Investigation of the connection between the statistical indicators of innovative processes and the socio-economic situation in the region

Many domestic scientific publications are devoted recently to innovative character of the development of the Russian economy and its regions. Innovative processes in the regions are associated frequently with the basic priorities of their social and economic development. This innovation assessment should have a strong basis. The subject of the article is the study of the major features of the social and economic development in one of the Russian regions against the background of the innovative processes in this region.

Innovative development, region, indicators, economic and social situation, investments.

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In scientific publications the present-day state of affairs connected with innovative character of the Russian economy has various estimations. For example, A.A. Dynkin and N.N. Ivanova in their article contained in the collaborative monography analyze the state of economy and innovations in Russia in comparison with the countries and world leading companies that have high values of investment dynamics in research, development and capitalization of knowledge-intensive companies and sectors [5, p. 63-82].

There is a rather pessimistic conclusion at the end of the article concerning the prospects of innovative development of science-intensive sectors of the Russian economy: "At best they will maintain and further strengthen their "niche advantages" on the basis of international cooperation and meet the country's domestic market demands for high-tech products" [5, p. 82].

This viewpoint can be confirmed by S.Yu. Glaziev's statement: "...Except for the nuclear and aerospace industries, that have acquired a wide range of competitive advantages, Russian industry does not have new technologically advanced production facilities" [1, p. 110].

World experience in estimating modern innovative projects that have perspective scientific, technical and economic advantage is reflected in a number of foreign publications [13, 14, 15, 16].

At the same time in domestic publications of the recent years the issue of creating in the Russian regions some special models of regional innovative systems that "...in the present conditions are the main mechanism of scientific and technical as well as the sustainable development of the regions" has received extensive coverage [4, p.213]. In the light of this viewpoint it is difficult to overestimate the influence of innovative processes' indicators on the state of domestic and also regional economy.

B.Z. Milner, the author of the Preface to the collaborative monograph quoted above is quite certain about it: "The innovative economy can exist only when science is an integral part of industrial production and a direct productive force... the next few years will provide a unique opportunity to formulate the qualitatively new approaches and the mechanisms that could ensure the sustainable development of the economy" [5, p. 5].

Taking into account such opposing views on the role of innovation processes in the development of Russian economy as a whole and its regions in particular, the further discussion of this problem can be considered logical and appropriate.

Russian legislation defines innovative activity as "...activitiy (including scientific, technological, organizational, financial and commercial activities), aimed at the implementation of innovative projects, as well as the creation of innovative infrastructure and the support of its activity" [11].

Given the economic consequences of innovative processes it is necessary to make a distinction between the generation and the use of innovations on specific territories. The manufacturing of an innovative product (item, technology, mode, method, etc.) is not always linked geographically to the objects of its use. High level of research and development (R&D) in the region's organizations can have only an indirect influence on the level of its economic development. The study of such relationships is an important scientific and practical problem.

The reviews and discussions of innovative development problems of the RF regions are reflected in a number of recent publications, in particular in the works [4, 7, 9]. At the same time these publications were preceded by the basic research studies of the RAS scientists, including [3, 6].

The activity of the State Scientific Center – Scientific Research Institute of Atomic Reactors (RIAR), which is the State Atomic Energy Corporation ROSATOM establishment in the city of Dmitrovgrad, the Ulyanovsk Oblast, is an example of very complicated relations between the results of the activity of a research organization and indicators of a region's economy [17].

RIAR has the strongest positions in Russia in the field of experimental validation of new fuel types and structural materials for nuclear power units, and it is the world leader in a number of fields.

S.Yu. Glazyev's statement cited above may confirm the importance of the development of these works [1].

At the same time certain directions of the Institute's activity show examples of innovative technologies implementation in the Ulyanovsk Oblast. In particular, it concerns the establishment of the first in Russia Federal center of nuclear medicine projects design and development (hereinafter – the Center) in Dmitrovgrad in accordance with the Decree of the Government of the Russian Federation of March 17, 2010 No. 145 [10].

Undoubtedly, one can speak about a high level of economic, including regional, efficiency of this innovative project development and functioning. The growth of Dimitrovgrad citizens' revenues due to the construction and operation of the Centre, the increase of tax revenues to all levels of the budgetary system, the incomes of the population and economic entities due to the expansion of social and industrial infrastructure of the Western part of Dimitrovgrad will undoubtedly serve as direct indicators of this efficiency. The methodology of evaluating economic efficiency of the creation of the Center was published earlier in the work [12]. At the same time the issues concerning the influence of development of educational, R&D, experimental-design and other types of innovative activities on the ultimate, adopted by the official statistics, indicators of socio-economic development at the level of a certain region as a whole are of particular importance.

The published research work by the scientists of the Institute of socio-economic development of territories of RAS was crucial for raising the issue [2].

