Agglomerative effects in economic development (on the example of regions of Russia)

E.F. Nazmeev, E.V. Maksutina, A.N. Makarov, E.S. Alpatova, A.Z. Galimov

Kazan (Volga region) Federal University, Kremlyovskaya Street 18, 420008, Kazan, Republic of Tatarstan, Russian Federation

Abstract. The article deals with agglomerative effects which can be used as the instrument of increase of economic activity and efficiency of development of certain territories. The mechanism of positive impact of agglomerative effects on territory development is shown. The sphere of high technologies as fundamental for territory development in modern conditions is considered. Major factors for formation of the hi-tech sphere in regions of Russia are revealed. Experience of some subjects of Russia on formation of the market of intellectual property and formation of city agglomerations, as key for ensuring economic development of regions of Russia is given. Examples of state (municipal) – private partnerships in economic development of region are reviewed, use of adaptive approach for its realization is offered.

[Nazmeev E.F., Maksutina E.V., Makarov A.N., Alpatova E.S., Galimov A.Z. **Agglomerative effects in economic development (on the example of regions of Russia).** *Life Sci J* 2014;11(6s):380-383] (ISSN:1097-8135). http://www.lifesciencesite.com. 78

Keywords: Externalities. Agglomerative effects. Agglomeration. Intellectual property. Innovations. Adaptive approach. The agent-oriented modeling. Conjuncture. State (municipal) - private partnership.

Introduction

Experience of the developed countries shows the importance of research of an externality (agglomerative effects) in studying reasons of economic development. Different types of externality are described in foreign economic literature, but are poorly presented in domestic. Only now works of domestic economists appear in which researches of spatial distribution of market forces, the reasons of their localization in certain territories and conditions of manifestation of agglomerative effects are presented. In economic-mathematical models value of these externalities isn't presented fully wherefore the use of the agent-oriented modeling is offered. For domestic economy and domestic economic school the market of intellectual property – the main link between science and production is absolutely new, and its role in manifestation of agglomerative effects isn't investigated at all. However agglomerative effects, turnover of intellectual property are the most important conditions of formation of conjuncture of economies of developed countries. Therefore search of opportunities of disclosure of agglomerative effects, effective functioning of the market of intellectual property, along with other markets in the sphere of production and services, is a crucial task for the solution of questions of economic development of regions of Russia.

The technological branch of industrial development forms the main conditions of successful economic development through the markets of hi-tech production presented by branches of the knowledge-intensive and high-tech sector (KIHTS). In this process it is possible to allocate three important components:

1. In conditions of new international division of labor, placement of many sectors of commercial activity and professional business services becomes more and more remote from production of goods as that, which specify a number of authors [1, 2, 3].

2. Placement of productions and services of the knowledge-intensive branches in the large cities and agglomerations. Modern agglomerations stretch for tens of kilometers and have the enormous social and economic potential which can be shown through externalities (agglomerative effects).

3. Increase in a share of intellectual property. In the conditions of globalization in the world market, along with goods, works and services, "the fourth basket" is made by the rights – intellectual property. Its sale in world trade within the World Trade Organization makes to 10% of gross domestic product of countries affiliated with the WTO [4].

The wide turn of results of scientific researches embodied in rights for objects of intellectual property changed idea of innovative process. This process causing increase of labor productivity and output capital ratio is considered as linearly - consecutive repetition of the following stages: basic and applied researches – development – design – production – sale. Management of research and development evolved from management of scientists and managers in 1925 - 1950 to management of means of strategic planning since 1975, and to management of a complex release consumption (management of life cycle) presently [5]. Consequently, in modern economic practice of

the developed countries innovative process represents a set of various operations which are carried out in parallel, instead of linearly as it was to the third quarter of the last century. Certainly, the market of intellectual property and information technologies acts as the main link of these transaction.

Participants of these numerous operations form a cluster of the relevant branch. By means of interregional and international trade, clusters are fixed in a certain geographical point – the central place. Agglomerations act as such central places. Agglomerations create favorable conditions for new branches in production sphere, rendering services, performance of work.

There exist indisputable advantages of agglomerative development which are connected with positive manifestation of the following externalities:

– MAR - externalities (Marshal-Arrow-Romer), distribution of new ideas in cities, existence of a wide range of professional intermediaries and qualified personnel;

– Jacobs-externalities (John Jacobs), arise thanks to variety of opportunities which a firm can use in a big city. There is no branch binding, rather the cumulative urbanization effect is shown;

– Porter - externalities. M. Porter in his researches, focuses attention on competition, speaking about importance of internal competition occurring inside a cluster.

As the main reasons for concentration of labor and productions in cities, in compliance with A.Selivan's approach, it is possible to allocate:

1. Comparative advantage which appears as a result of distinctions in labor productivity level. These distinctions have to be rather great to compensate transport expenses.

