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## **Methodological Aspects of Prioritization of Financial Tools for Stimulation of Innovative Activities**

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**Abstract:**

*The article offers methodical recommendations on evaluation of financial & investment and innovational potential of the region. Evaluation of innovational potential of the territory was conducted on the basis of hierarchical ranking assessments. Financial and investment potential is considered to be equal to net savings per capita. The authors view the possibility for development of financial and innovational strategy of region's development on the basis of evaluation of these potentials. The article analyzes financial & investment and innovational potentials of the regions of the Southern Federal District. On the basis of correlation of the above potentials, matrix of prioritization of financial tools of stimulation of innovative activities is offered.*

**Key Words:** *financial and investment potential of region, innovative potential of region, financial & innovational strategy of region, tools of financial stimulation*

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## **Introduction**

Innovative activities under the modern economic conditions acquire great significance and ensure increase of competitiveness of specific regions and country on the whole. High level of innovative activity allows creating conditions for sustainable economic growth in long-term and for the most effective use of current resources. At this stage of development, special role belongs to management of innovational sphere at regional level.

Strategic decisions, taken at the level of region in the sphere of management of innovative activity and creation of conditions for successful functioning of innovational enterprises should be based on evaluation of, financial & investment potential of territory (as a source of internal financial assets) and, on the other hand, of innovational potential (as an object for investing financial resources).

## **Chapter I**

In authors' opinion, building the system of indicators, which is a basis for formation of innovational potential, is conducted on the basis of structural & factorial model which characterizes the process of management of innovative activities at the level of regional economic system, which fully describes the components of regional innovational potential (subject, innovational infrastructure, and innovations consumers). As factors emerge from resources and conditions of economy, they actually create the dominant of their effective transformation into the production item for provision of the principle of sustainable development if this territory, thus creating a "core of development".

Modern methodological approach of O.V. Inshakov [Inshakov, 2003], offered on the basis of theory of endogenous factors of production, allows building the model of management of regional innovative activities, which reflects the influence of main factors of "core of development" of economic system, transformed as to the studied process.

During intensive interaction of transformational (human (H), technical & technological (T), natural and resource (N)), and transaction (institutional (Ins), organizational (O), and informational (Inf)) factors, a "core of development" emerges.

This model is described as a function of variables range, which include sets of six most important components:

$$U = F(N, H, T, Ins, O, Inf), \text{ where:}$$

U – level of development of innovational potential of the region,

N – natural and resource factor;

H – development of human factor;

