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STRATIFICATION OF TERRITORIES OF INNOVATIVE DEVELOPMENT: THEORETICAL APPROACHES

The factors influencing development of regions are studied in the article. The author considers approaches to territories stratification by criteria of innovation, existing in the scientific literature.

Keywords: territories of innovative development, regions typification, innovative development, stratification.

In modern conditions the innovative way of the development is admitted as a priority direction of economy going out from its crisis state and the way to increase its efficiency. Globalization and integration processes indicate the necessity to pay attention to the territories which have high innovative potential. So consideration of existing theoretical approaches to stratification of such formations seems topical.

The significant amount of publications is devoted to the issues of stratification of innovative development territories. The review of their content seems expedient in the following sequence: definition of typification factors of innovative development territories, consideration of stratification groupings and their adaptation in modern conditions analysis. Russian practice is taken as a basis of research.

It is pointed in a number of works by region development experts that spatial organization in Russia has appeared to be inefficient and has led to expenses growth to support infrastructural economy and other negative consequences.

A. G. Granberg, defining specificity of economic, legal and ethno-political space of the Russian Federation, allocates the following forming feature groups:

– considerable differences of natural-climatic conditions that proves the presence of minerals and other resources;

– during the Soviet period the basic principle of productive forces allocation was to form the economy as a "single factory" where the republic and region economic complexes were considered as peculiar "workshops" with the main purpose to satisfy the needs of the country's national economy, and only after that – to satisfy the needs of the country's population;

– high differentiation of social and economic development levels of the Russian Federation subjects, certain indicators show tens times gaps;

– RSFSR formation was based on the national-territorial principle, so it wasn't related to the territories economic potential;

– Russia's national policy (as well as during the Soviet period) is characterized by substitution of its population national interest by the mechanical sum of separate ethnic communities interests;

– qualitative difference of basic values idea and acceptability of various mechanisms of social and economic transformations is also typical for territorial communities;

– presence of various ideas about the most preferable form of the national-state system that involves a various measure of the state and regions responsibility for social and economic problems solution [1].

In our opinion, in modern conditions the list of the specified factors should be supplemented with the ones such as presence of highly developed branches, the state policy orientation and the international environment influence. Interaction of external and internal parameters can influence the formation of innovative development territories today.

Theoretical foundation of stratification issues dates back to the 1940s. The definition of various factors as the basic criterion of stratification (in this article stratification is treated and seen from the position of innovative activity) causes a variety of approaches.

Typification of Russian and the near abroad regions by the degree of innovative potential development and innovative activity scales is conducted in V. L. Baburin's research. On a parity of creative and acceptor components, correlation between innovative productivity of the USSR regions (number of patents per 100 thousand people of urban population) and the level of their innovative consumption (the relation of the introduced patents to the number of the produced ones), or the creativity index, have been calculated. As a result, the following groups of regions have been singled out:

1. Creative regions (using much fewer inventions than they create, having higher density than the Union on average). Moscow capital region and St.-Petersburg were the examples of such regions.

2. Sub-creative (using much fewer inventions than one uses having higher than average innovation density). They included a number of areas of the Volga-Kama interfluve, the Ural-Volga Region, Rostov Region, Novosibirsk-Omsk area.

3. Acceptor-creative (having higher than the Union average innovation generation, but having a large part (exceeding 100 %) of the inventions used). In Russia industrial-agrarian areas belong to them: the Altay and Krasnodar Territories, Belgorod and Voronezh Regions, Chuvashia and Mari-El.

4. Strong acceptors (having rather low innovation generation, but having very high (exceeding 100 %) generation of the inventions used). First of all, these are near-the-capital areas (Leningrad area), and the areas of economic development the Khanty-Mansi Autonomous Area and Yamal-Nenets Autonomous Area, the Far

East southern regions, Astrakhan, Orenburg and other Regions.

5. Weak acceptors (having low innovations generation and having a part of the inventions used higher than the Union average, but not exceeding 100 %). In this group the most developed east areas and also the periphery areas and republics of European Russia are widely presented.

6. Innovative periphery (having the lowest indicators both for inventions density and their use). This group includes mainly the USSR peripheral territories (overwhelming majority of autonomous regions, republics of Siberia, the Far East and the Northern Caucasia), internal areas of Transcaucasia, some "godforsaken places" of European Russia (Tambov, Kostroma, Novgorod Regions) [1].

In N. I. Markova's works regions stratification by innovative activity, conducted both with the help of formal methods of dispersive analysis and by means of expert estimations, allows with a sufficient degree of validity to allocate only one group including eleven subjects of the Federation, which have the innovative potential developed enough and the possibilities of activate its use (Moscow and St.-Petersburg, Moscow, Samara, Nizhni Novgorod, Kaluga, Sverdlovsk, Novosibirsk, Tomsk, Chelyabinsk and Voronezh Regions). The group structure testifies that the innovative potential of these regions is defined first of all by their high scientific potential. These are not only the regions with a high level of social and economic development, but also historically-established scientific centers of the country. Their role in the innovative process is to be innovation donors, first of all in the high technologies sphere [1].