The publication mentioned above provides the methodology of calculating the scientific and technical potential index of the RF regions, which is the simple average of the indices of the sections it includes, i.e. "Science and innovations", "Education", "Information structure and communications". On the basis of this index the authors rated the RF regions according to the developmental level of the scientific and technical capacity in 2003 – 2007 [2, p. 142-144]. Naturally, one would like to compare this rating with a rating of socio-economic situation in a definite region in order to find possible links between these ratings in the dynamics. This comparison extends our views on the value and importance of scientific-technical potential development of the territory in the formation of its main socio-economic indicators.

In itself the choice of the region's main socio-economic indicators is not a trivial task. The list of the main socio-economic indicators of the rating of the RF subjects, which is pub-lished annually in the Rossiyskaya Gazeta at the end of each reporting year, can be considered the most trustworthy. For the purposes of this article it is appropriate to consider the period of socio-economic position of a region, and in this case it is the Ulyanovsk Oblast, from 2007 to 2010. This is due, firstly, to the considerable instability of the economic situation in the 2000s, secondly, to the above mentioned period of calculation of the scientific and technical potential rating of the regions in 2003 – 2007, and, finally, the necessity of considering the time lag in the implementation of the scientific-technical achievements in the real sector of the economy. One can estimate the length of the lag to be 3-5 years taking into account, in particular, the design and construction of new production facilities' average duration, the education period at the universities, the observations concerning the spread of innovations in information technologies, etc. Taking this circumstance into consideration, this work deals with the indicators in accordance with the basic parameters of the socio-economic position of the Ulyanovsk Oblast for 2007 – 2010. [8].

Indicators presented in *table 1* are among such basic parameters.

Table 1. Dynamics of the Ulyanovsk Oblast rating among the subjects of the Russian Federation on the basis of the most important socio-economic indicators in 2007 – 2010

Indicators of the dynamics for evaluation of the position of the region in the Russian Federation	The position of the oblast among the RF subjects in the years			
	2007	2008	2009	2010
1. Industrial production index (in % to the previous year)	32	59	65	4
2. Index of physical volume of works, executed in the field of "Construction" (in % to the previous year)	40	25	50	73
3. Investments in fixed capital (in% to previous year)	31	23	27	67
4. Index of agricultural goods production in farm enterprises of all types (in% to previous year)	56	19	55	73
5. Index of consumer prices (December of the reporting year to December of the previous year)	69	42	7	70
6. Nominal average monthly wage of one employee (roubles)	73	70	69	65
7. Actual average monthly wage (in% to previous year)	27	41	35	3
8. Real cash incomes of the population (in% to previous year)	64	62	56	11
9. Total number of the unemployed (according to population surveys on the issues of employment, in% to economically active population)	21	45	46	53
10. Natural population growth (decline) per 1000 people	69	59	59	62
Average position	**48**	**45**	**47**	**48**

The table is organized as follows. Out of 46 indicators, the data for which are presented in the Rossiyskaya Gazeta, only 10 are used in this table. The numbering of places is presented in ascending order: number 1 is the best value of the indicator. Accordingly, the following considerations have been taken into account.

First: the data array presented in the given publications (46 indicators of 83 RF subjects − about 3800 values) for each year potentially serves as a basis for an almost unlimited number of analytical tasks. A limited number of indicators is purposely selected to achieve the goal of the task.

This is done in order to make the results of the analysis more compact and convenient for perception "at a glance". Of course, even with the task determined this way, the view of its solution could be quite various. But even for the 10 indicators, reflected in the table, the work with an array of about 800 values for each year had to be accomplished.

Second: the necessity to bring the results to a compact view has not removed the problem of their representativeness. That is why the 10 indicators include: investment as a source of economic potential increase; industry, agriculture and construction as the main branches, forming the gross regional product of the oblast; people's wages and incomes, that mainly determine the population living standard; unemployment as equally connected with the situation in the production sector of the economy and reflecting the social character of the population; natural population growth (decline) as a certain synthetic indicator, which reflects the solution results of the urgent problem concerning the preservation of the RF population.

Third: given the above stated definition of the task, the consideration of a series of related and duplicating indicators, such as construction of residential buildings and housing prices indices, wage arrears, indices of crop and livestock production, etc. could not affect the results of the analysis.

The final line of the table does not require any special comment. Obviously, remaining within the framework of the indicators under review, the position of the oblast for 2007 − 2010, shows its relatively stable character.

Consideration of the above stated problem dealing with the study of innovative processes influence on the economic development of the region requires a joint presentation of the data about the dynamics of all the most important indicators, reflecting this impact.

At the same time it is important to analyze the indicators provided by official statistics. Herewith, *table 2* summarizes the indicators under review for the period under review.

Table 2. Indicators reflecting the position of the Ulyanovsk Oblast among the RF subjects concerning the impact of innovative processes on the region's socio-economic situation

Indicator for the evaluation of the region's place in the Russian Federation	Region's place among the subjects of the Russian Federation for the years							
	2003	2004	2005	2006	2007	2008	2009	2010
1. Industrial production index(in% to the previous year)	40	77	23	58	32	59	65	4
2. Number of created advanced production technologies, units	12	17	44	27	27	52	33	30
3. Number of used advanced production technologies, units	26	23	33	28	38	36	36	43
4. Index of physical volume of investments in the fixed capital (in constant prices of the previous year)	59	9	49	17	31	23	27	67
5. Rating of the oblast in the Russian Federation according to the level of development of the scientific and technical capacity in 2003 – 2007 (place)	53	33	45	42	26	Not calculated due to the lack of published data		

The table uses the data that was already stated above, as well as the data concerning the position of the Ulyanovsk Oblast on the basis of statistics provided by Federal State Statistics Service of the Russian Federation [18].