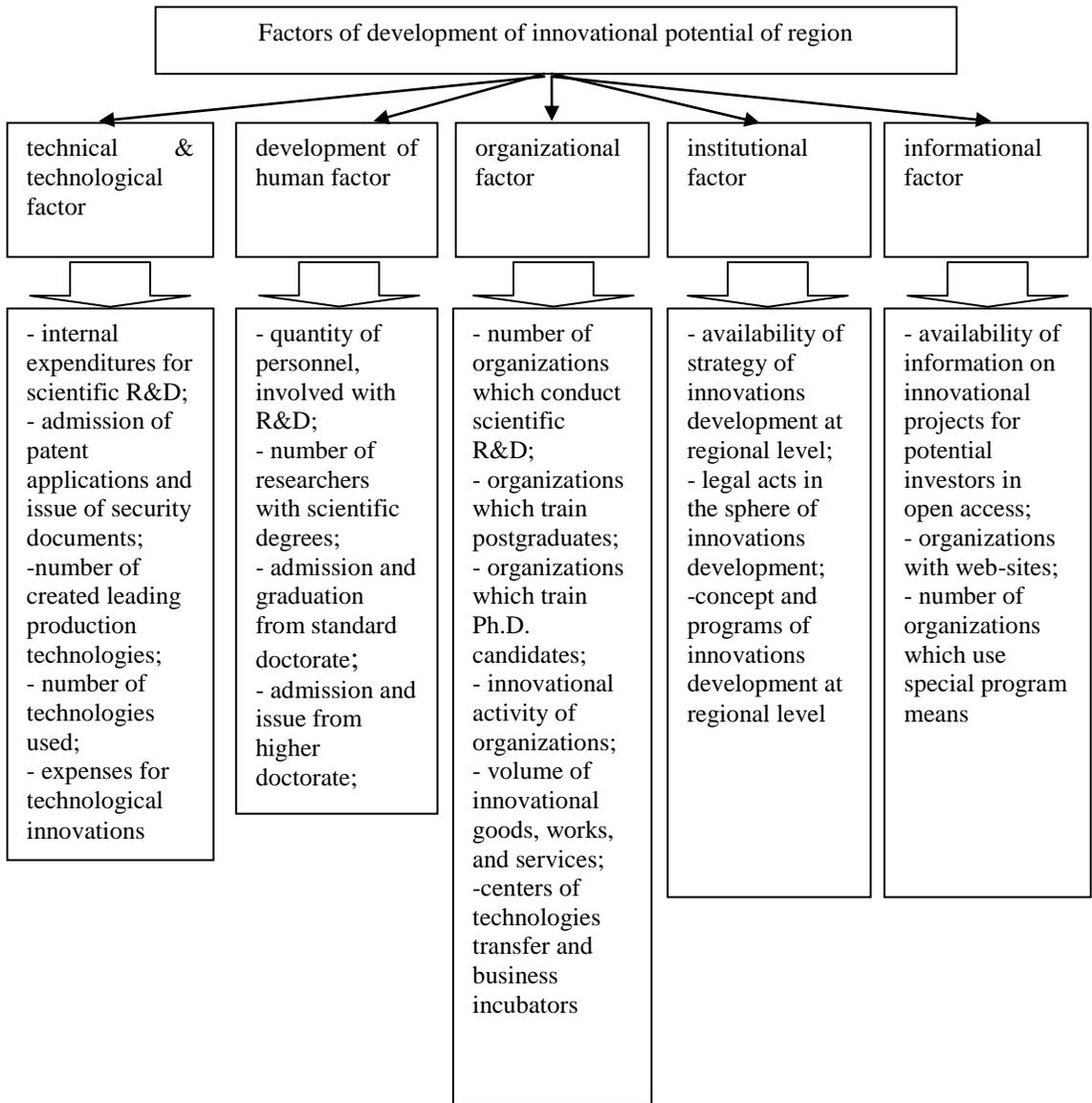
T – technical & technological factor;  
Ins – institutional factor;  
O – organizational factor;  
Inf – informational factor.

Let us view these factors as to innovational potential of region in detail and distinguish the groups of indicators which are peculiar for each factor.

Relating to innovational potential of region, from the point of view of accessibility of data for analysis and expedience of their processing, the given factor model should be adapted and specified. The offered model consists of 21 indicators, grouped into five blocks, and is presented in Figure 1.

Natural and resource factor is not viewed during evaluation of innovational potential due to impossibility for separation of resources which are potentially related to innovational process. Consideration of this factor as totality of natural resources on the territory of the region is possible, but during comparative analysis of regions there will be a shift of regions (higher ranking of innovational potential) with larger volume of natural resources – which does not reflect the sense of real innovational processes in region's environment.

Each indicator is assigned hierarchical ranking evaluations which are further summarized during calculation of total ranking of region.



**Figure 1.** Factors of development of region’s innovational potential

For each indicator  $c_i$  ( $i$  – counting number of indicator), average value is calculated (Formula 1).

$$\bar{C}_i = \frac{\sum_{j=1}^N C_{ij}}{n} \quad (1), \text{ where:}$$

$C_{ij}$  – value of  $i$ -th indicator for  $j$ -th region,

$n$  – number of subjects (regions).

Sphere of changes of  $i$ -th indicator  $[C_i^{\min}, C_i^{\max}]$  was divided into  $n$  intervals. First indicator has the value of ranking  $r_{\min}=1$ , and the last one -  $r_{\max}=M$  ( $M$  – maximal value of ranking). As calculations showed, finding the function  $r_{ij}=f(c_{ij})$  required seven intervals, i. e.,  $r_{\max}=6$ .

