

Territorial development of the Republic of Karelia in the context of the theory of circular cumulative causation

Nikolai Vladimirovich Levkin
Petrozavodsk State University
Institute of Economics and Law
Petrozavodsk, Russia
levkip@mail.ru

Sergey Sergeevich Vereshko
Petrozavodsk State University
Institute of Economics and Law
Petrozavodsk, Russia
vereshko.s@mail.ru

Abstract — It is impossible to imagine the development of modern spatial economy without taking into account the effect of circular cumulative causation, when individual territories have an impact on other territories and this relationship is nonlinear. The Republic of Karelia is a region composed of such heterogeneous territories. The polarization of the economic space together with the effect of circular cumulative causation multiplies the contrasts between the leading territories and the territories-outsiders, which leads to negative social selection: the displacement vector of the most skilled workforce flowing from the territories-outsiders in the regional centers, then to the big cities and abroad. In order to ensure a breakthrough in the economic development of the territories, it is necessary to eliminate the negative impact of the effect of circular cumulative causation and make this impact, on the contrary, positive. To do this, it is necessary, first, to identify and describe the negative manifestations of this effect and, secondly, to propose mechanisms for its transformation into a positive direction, when the leading territories will not absorb the resources of other territories, but will contribute to their increment and more rational use at the local level. This provision determines the goal of the study. The main theoretical and applied methods of work are the reference to the methodology of spatial economics, presented by the works of domestic and foreign researchers (first of all, the fundamental works of G. Myrdal), as well as a comparative and statistical analysis of the development of the territories of Republic of Karelia on the basis of open official sources. As the main conclusions of the undertaken study can be identified: 1) synthesis of the accumulated theoretical material in the analysis of the effect of the circular cumulative causation; 2) statistical analysis of the territory development of the Republic of Karelia, taking into account the negative impact of the effect of the circular cumulative causation; 3) the development of measures for transformation of the negative effect of the circular cumulative causation in the positive on the example of the Republic of Karelia.

Keywords — regional economy, inequality, spatial economy, investment climate

I. INTRODUCTION

In today's globalizing world, the contradictions of social and economic development are acute manifested due to the uneven distribution of labor, organizational, financial resources and natural resources. In accordance with the National Security Strategy of the Russian Federation to ensure economic security of the country, the main effort should be aimed at addressing imbalances in the economy, territorial development, labor market development, transport, information, social and educational infrastructures, the emergence of a new geography of economic growth, new industries, centers of industry, science and education, activation of fundamental and applied scientific research, improving the quality of general, professional and higher education, improvement of national investment and financial institutions, stimulating the migration of production from other countries to Russia. The appeal to the key works of scientists-economists in the context of the theory of circular cumulative causation can contribute to the solution of these problems in many ways. This direction of spatial economy is connected, first of all, with the works of the Nobel laureate in the field of economics G. Myrdal. Contrary to the prevailing long time in the mainstream of economic thought ideas about the achievability of the equilibrium state in complex systems, the theory of circular cumulative causation brings to the fore the study of non-equilibrium processes, which are based on mutually reinforcing recursive loops of direct and inverse relationships. At the same time, the economic development of the regions does not occur simultaneously and linearly: some of them become leaders, and others can only follow them, or even demonstrate a lack of growth. On the example of developing countries G. Myrdal in his work "Rich Lands and Poor" [1], published in 1958, showed how, through specialization and economies of scale, the minor advantages of individual territories multiply many times, that leads to their accelerated development. But the same process may be accompanied by an even greater lagging behind the less developed territories. In fact, G. Myrdal in his study gives an economic interpretation of the "Matthew effect", when the rich