The following main conclusions can be formulated on the basis of the data produced in the table.

1. The arithmetic mean value of the Ulyanovsk Oblast rating according to the level of the scientific and technical capacity development in 2003 − 2006 (43rd place) corresponds to the level of the region's socio-economic position in 2007 − 2010. (47th place). This may indicate the significant influence of the region's scientific-technical potential on the level of its economic development. The sharp increase in the scientific and technical capacity rating − from the 42nd place in 2006 to the 26th place in 2007, might be an incentive for even more rapid growth of the region's rating according to the industrial production index − from the 65th place in 2009 to the 4th place in 2010.

2. Within the period of 2007 − 2010, a stable relationship at approximately the same average level (36th − 40th place) can be observed by a number of indicators: industrial production index, the number of created and implemented advanced industrial technologies, the index of physical volume of investments in the fixed capital. This information can prove valuable for predicting the most important economic indicators of the region's development, taking into consideration the fact that innovations concern, first of all, industrial production management.

3. It is obvious that the oblast, despite its high level of industrial production development (in 2007 − 2010 − on average 40th place in Russia), lags behind because of other branches of material production (clearly negative trends in the construction and agriculture indicators). These trends require the most careful attention on the part of regional authorities; otherwise the concentration of efforts on the most innovation-intensive directions in the

industry will not be able to influence the overall level of performance indicators of the regions' economy.

4. Along with the previous conclusion, it has to be admitted that overall deterioration of the region's position according to the number of advanced production technologies developed in the period from 2007 to 2010 (from the 25th place to the 36th place), the number of used technologies (from the 28th place to the 38th place), the index of physical volume of investments in fixed capital (from the 32nd place to the 37th place) as compared to the period from 2003 to 2006 in no way correlates with the region's simultaneous rise by 10 positions according to the index of industrial production − from the medium 50th up to the 40th place.

5. Sadly, the study of the innovative processes influence on the basic socio-economic indicators of other regions does not provide qualitatively different views on the nature of this influence. One of the most "innovatively advanced" regions in the Privolzhsky Federal District, no doubt, is the Samara Oblast, which borders on the Ulyanovsk Oblast. According to the state statistics data, in the period 2003 − 2010, the Samara Oblast rating concerning the number of created and implemented advanced technologies, on average, was a lot more preferable in comparison with the Ulyanovsk Oblast rating: the 6th − 7th places against the 30th − 33rd places. The levels of scientific-technical capacity development of the compared regions in 2003 − 2006 were even more diverse: the Samara Oblast took the 11th place, the Ulyanovsk Oblast took the 43rd place [2, p. 142]. At the same time, the regions' positions according to the described method of assessment of the regions' socio-economic development rating, shows the close values of these ratings in 2007 − 2010: the Samara Oblast took the 40th place, the Ulyanovsk Oblast took the 47th place. As for the index of industrial production the situation was reverse in that period: the Samara Oblast took the 48th place, the Ulyanovsk Oblast took the 40th place.

Although the results mentioned above and the accompanying circumstances prove a certain influence of innovative processes in the Ulyanovsk Oblast on its main socio-economic indicators, it will still be premature to draw ultimate conclusions about the extent of this influence.

One cannot but agree with the authors of one of the latest monographs devoted to the study of integral indicators for the evaluation of the Russian regions' socio-economic position. They conclude: "We would like to consider this book as a kind of introductory study of the branch of regional science that is very fruitful and interesting from the practical point of view" [7, p. 203].

Certain separate conclusions, related to the subject of the article, can be summarized as follows.

1. The study of influence of innovative processes on the region's socio-economic performance should be carried out systematically. The period of the initial data submission for the research should be representative and comparable with periods of innovative projects development and implementation.

2. Current market conditions, in which the regional economy is functioning, are the main impetus (and deterrent) of its development.

3. There is no direct connection between the official statistical data of the state of a regional innovative and economic activity during the certain periods of time.

4. The joint efforts of a region's business and authorities aimed at the creation of the genuinely favorable climate for attracting domestic and foreign investments should be considered the most important priority of the regional socio-economic development. This factor acquires fundamental importance, since it is closely connected with the region's basic indicators and has considerable influence on them. In the near future this connection with the indicators of regional innovation activity is uncertain.

5. The maximum use of the scientific-technical capacity of Russian and regional scientific-research, project and design organizations is the key priority guideline of innovation policy in a region. In this respect the leading role should belong to the policy of regional authorities aimed at innovation projects funding (also in the form of granting of guarantees, privileges, etc.) together with the Federal center.

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