As a result of transformation of indicators  $c_{ij}$ , matrix of corresponding private rankings  $r_{ij}$  is found, in which the columns are distributions of ranking of region as to various indicators, and lines are distribution of this ranking as to various regions. Each sub-system of the level is characterized by ranking  $R_{lj}$ , ( $l$  – number of sub-system ( $l = 1, \dots, 5$ )):

$$R_{lj} = \sum_{i=1}^k r_{ij} \quad (2), \text{ where:}$$

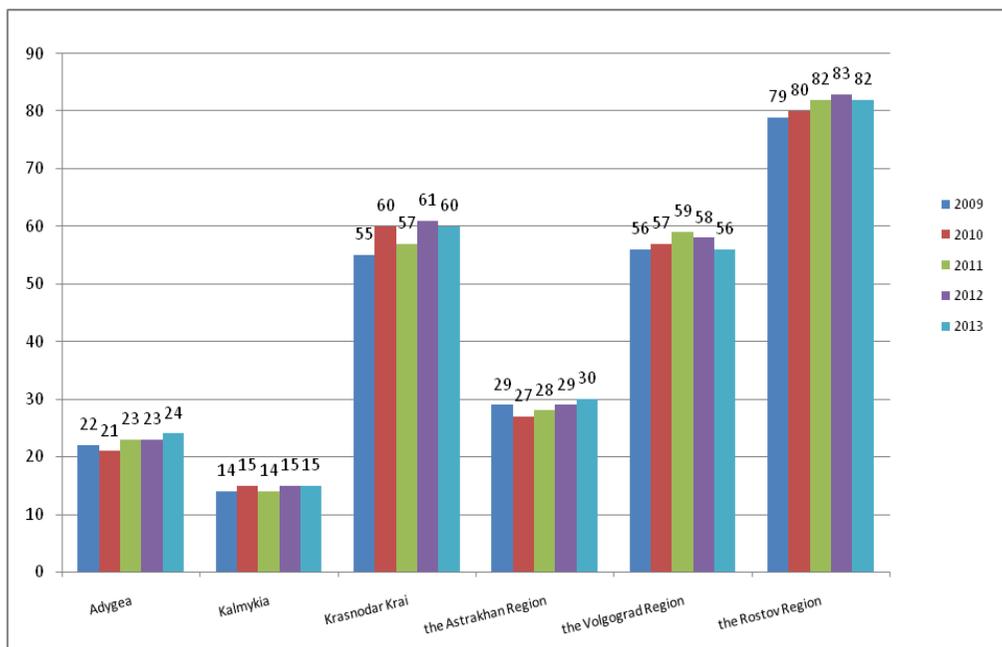
$k$  – number of indicators which characterize this block of model.

Thus, innovational potential of region has the following analytical expression for general ranking:

$$R_j = R_t + R_h + R_{Ins} + R_O + R_{Inf} \quad (3), \text{ where:}$$

$R_t, R_h, R_{Ins}, R_O, R_{Inf}$  – rankings of sub-systems: technical & technological, human, institutional, organizational, and informational factors, correspondingly. As  $R_j$  is a numerical expression, formula (3) determines the level of development of innovational potential for specific region.

Innovational potential of regions of the Southern Federal District in 2009- 2013 is characterized by the following data (Fig. 2).



**Figure 2.** Dynamics of changes of innovational potential of regions of the Southern Federal District in 2009-2013

Among the regions of the Southern Federal District, the first place as to development of innovational potential belongs to Rostov Oblast, (in 2013 – 82 points), then goes Krasnodar Krai (in 2013 – 60 points), and Volgograd Oblast (in 2013 – 56 points). Astrakhan Oblast is ranked 4<sup>th</sup> (in 2013 – 30 points), then – Republic of Adygea (in 2013 – 24 points), and Republic of Kalmykia (in 2013 – 15 points).

## Chapter II

Based on necessity for consideration of wider notion – financial & investment potential of region – let us determine its specifics and difference from financial potential. Specifics of financial & investment potential consists in necessity for considering this potential not only as totality of financial resources, accumulated by regional authorities in the form of revenue and subsidies from budgets of higher levels but also as financial resources which belong to companies and households. However, not all financial resources which are at economic subjects' disposal are used for investment, let alone innovational activities. Thus, it is necessary to deduct the volume of resources used for consumption of society, companies, and households from these financial resources.