get richer and the poor – poorer. The territory is backward because it is initially backward – the essence of circular cumulative causation. The most prominent followers of the ideas of G. Myrdal became P. Potier, A. Hirschman, F. Perroux, J. Friedman, H. Lasuen, etc. These scientists consider various ways to overcome the irregularity in the distribution of wealth between territories and exit from the closed state of circular causality, namely: how to arrange for the leading territories to "pull" lagging territories and to contribute to the equalization of the levels of economic growth in the region. For example, P. Potier noted in his works that the territories located between the growth poles (rapidly developing regions) and providing transport links, receive an additional impetus to growth due to the increase in cargo flows, the spread of innovations, the development of infrastructure. Therefore, they turn into "axes" of development that define the spatial framework of economic growth of a large region or country. The most relevant examples of the implementation of the theory of P. Potier in practice were China's promotion of the idea of the "Great Silk Route" and for the Russian Federation – the implementation of the project "Northern Sea Route".

Recently, the concepts of a new economic geography, one of which is the model of "Core – periphery structures", has become widespread. It aims to explain the causal relationships of transactions (movements in the economic space) and to use the concept of the effect of positive returns to scale caused by mechanisms of imperfect competition and imbalance of extractive and inclusive institutions (both political and market).

The problems of studying the balanced territorial development in the Russian Federation from the standpoint of the Republic of Karelia are presented in the works of Morozova T. V., Druzhinina P. V., Tolstoguzova O. V. and others [2]. The economic and spatial development of border regions as geo-economical facilities is explained by the researchers in the context of a polycentric model of core-periphery structures. In addition, the classification of systemic factors and risks that determine the nature of the influence of the cross-border situation and the direction of the development processes of the Republic, including cross-border cooperation with foreign countries is implemented [2].

However, within the framework of these studies there is no comprehensive analysis of the influence of the factor of circular cumulative causation on the current and further development of the Republic of Karelia. In this regard, the goal of the study is to identify and to describe this factor in the context of the approach of G. Myrdal and his followers. To achieve this goal, the following tasks are solved:

- on the basis of statistical material to show the influence of circular cumulative causation on the economic processes taking place in the Republic of Karelia;

- to identify ways to overcome the impact of negative consequences of circular cumulative causation on the regional economy.

II. MATERIALS AND METHODS (MODEL)

The economic space of the Russian Federation is formed from regions that differ significantly in many respects. Various natural, climatic, historical and cultural, production factors lead to the fact that the level of social and economic development differs from region to region. There is a situation that can be analyzed in the coordinate plane "the leading territory" and "territory-outsider", when some regions "pull" the resources of the country ("leading territories") by reducing the economic potential of other subjects of the Russian Federation ("territories-outsiders"). For example, a similar center of attraction of economic resources is Moscow. Within the subjects of the Russian Federation there is exactly the same situation. This process is heterogeneous and non-linear, and for this reason we do not forecast it well, which, in turn, makes it difficult to develop appropriate economic policy, both at the level of the Russian Federation as a whole and at the level of individual subjects and territories. Under the effect of circular cumulative causation we understand the nonlinear process of interaction between territories, when some of them become centers of growth, and others fall into a nonlinear dependence on this process. Two possible manifestations of this effect are positive (strong territories "snowball" others, including making them new points of growth) and negative when the "Matthew effect" is realized – "the rich get richer and the poor poorer". The impulse for overcoming the negative and strengthening the positive effects can be generated both by the internal state of the region and its constituent territories, and by external impulses from the authorities.

III. RESULTS AND DISCUSSION

A. *Results of the development of the theory of circular cumulative causation for the modern spatial economy*

Generalizing the ideas of the followers of the theory of circular cumulative causation of G. Myrdal, we can draw the following conclusions [3, 4, 5, 6]:

Due to external and internal factors (historical, demographic, natural, socio-cultural, etc.) we can observe uneven economic development of territories within one region or country. Some territories become leaders, others – outsiders. In many ways, this happens spontaneously, but thanks to social engineering, this process can become and is manageable [7].