There are two types of territorial innovative-technological formations specified in the scientific literature according to N. V. Beketov. A part of them is the areas with natural (evolutionary) concentration of high technology branches (the so-called technological regions). Absence of the special planning and coordinating foundation at the period of their appearance can be defined as their main distinctive feature. Other formations are the specially created centers of technological development (scientific, technological, research parks, "business incubators", innovative centers, etc.) [2].

E. A. Lurie, generalizing the experience of innovative development territories formation in Russia in the 20 th century, marks out 19 types of them. As the defining features in the given stratification we can see: administrative resource; the society mentality (the level of its susceptibility to innovations, readiness for innovative transformations, adaptation to the special innovative culture); presence of the developed documents regulating innovative activity (the Forecast, the Concept, the Strategy, the Program); involvement of the scientific-educational complex; estimation of the created innovative system influence on the basic indicators of the region development [3].

In the Base report for OECD to review the national innovative system of the Russian Federation "the National innovative system and the state innovative policy of the Russian Federation" 6 groups of the regions are marked out formed on the basis of the newness of the innovation index. On the basis of indirect statistic data the basic components of the innovative process are considered. As a criterion to estimate scientific potential the so-called the newness of innovation index was used. According to its value the regions which are leaders in scientific-technological potential, the regions which are leaders of realization and advancement of scientific work into a final business product, the regions focused on technology loans are assigned. The results of the Russian Federation regions analysis from the point of view of human potential presence to implement innovative activity, to distribute new knowledge, and to launch innovative products to the market are used as components.

The newness of innovation index under the conditions of Russian innovative system formation rather fixes the regions start position from the point of view of their having some qualities necessary for innovations creation. The index better characterizes regions readiness or ability to innovations, rather than the actual innovative process. It is possible to concern the integration of the indicators used for its calculation as the advantages of the offered index. They embrace (as much as the modern official Russian statistics allows it) the basic stages or elements of the innovative process. A lack of the given tool is that it does not allow to estimate quality and intensity of interaction between the components of the innovative chain.

Proceeding from the considered approach the Russian Federation regions are divided into 6 conventional groups [4]:

Group 1 ("capitals") is the leader by all the indicators. It concentrates highly skilled human resources and implements the market stage of innovations the most successfully. The best representatives are Moscow, St.-Petersburg and the Republic of Tatarstan.

Group 2 is possible to be conventionally named "potential innovative leaders" or "the regions ready to innovations", is the leader by the market component after "capitals" (corresponds to the "capitals" level), lagging behind by characteristics of human potential. The greatest number of high technologies is used and the greatest volume of innovative products is made in the regions of the second group. These are Saratov Region, Nizhni Novgorod Region.

Group 3 includes the regions where sub-indices of human resources carry the greatest weight in the total index. They are slightly inferior to the group of potential innovative leaders by these sub-indices. However "market" sub-indices, especially the "appearance on the market" index, lag behind essentially. It can be explained by inefficient use of qualitative human resources, absence of stable relations between science and manufacture or discrepancy between scientific and industrial bases of the region. This group can be characterized as the regions with unrealized intellectual potential. The subjects of the named group are Tomsk, Novosibirsk, Omsk Regions and the Primorsky Kray.

