed the following features of the region's legislation in the field of innovation.

- a large number of legal acts have become invalid (without replacement by new acts) [14];
- changes in state support are systemic (amendments took place in 2013, 2015, 2017, 2018 and so on)[14].

The analysis of legal acts showed that, on the one hand, regional authorities are actively working to improve legislation in the field of innovation. On the other hand, these changes are permanent and speak about an excessive instability of the formal norms of interaction between the economic entities in activity under analysis.

Speaking about the economic component of the support for the development of innovations in the region (in recent years) as a way to increase its economic security, it should be noted that over the period 2014 - 2016 under the program

"Economic Development and Innovative Economy", 2332 million rubles were allocated from various budgets (federal and regional) [15]. Also small and medium-sized businesses received the support from regional authorities through the subsidization of a part of their costs for innovation activities (1.8 billion rubles) [16].

Along with this, in 2017 a set of measures was taken in the field of encouragement of regional innovations:

- research support (5 incentive awards in science and technology)
- competition to support research projects (10 projects each received grants of 500 thousand rubles);
- in the framework of the joint project of the Administration of the Volgograd Region and the Russian Humanitarian Science Foundation and the Foundation for Basic Research the support was provided to 84 projects totaling 40 million rubles;
- support from the Foundation for Assistance to the Development of Small Enterprises in the Scientific and Technical Sphere (more than 20 innovative projects received about 33 million rubles), etc. [17].

Proceeding from this, it can be said that in the Volgograd region predominantly the economic measures are taken to stimulate the innovative activities. The institutional content of motivation is developed to a smaller extent. However as the indicators of innovation development in particular and the indices of economic security of the region as a whole show, the development of the institutional system is one of the basic aspects of the effectiveness of economic measures introduction.

#### IV. CONCLUSION

In world practice, a system of measures that are aimed at regional innovation development has been developed and is being implemented.

Based on the above analysis of the institutional system in the field of innovation in the Volgograd region, it is advisable to offer a number of directions for its improvement.

##### A. Legislative measures:

- improvement of the legislation in the field of innovation;
- tightening the anti-corruption legislation.

##### Infrastructure Development Measures:

- creation of informational and analytical centers, transfer and consulting centers responsible for the effectiveness of the "transfer" of technologies at various levels of the innovation system;
- formation of venture funds that contribute to the growth of the potential of regional economic entities to conduct research, create innovative developments and introduce them into production processes.

### C. Socio-cultural measures:

- development of a set of measures to increase the public confidence in the police and the political system as a whole.

Thus in order to increase the innovativeness of the regional economy contributing to the enhancement of its economic security, it is possible to introduce a complex (legislative, infrastructural, socio-cultural) measures of diverse content, which together will allow the Volgograd region achieving better results.

The preferential nature of economic incentives does not lead to a significant strengthening of the region's ranking positions in terms of its innovativeness (the statistics given above prove this) and therefore does not create the potential to enhance the security and the sustainable development of the Volgograd region in the long term.

In this regard, it can be concluded that only the synthesis of economic and institutional measures will allow creating conditions for a secure development of the economy of the region as a whole.

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