There are three possible scenarios: first, the leaders are rapidly developing, including due to the increasing economic downturn in the lagging territories ("Matthew effect"). The explosive economic growth of the leading territories leads to increased imbalances in regional development as a whole and cannot be interpreted as a positive result in the long term; secondly, the leaders "pull" behind them the lagging territories, there is a spatial alignment of economic development; thirdly, there is a complex dynamic model of development, when through the implementation of the synergistic effect the territories complement each other, changing alternately the status of the leader in space and time, and thereby contributing to continuous economic growth for

all territorial entities. It is obvious that the most favorable outcome for society is the last two scenarios. This brings up the question about the mechanisms of realization of these scenarios [8].

As mechanisms for the implementation of cumulative growth scenarios can be identified: (a) development and use of traditional economic factors contributing to development of labor productivity and production efficiency: the introduction of the latest achievements of scientific and technological progress, reducing the tax burden on business, the use of cheap labor, the removal of monopoly barriers with the intensification of market forces, more competent placement of productive forces, etc.; b) the formation and change of regional development institutions that are both system-wide (protection of property rights, an effective judicial system, anti-corruption policy, the rule of law, etc.), and affect the territorial (local) specificity (social and cultural institutions) [9].

The society represented by the state and local self-government can form points of growth using such tools as indicative planning, public-private partnership, creation of special economic zones [10].

Under modern conditions in forming of the balanced model of territorial development of economy there is a problem of coordination of economic, ecological and social interests of territorial communities [11]. The development balance of the economy becomes a necessary condition for the sustainable development of any territory.

B. The problems of balanced territorial development of the Republic of Karelia

The Republic of Karelia is a part of the North-Western Federal district, its administrative center is the city of Petrozavodsk. Karelia borders the Murmansk Region in the North, the Leningrad and Vologda Regions in the South, and the Arkhangelsk Region in the East. The Western border of the region is 723 km long and coincides with the border of the Russian Federation and Finland.

According to the data for 2017 (hereinafter referred to as Rosstat (Federal State Statistics Service) [12], the authors' calculations), the largest share in the structure of added value of Karelia's GRP are mining (17.6%), manufacturing (16.9%), transportation and storage (11.8%), wholesale and retail trade (9.8%).

The Republic of Karelia consists of 126 municipalities, including 16 municipal districts and 2 urban districts, 22 urban and 86 rural settlements.

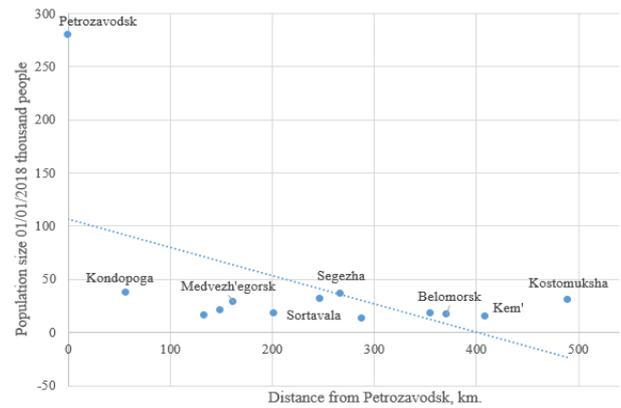


Fig. 1. The dependence of the population in municipalities on the distance to the city of Petrozavodsk

Figure 1 presents data on the population and the distance from the administrative centers of municipalities to Petrozavodsk. As you can see, there is an inverse dependence of the population on the distance, the exception – the most developed areas, such as Kostomuksha urban district – a major industrial center of the region.

During the period from 2014 to 2018, the population of the region decreased from 634.4 to 622.5 thousand people. During this time, the population of Petrozavodsk urban district increased by 2.6%, and the share of the region's population falling on this territory increased from 42.9% to 44.9%. At this period, there is an increase in the population in only two municipalities: Kostomuksha urban district (+1.0%) and Prionezhsky district (+2.8%), which is directly connected with Petrozavodsk urban district.