In its turn, financial potential is a movement of separate financial flows of economic agents and includes primary and secondary (or used) financial potentials. Primary financial potential is volume of issue of goods, works, and services on this territory

(i.e., GRP). Secondary financial potential is divided into current (consumption for households, simple reproduction for companies) and investment (investments for companies and households) – in this case, financial & investment potential for companies and households is viewed [Ivanova, 2007].

During such evaluation of financial potential (as sum of potentials of economic agents), situation of repeated calculation emerges. For example, financial assets of population can largely form liabilities of insurance companies and commercial banks and then transform into their assets. In their turn, assets of legal entities and individuals could be formed from bank loans. This, the more developed is the banking sector in specific region, the more significant is the problem of double count during evaluation of financial potential of the region. Potential of financial credit system in the region could be realized positively and negatively for financial potential of the region – this is caused by the fact that banking sector can attract resources from outside the region and “draw” financial resources into other regions with more competitive economy. Activities of financial credit system during evaluation of financial potential of region are difficult to analyze, but it is impossible not to take them into account.

Within the evaluation of financial & investment potential of territory’s potential it is possible to use indicator of gross savings in the region, which reflects financial resources that the territory has for conduct of innovation & investment activities. However, not all savings are used for investment & investment activities. They have the amount of gross savings of main capital which further should be excluded from calculation. Net savings are difference between gross savings and consumption of main capital. Thus, at regional level, amount of gross savings is calculated according to the following formula: *Gross savings = GRP – final consumption*. Formula for calculation of net savings has the following form: *Net savings = gross savings – volume of gross accumulation of main capital*.

Such methodology was previously used by L.A. Tolstolesova [Tolstolesova, 2012] – however, indicators were evaluated not per capita, which complicated the comparison of data for various regions. For comparative analysis of regions as to level of development of potential and comparison of data, we offer to evaluate indicators of gross and net savings per capita.

Indicator of net savings in the regions of the Southern Federal District in 2009-2012 is shown in Table 1.

**Table 1** - Net savings per capita in regions of the SFD in 2009–2012, thousand rubles

	Republic of Adygea	Republic of Kalmykia	Krasnodar Krai	Astrakhan Oblast	Volgograd Oblast	Rostov Oblast
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2009	-50.8	-21.3	-69.4	-61.2	-17.1	-50.1
2010	-46.5	-20.4	-100.9	-67.2	-11.5	-42.5
2011	-62.7	-39.0	-113.1	-71.9	-8.3	-49.2
2012	-72.8	-47.4	-122.1	-68.2	-9.2	-63.6

Viewing the data of Table 1, it is necessary to note that among the regions of the SFD, positive value of net savings per capita was not observed during the whole studied period. However, in Volgograd Oblast, negative value of this indicator is minimal.

### **Chapter III**

Increase of innovative activities at regional level is possible through the use of tools of financial stimulation which will allow activating the activities of potentially innovation-oriented subjects of economy.

Financial stimulation of innovative activities from region is divided into: direct participation in the form of project financing; financing of infrastructural elements; indirect regulation of business (largely through tax mechanisms).

All tools, depending on the level of their influence on innovative activities, are divided into three groups in this research (A, B, C), which are shown in Table 2.

Most expenditures for direct participation in financing of innovative activities are conducted within long-term state programs which include sub-programs and targeted programs. On the whole, it is possible to distinguish financial support for innovation-oriented enterprises in the following way:

1. Provision of subsidies for covering:

- paid interest for received loans;
- expenditures for investment project for improvement and creation of new technologies and production;
- expenditures for expert evaluation and analysis of investment projects;
- expenditures for R&D engineering works;
- expenditures for payment of profit from bonded loans, performed with provision of state guarantees of the Russian Federation (used in aviation and defense industry).

2. State support is conducted through contributions into Registered capitals of specific organizations, which allows increasing the number of own assets used for creation, implementation, and use of innovational technologies and products.