2. Scale effect on transport.

3. Internal scale effect of production.

4. Effect of concentration

4.1. Effect of localization

4.1.1. Scale effect of production of intermediate factors of production

4.1.2. Formation of a uniform labor market

4.1.3. Modulation of knowledge

4.2. Effect of urbanization.

It appears as a result of growth of city's economy scale, and not only certain branch. It bears benefits to all firms of a city, not just to firms of one branch [6].

The specified externalities and effects are represented in the form of agglomerative effects which are considered as positively influencing economy of territory. It allows opening new opportunities for economic development of region. Schematically this process can be presented as follows (fig. 1).

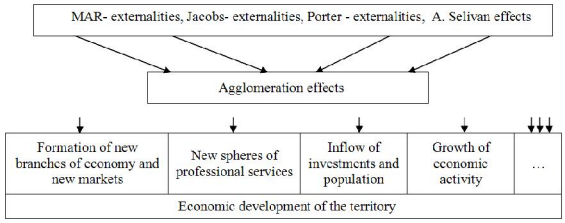

Fig.1. The scheme of impact of positive influence of agglomerative effects on economic development of the region

Set of these effects and externalities which are based upon favorable for business institutional conditions (the low loan interest, favorable legislative base, protection of the property rights, etc.) of the developed countries, allow to be implemented effectively not only to state programs on development of businesses (for example, in the form of science and technology parks, free economic zones, etc.), but also to the programs formed independently, through spatial manifestation of market forces: Marshall industrial regions; Italian industrial districts; regional and local clusters, etc.

Thus, in reference to geographical aspect, it is possible to identify two new tendencies: innovative processes which become more and more transnational – on the one hand, and emergence of regional or local innovative networks – on the other hand [7].

In Russia market forces are localized only in the branch markets, they didn't gain independent spatial distribution, except separate cases. For example, placement of numerous small businessmen round the largest in Russia enterprise for production of heavy-load cars KAMAZ in the city of Naberezhnye Chelny. But, unfortunately, they are stand-alone, not numerous examples, presented by small enterprises. The innovative infrastructure, as well as innovative business is initiated by the regional authorities within state-private partnership. For example, creation of Kamsky industrial park, IT park, construction of the new municipal production site.

Projects of state-private partnership can have different scales, for example Skolkovo or municipal production site. These projects have to be focused not only on quantitative indices (output, number occupied, profitability, etc.), but also to consider different levels of effects (level of enterprise, city, region, branch, state). Therefore it is necessary to use adaptive approach as it includes many aspects of development and unites them in uniform system.

Adaptive approach assumes observance of a number of general conceptual principles [8]: principle of feedback, principle of multi-levelness, principle of necessary variety, principle of openness, principle of dual management.

$$O = \sum_{I=1}^{n} B_I x N_I x \Delta_I \quad (1)$$

O – estimated coefficient of an indicator, B_I – basic value of an indicator, N_I – standard value of an indicator, [$delta_I$] – indicator change, as a difference between basic and actual value (strengthening or weakening influence).

The state and municipal private partnership widely extends in Russia. But at the same time, this mechanism is a fertile field for "kickbacks" and corruption. That is risks of such partnership are very great. When planning projects of the state and municipal private partnership it is necessary to provide possibility of their effective implementation with accounting of risks and opportunities. As the important tool it is expedient to use adaptive system in economic-mathematical modeling. It in turn allows carrying out agent-oriented modeling which considers a set of independent decisions made by independent agents [9, 10]. However among parameters of communications, it is necessary to mark out strengthening values – externalities (agglomerative effects).

At the region level, possibility of manifestation of agglomerative effects is probable in being formed agglomerations, in the Republic of Tatarstan they are: The Kazan, Naberezhnye Chelny and Southeast agglomerations (on placement they are presented in the form of an arch (an industrial arch of Tatarstan)). In these central points more than 90% of scientific and technical and financial capacity of Tatarstan is localized. These three agglomerations can offer a various range of intermediate factors of production. Here can be shown the market strength of economic agents, capable to create their own business environment, instead of initiated by the state [11, 12].

Potential of these agglomerations isn't shown yet in connection with weak agglomerative communications. For manifestation of network effects and strengthening of influence of positive externalities, in these agglomerations there has to be uniform labor market, common information space and infrastructure framework, uniform town-planning and management of municipality. Development of innovative environment increasing efficiency of economic relations of a city requires full functioning of the market of intellectual property. In this market there can be presented interests of the enterprises which need innovations, scientific centers and individuals who can create innovations, marketing specialists, lawyers, patent agents and other structures interested in creation and movement in an economic turnover of intellectual property rights here can actively work.

Conclusion

Thus, effective implementation of innovative development of territory requires existence of three basic conditions providing innovative development: material base of branches of NVTS, developed market of intellectual property, compact settlement of population in the form of agglomeration.