During the period from 2012 to 2018, the share of urban population increased from 78.4% to 80.4%, and the share of rural population decreased from 21.6 to 19.6%. At the beginning of 2018, 339 thousand people are of working age, of which 47.6% are residents of the Petrozavodsk urban district. Another 25.8% of the working-age population is accounted for by five municipalities: The Kostomuksha urban district, Kondopoga, Medvezhi'egorsk, Segezha and Sortavala districts. The share of Prionezhsky district, located near the city of Petrozavodsk, accounts for 3.6% of the population of working age.

The dynamics of social and demographic migration according to the results of 2017 shows that the number of arrivals exceeds the number of migrants who left in the Petrozavodsk urban district, Prionezhsky and Sortavala districts. At the same time, the Petrozavodsk urban district accounts for 39.8% of the number of arrivals and 33.8% of the number of migrants who left.

Over 2018, the volume of shipment of goods of own production, performance of works (services) on their own (except for small businesses) amounted to 281 142.2 million rubles, of which more than three-quarters accounted for four municipalities: Kostomuksha (28.0%) and Petrozavodsk (23.1%) urban districts, Kondopoga (14.8%) and Segezha (11.6%) municipal districts.

Retail trade turnover over 2018 was 65 144 226 thousand rubles, of which 58,2% are accounted for Petrozavodsk urban district. About 19.7% of the turnover of retail trade are accounted for the Kostomuksha urban district and Kondopoga, Segezha and Sortavala districts cumulatively.

At the beginning of 2018, the length of public roadways in the Republic of Karelia consists 10,854. 6 km, of which 59.7% regional, 27.7% local and 12.7% federal. At the same time, the road network with a hard surface is 79.4% of the total length. 98.9% of federal roads, 79.6% of regional roads and 70.1% of local roads have hard surface.

TABLE I. PRIVATE INVESTMENTS IN FIXED CAPITAL PER CAPITA IN MUNICIPALITIES OF THE REPUBLIC OF KARELIA ^a

Municipality	The amount of investments, RUB.	
	2018	2017
Kostomuksha	183,955	131,642
Segezha	71 973	260,784
Pryazha	49 634	18 455
Olonets	46 791	79 779
Pitkyaranta	30 435	28 694
Kem	20 665	1 592
Petrozavodsk	20 084	18 309
Prionezhsky	14 668	19 520
Kondopoga	13 175	25 595
Kalevala	10 953	7 488
Pudozh	10 233	n/a
Suoyarvi	6 737	11 991
Sortavala	4 814	8 762
Medvezhiegorsk	3 700	1 734
Loukhi	3 600	3 285
Belomorsk	1 217	1 261
Lakhdenpokhya	1 023	728
Muiezersky	99	n/a

^a. Calculated and compiled by the authors according to the data of Federal State Statistics Service.

^b. The average value of the indicator for municipalities in 2018 amounted to 27 431 rubles per capita, as can be seen from the Table 1, the size of investments reaches this volume in 5 of 18 municipalities. In the urban district of Petrozavodsk, the amount of investments amounted to 20 084 rubles per capita, which should be interpreted taking into account the fact that this municipality accounts for about 45.0% of the population of the Republic of Karelia.

^c. Some shifts in the size of investments in 2018 compared to 2017, as a rule, are associated with the introduction of fixed assets by the largest enterprises of the region. For example, in 2017, in AO "Segezha CBK" the basic enterprise of Segezha Group, which is part of Joint-Stock Financial Corporation "Sistema" a new paper machine, was put into operation, which led to a relative reduction in investments in 2018.

^d. Table 1 presents data on the amount of private investment in fixed capital per capita across the municipalities of the Republic of Karelia. The amount of investments is calculated as the difference between total volume of investments and budget investments. The final indicator is obtained as a ratio to the population size in the municipalities of the region; it does not take into account the investments of small businesses. In addition, the specificity of statistical accounting is such that a number of data on individual single developers are included in the final indicator of investments in fixed capital in the region without a breakdown for municipal districts and urban districts.