Инновационная карта России

Группы регионов по уровню инновационности
№1
№2
№3
№4
№5
№6

Составлено ЦСР С-З
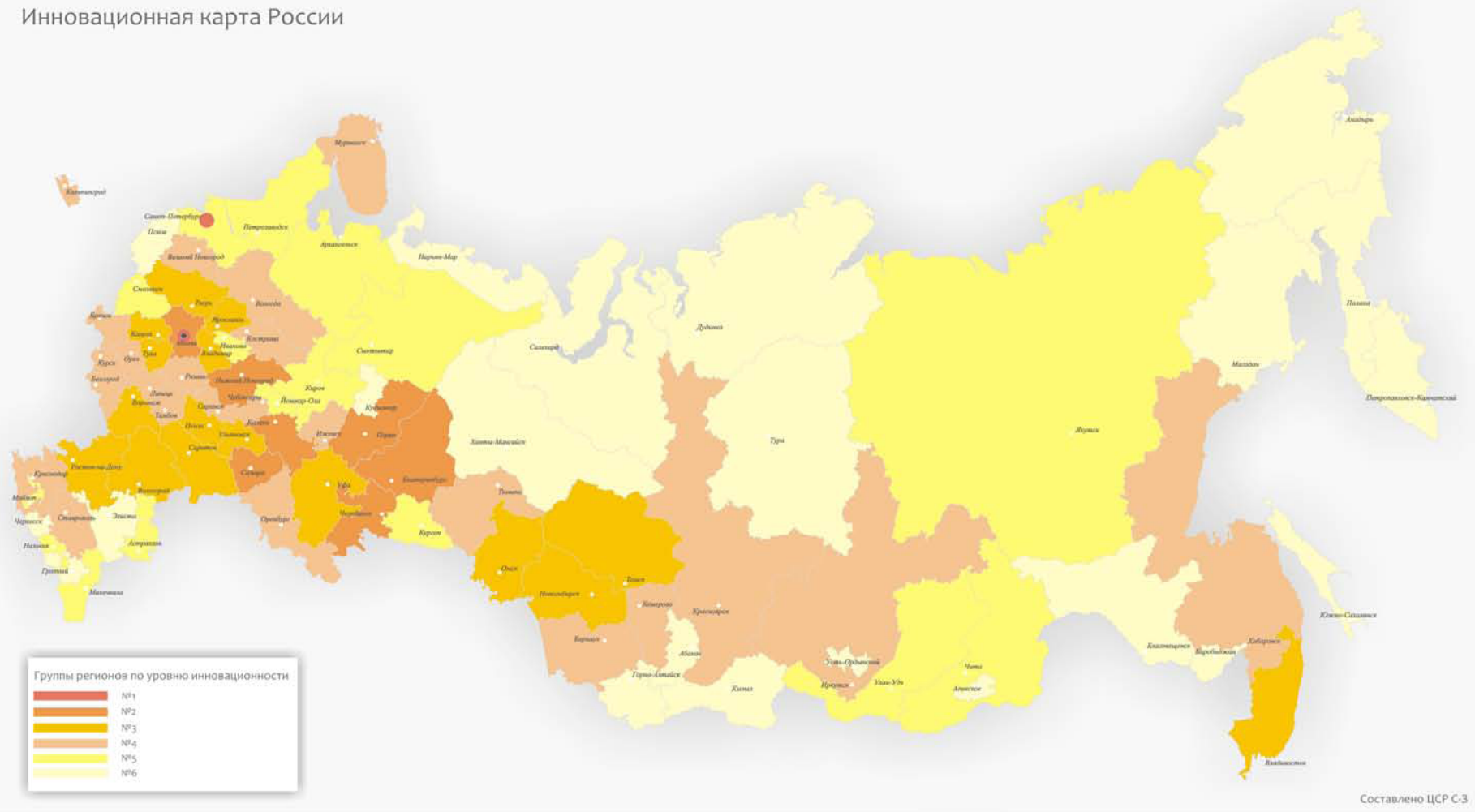
Innovate map of the Russian Federation

Group 4 is very homogeneous by indices of "market" and "human potential", in the majority of its regions there are big cities, or they are located close to Moscow, so there are sources of human resources for new knowledge creation in these regions. Group 4 is inferior to Group 3 in terms of the «new knowledge creation» index, but they are on the same level by market indices. Thus, the regions of Group № 4 can be characterized as large industrial centers relying on technologies transfer, having an average level of innovative potential as they produce quite a large product volume using high technologies. However there is no due number of specialists for new knowledge creation. This group is represented by the Krasnoyarsk Territory, Kemerovo Region, Orenburg Region.

Group 5 represents the regions which are not among the leaders at present by any of the indicators, and neither their education system nor their industrial base allow them to move onto the next level. The regions – representatives are the Buryat Republic, Arkhangelsk, Kurgan, Chita Regions.

Finally in the last *Group 6* there are regions-outsiders by all the indicators. They are the Altai Republic, the Tuva Republic, the Khakass Republic, the Khanty-Mansi Autonomous Area.

In figure "Innovative map of Russia" made on the basis of the analysis of the regions level of the newness of innovation is presented [4].

A number of legislative acts show attempts of the regions stratification from the point of view of the possibility form conditions for innovative transformations. In particular, in the Program of the Russian Federation Government "Reforms and development of the Russian economy in 1995–1997" the following groups of the regions were allocated: lagging behind, depressive, crisis, and also the regions of the special strategic value.

In the Project of Siberia Social and Economic Development Strategy while considering Siberian Federal district according to its economy structure, specificity and rates of social and economic development, three groups of regions have been distinguished:

– the mastered areas of resources extractive orientation with centered settlement character, rather a high level of industry and its resource branches development, having definite specialization (Kemerovo, Tomsk, Irkutsk Regions, the Krasnoyarsk Territory, the Khakass Republic). Here the basic sources of the Russian Federation budgetary system are formed;

– regions with rather high density of population, quite diversified economy and rather a high level of infrastructure development and the territory cultivation (Novosibirsk and Omsk Regions); basic scientific-educational and agrarian potential, the processing sector of Siberian industry are concentrated here;

– territories with a low level of social and economic development (the Altai Republic, the Tuva Republic, Altai Territory, the Buryat Republic, Chita Region) [5].