Despite rather deep analysis of agglomerative opportunities in foreign literature, in Russian economic science they are yet enough widely studied. The existing business community isn't included in process of formation and manifestation of agglomerative effects actively enough. It occurs against absence of understanding of importance of identification of these effects and their replication on all territory of Russia from local authorities. Perhaps, the Kaluga, Belgorod, Vladimir, Novosibirsk, Tomsk regions are the most promoted here. The Republic of Tatarstan, the Republic of Bashkortostan and some other regions only declare desires in the form of programs or plans for formation of appropriate programs. However actually necessary work is carried out at the level of ministerial offices or at the level of discussion in scientific community, which is in separation from real business practice. Thus, in specified republics there is considerable scientific and technical potential, human and energy resource which is capable will be shown, but, probably, under other institutional conditions. For example like in the Kaluga region.

Possibilities of innovative development of regions of Russia can be implemented through the basic regional centers – agglomerations. Russia only starts forming agglomerations. This process isn't built in a complete state policy despite some meetings at the level of the Federation Council and the State Duma of the Russian Federation. At the level of regions decisions are made only in some, for example, in the Republic of Chuvashia, Moscow and the Moscow region, the Samara region, etc.

In business areas artificially created by the state, communication are localized, closed on their own interests. Therefore agglomerative effects aren't shown. The purposeful policy of the local, regional authorities, business community and public organizations on disclosure of this potential isn't carried out. Among the reasons it is necessary to point to the two main: first is lack of wide-ranging

scientific and practical studies on problems of formation of agglomerations at the level of regions, disinterest of the regional authorities and leaders of business community in new opportunities, desire to keep everything as it is.

The second is uncensorious attitude, denials or incomprehension of authorities and business community of a role of intermediary (auxiliary) services (consulting, marketing, outsourcing). It constrains creation of conditions for emergence of new businesses which are necessary for formation of clusters and manifestation of agglomerative effects.

Selection of projects on state and municipal private partnership is carried out on the basis of regulations which don't correspond to the principles of adaptive management. Agent-oriented modeling isn't used, planning is carried out "from reached", without potential opportunities and risks. There is no plan for formation of agglomerations, formation of market of intellectual property has just started, thus it is initiated by the regional authorities at weak interest of local business community. In this regard innovative development of the cities of the Republic of Tatarstan will remain in condition of potential for a long time, and economic development will lean on traditional branches: petrochemistry, mechanical engineering, construction.

Corresponding Author:
Dr.Nazmeev E.F.
Kazan (Volga region) Federal University
Kremlyovskaya Street 18, 420008, Kazan, Republic of Tatarstan, Russian Federation

References

1. Allen, J., 1997. Economies of power and space. Geographies of economie. London: Arnold, pp: 59-70.
2. Miller, W.L. and L. Morris, 1999. Fourth Generation R&D: Managing Knowledge, Technology, and Innovation. John Wiley and Sons, Ltd, pp: 40.
3. Carlsson, B. and R. Stankiewicz, 1991. On the Nature, Function and Composition of Technological Systems. Journal of Evolutionary Economics 1: 93-118.
4. Bagautdinova, N.G., A.Z. Novenkova and A.V. Sarkin, 2013. Quality management system formulation and implementation as a factor of enhancement of the university role in the local development. World Applied Sciences Journal, 27(13): 38-42.
5. Novenkova, A.Z., I.R. Gafurov and N.V. Kalenskaya, 2013. Marketing of Educational Services: Research on Service Providers Satisfaction. Procedia Economics and Finance, 5: 368-376.
6. Isaeva, T.N., L.N. Safiullin, N.G. Bagautdinova and R.N. Shaidullin, 2013. Aspects of a multi-level study of competitive performance of objects and subjects of economic management. World Applied Sciences Journal, 27(13): 116-119.
7. Gainova, R.A., R.N. Shaidullin, L.N. Safiullin and E.M. Maratkanova, 2013. Infrastructural Component in Maintenance of Competitiveness of Region. World Applied Sciences Journal, 27(13): 97-101.
8. Dumont, G. and M. Huzmezan, 2002. Concepts, methods and techniques in adaptive control. American Control Conference (ACC) (issue 2), Anchorage, AK, USA, pp: 1137–1150.
9. Safiullin, M.R., I.G. Samigullin and L.N. Safiullin, 2013. Model of Management of Competitiveness of a Machine-building Complex. World Applied Sciences Journal, 27(13): 212-216.
10. Agent-Based Simulation Comes of Age. Software opens up many new areas of application. By Douglas A. Samuelson and Charles M. Macal. Date Views 01.02.2014 www.agsm.edu.au/bobm/teaching/SimSS/orms-agent_files/agent.html.
11. Askhatova, L.I., A.M. Fatkhiev, L.N. Safiullin and A.M. Safiullina, 2013. Competitive Strategies Formation in High Technology Enterprise. World Applied Sciences Journal, 27(13): 20-23.
12. Pushnoi, G.S. and G.L. Bonser, 2008. Method of Systems Potential as “Top-Bottom” Technique of the Complex Adaptive Systems Modelling. In Ang Yang & Yin Shan (eds.) Intelligent Complex Adaptive Systems. Hershey-London: IGI-Publishing, pp: 26-73.

4/20/2014