The elimination of imbalances in investment activity requires, among other things, work on the part of municipal authorities. The possibilities of the municipal level include an inventory of industrial and land plots on which it is possible to implement investment projects; updating passports of industrial sites and placing them on the Investment portal of the Republic of Karelia; introduction of the best practices of the national rating of the regional investment climate, municipal practices on the formation of the investment climate, collected and systematized by ANCO "Agency for Strategic Initiatives"; work within projects based on municipal-private partnership; ensuring the implementation of measures to implement target models to simplify business procedures and increase the investment attractiveness of the subjects of the Russian Federation.

IV. CONCLUSION

Thus, we have considered the problems of polarization of the economic space in relation to the Republic of Karelia, which clearly shows the vector of movement of population, labor and other resources from the periphery to the regional development centers. The reduction of the negative impact of the effect of circular cumulative causation will be facilitated by social and economic policy which is directly related to the leading territories of Karelia (Petrozavodsk and Kostomuksha urban districts, Prionezhsky district), as well as the cities of St. Petersburg and Murmansk, as the "axes" of the region's development. Regional development institutions aimed at qualitative changes in the investment climate in the region will contribute to this and are already contributing to it. In addition, the development of the region's territories should be accompanied by the involvement of the municipal level of power in the system of indicative planning.

References

- [1] Myrgal G. Rich lands and poor : the road to world prosperity. New York : Harper, 1958, 168 p.
- [2] Prigranichnaya periferiya Rossii : geoeconomika, kommunikatsii, strategiya [Border periphery of Russia: geo-economics, communications, strategy] : collective monograph / ed. O. V. Tolstoguzov. Petrozavodsk: KarRC RAS, 2018, 241 p.
- [3] Fujita M., Mori T. Structural stability and evolution of urban systems // *Regional Science and Urban Economics*, 1996, vol. 27, pp. 4-5.
- [4] Krugman P. Increasing returns and economic geography // *Journal of Political Economy*, 1991., vol. 99, pp. 483-499.
- [5] Krugman P. R. *Geography and Trade*. Cambridge, Massachusetts, Massachusetts Institute of Technology Press, 1991, 156 p.
- [6] Richardson H. W. *Regional Economics. Location theory, urban structure and regional change*, World University, 1969, pp. 123-145.
- [7] Acs Z. J., Varga A. *Geography, endogenous growth, and innovation // International Regional Science Review*, 2002, vol. 25, № 1. pp. 132-148.
- [8] Gadzhiev Yu.A. Zarubezhnye teorii regional'nogo ekonomicheskogo rosta i razvitiya [Foreign theories of regional economic growth and development]. *Ekonomika regiona [Economy of the region]*, 2009, №2, pp. 45-62.
- [9] Levkin N.V., Tereshchenko D.S. *Institutsional'nye aspekty formirovaniya blagopriyatnogo investitsionnogo klimata v stranakh s ekonomikoi tranzitivnogo tipa [Institutional aspects of creating a favorable investment climate in countries with transitive economies]*, Petrozavodsk: PetrSU Publ., 2014, 122 p.

- [10] Makhovikova G.A., Efimova N.F. Gosudarstvenno-chastnoe partnerstvo: zarubezhnyi opyt i rossiiskie realii [Public-private partnership: foreign experience and Russian realities], St. Petersburg: Saint-Petersburg State University of Economics Publ., 2013, 251 p.
- [11] Verdú-Vázquez A., Fernández-Pablos E., Lozano-Diez R., López-Zaldívar O. Development of a methodology for the characterization of urban and periurban green spaces in the context of supra-municipal sustainability strategies, *Land Use Policy*, 2017, vol. 69, pp. 75-84.
- [12] Territorial'nyi organ Federal'noi sluzhby gosudarstvennoi statistiki po Respublike Kareliya : Federal'naya sluzhba gosudarstvennoi statistiki [Territorial body of the Federal State Statistics Service for the Republic of Karelia: Federal State Statistics Service], Available at: <http://krl.gks.ru/>. Reference date: 20.03.2019.