The table represents the results of the conducted calculations, in our opinion, reflecting the basic stratification criteria.

Granberg A. G. specifies that correlation of scales, forms and tools of regional policy with specificity and needs of various types of regions, and also with its long-term orientation is possible only with typification of social and economic development levels of the federation subjects. The given typology is not conducted in Russia [1].

A number of scientists consider that studying regions economy manifestations of the so-called of "resource damnation" phenomenon is of great importance, when the countries possessing rich natural resources show lower rates of development than the countries, which do not have these resources. Nevertheless, according to the experts' analysis and estimation, there is no linear dependence between the volume and the kinds of the resources and the economy development rates [6].

The basic indicators of the Siberian Federal District regions development in 2007*

Region	Number, thousand people	GRP per person, thousand rub. per capita, 2006	Investment expenditures, thousand rub. per capita	Average monthly income, thousand rub. per capita	Budgetary security, thousand rub. per capita
The Altai Republic	207	54.39	27.908	6.934	43.76
The Buryat Republic	960	94.168	21.495	8.892	29.01
The Tuva Republic	312	47.967	6.814	5.817	31.85
The Khakass Republic	537	94.949	31.034	7.982	22.27
Altai territory	2508	66.275	16.964	7.438	н/д
The Krasnoyarsk Territory	2890	202.029	40.82	12.654	41.77
Irkutsk Region	2508	128.276	48.769	10.078	27.55
Kemerovo Region	2823	119.124	38.085	11.700	29.98
Novosibirsk Region	2636	108.453	32.306	10.317	25.86
Omsk Region	2018	121.934	32.367	11.318	26.93
Tomsk Region	1035	180.44	61.973	11.890	30.26
Chita Region	1119	77.898	30.365	8.212	н/д

*The source: calculated by the author according to [7].

Consideration of the above-stated approaches allows to make the following conclusions:

– there is no common approach to the criteria choice at present. Every indicator taken as a basis allows to reflect specificity of the formations considered;

– there are quite many parameters applied as stratification indicator criteria;

– imposing of the received stratification results allows to define coincidence of separate groups including, as a rule, the identical list of regions that gives a chance to make an assumption that there is some regularity which appears while grouping by the newness of innovation.

The author's position in this point is based on use of the innovative susceptibility factor as a priority. In our opinion, it fully considers economic, social and motivational components. The approach is expounded in the author's publications n more detail [8].

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INTEGRATION BETWEEN HIGHER SCHOOL AND INDUSTRY IN REGION AS THE FACTOR OF IT'S INNOVATIVE DEVELOPMENT

In this article the problems of Integration between Higher School and Industry in innovative development of region are covered. Retrospective analyze of co-evolution between defensive-industrial complex and Higher School in the face of Siberian State Aerospace University is carried out for estimation of dynamic interaction.

Keywords: innovative development, integration, defense industry, higher school, co-evolution.

Increase of national economy competitiveness ability, retention the position of Russia in the row of the world leading countries is possible when the innovative way of development is realized and the growth of intellectual public potential becomes the most important state problem.

The modern Russian government understands the importance of innovations and tries to stimulate everyway the innovative development of the country. So in the article "Message of President of Russian Federation D. Medvedev to Federal Assembly" (November 2009th) the President accentuated the necessity of creation in Russia the big Centre of innovations, the analogous of famous Silicon Valley, where "the attractive conditions for labour of leading scientists, engineers, constructors, IT-specialists, managers and financiers will be formed and new competitive in the world market technologies created" [1].

Recently, at the meeting with the winners of school Olympiads the President said, that the Russian Silicon Valley will be built in the Skolkovo in the suburbs of Moscow [2]. However it's not clear, why the Committee for Creation the Russian Centre of innovations chose this place. As it is known, some Russian territories known as zones of high technologies competed for the opportunity to become such a centre. They are Tomsk and Novosibirsk regions, St.-Petersburg and others. There are famous Universities and scientific centers, also big enterprises for industrial application of new developments tied up by the longtime connections.

Integration between Universities, enterprises and other Institutions doing scientific and research activities is a very important factor for the formation of the Centre of innovations.

Just the integration between Stanford University and the Base of United States Air Force (USAF) in Palo-Alto permitted to create the "Stanford Research Institute", which worked first for defense and then became the biggest Centre of microelectronics in the world [3].

There are some famous Universities of such kind in the USA, for example: "Massachusetts technological Institute" st. Massachusetts, "Texas University" in Ostin,