3. Grants in the sphere of science, including subsidies, issued for scientific research, conducted in Russian higher educational establishments.

Expenditures of budget assets are not always directed at financing of innovative activities – part of expenditures indirectly supports development of

innovations in the country; these expenditures include stipends and premia in science for young scientists and specialists.

4. Venture financing with participation of region and state’s means under the conditions of parity with private business.

5. Projects with the use of mechanism of private-public partnership.

Use of these tools of financing of innovative activities at the level of regions allows achieving certain results only with availability of sufficient volume of assets in the budget at initial stages of development of regional innovational system – when infrastructure and mechanism of cooperation of all market members are not yet formed. As a matter of fact, direct inflow of financial resources ensures only short-term effect, which, after termination of financing, may lead to lack of sustainable development. These tools could be used either for protection and development of strategically important spheres and enterprises of the state or at initial stages of development of regional innovational systems, or with availability of large volume of financial resources which territory’s budget possesses.

The next group of tools is aimed at financing of innovational infrastructure.

Innovational infrastructure can be divided into 4 components:

1. Legal infrastructure: complex of laws on protection of objects of intellectual activities and protection of rights; legal acts which stimulate R&D in the interests of industry and regulating the processes of transfer of results of research into the spheres of their use; complex of legal acts which determine conditions of creation and activities of institutes of support for entrepreneurial business; legal provision of activities of small and medium business.

2. Informational infrastructure: reference, patent, conjunctural, analytical, technical, and advertising information. Main informational needs during solving the issues related to patenting the novelties and conducts of marketing research.

3. Specialized innovational centers: business incubators, technological parks, innovational centers, centers for business support, etc.

4. Financial institutes: banks, investment institutes, individual investors, venture funds, budget, etc.

Indirect regulation of business is brought down to tax stimulation. Support for innovative activities is realized through state or regional public authorities’ establishment of special conditions of calculation and payment of taxes, collected into budgets of various levels. Stimulation of innovational development takes place by means of increase of motivation with economic subjects for conduct of innovation-oriented projects.

**Table 2** - Tools of financial stimulation of innovative activities

direct participation in the form of projects financing Group A	financing of infrastructural elements Group B	indirect regulation of business Group C
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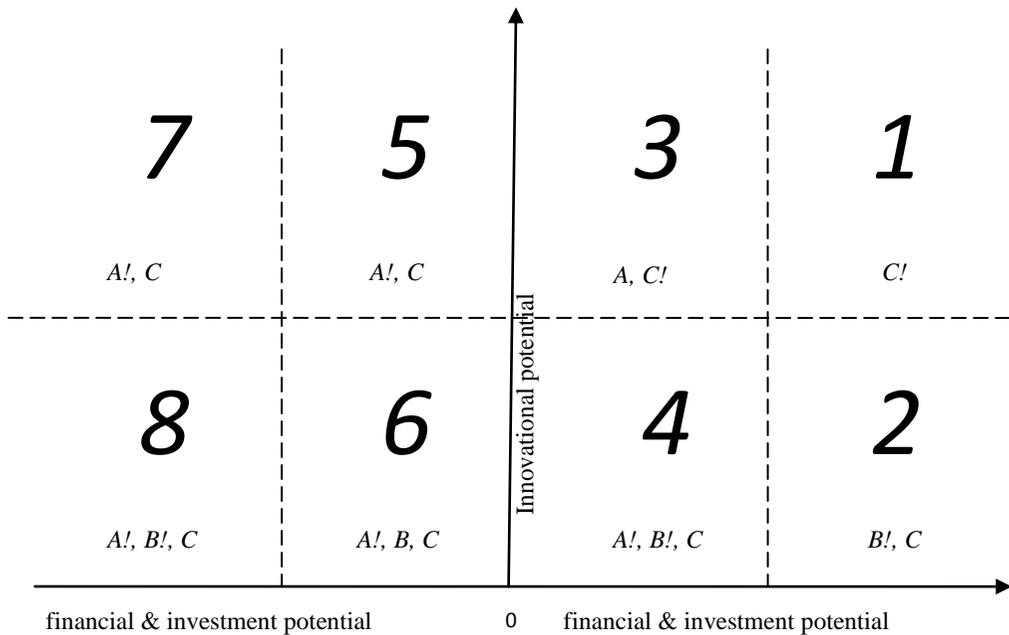
1. provision of subsidies	1. legal infrastructure	1. investment tax credit
2. state support through shareholders fee	2. informational infrastructure	2. investment tax subsidies
3. grants in the sphere of science	3. specialized innovational centers	3. tax holidays
4. venture financing	4. financial institutes	4. areas with subsidized taxation (scientific cities and technological cities)
5.projects with the use of public-private partnership technology		5. tax exemptions for certain objects

Selection of tools of financial stimulation of innovative activities is based on evaluation, on the one hand, on financial & investment potential of territory (as a source of internal financial means), and, on the other hand, on innovational potential (as an object of investment of financial resources) [Chekalkina, 2013].

Depending on results of evaluation of financial & investment and innovational potential, regions should be divided according to Figure 3.

Areas 1,2,3,4 in Fig. 1 have a positive value of financial & investment potential of region, areas 5,6,7,8 – negative. Intersection of dashed line with axes corresponds to average value in the studies totality of regions.

Area 1. This area is characterized by high level of development of innovational potential and high value of financial & investment potential. Regions of this category transform innovational potential with the help of financial resources into final innovational products.



**Figure 3.** Matrix of correlations of financial & investment and innovational potential of regions

Area 2. These regions are peculiar for correlation of high level of financial & investment potential and development of innovational potential which is lower than average with the studies totality of territories. Such correlation usually leads to attraction of financial resources into regions with higher level of development of innovational potential.

Area 3. It is characterized by high level of innovational potential development and value which is lower than average financial and investment one. This area is peculiar for absence of financial resources for transformation of innovational potential into specific projects, but, due to high level of competitiveness of territory, it is possible to attract financial resources from other regions.

Area 4. It has correlation which is lower than average one – as to value of financial & investment and as to the level of innovational potential development. Such regions are developing, and their development is impossible without financing from federal budget – at that, this financing should be aimed at development of innovational potential.

Area 5. Negative value of financial & investment potential shows the absence of financial resources necessary for realization of existing innovational potential. Such territories consume more than produce, but, in spite of this circumstance and due to

high competitiveness, territories (due to development of innovational potential which is higher than average) can attract financial resources from outside under the market conditions.

Area 6. Such correlation of potentials is peculiar for depressive regions. They are peculiar for negative value of financial & investment potential and level of innovational potential development which is lower than the average. Development of these territories is similar to regions from area 4.

Area 7. Level of development of innovational potential is higher than the average, and financial & investment potential has negative value – at that, this value is lower than the average negative for the studied regions. Such territory does not possess financial resources but it can attract them under the market conditions from other regions.

Area 8. It is the most unfavorable one. These regions require radical transformations; probably, development of innovational activity is not expedient due to high resource intensity from the state.

Depending on the area of region's location, tolls of financial stimulation of innovational activities differ. Explanatory sign near the group of tool (e.g., A!) shows prioritization of the use.

## **Conclusion**

Thus, on the basis of the conducted analysis of financial & investment potentials of the regions of the SFD, it is possible to conclude the following:

- regions of the SFD are strongly differentiated as to the level of innovational potential (values are very scattered, there are regions-leaders and regions-outsiders);
- as to the level of financial & investment potential, a;; regions have negative values of volume of net savings (minimal negative value is observed in Volgograd Oblast).

This research offers methodology for selecting tools for financial stimulation of innovative activities on the basis of evaluation of financial & investment and innovational potentials of region. This methodology is based on building the matrix of correlation of potentials and further zoning of territories.

**Acknowledgement:** The research was conducted with financial support of the Russian Humanitarian Scientific Fund of the project for scientific research (“Formation of financial & innovational strategy of development of region as a tool of increase of innovative activities of organizations (by the example of Volgograd Oblast)”, project No. 14-12-34008

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