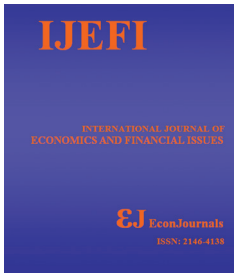

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Compression of Economic Space and its Impact on Peripheral Areas

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ABSTRACT

The authors use territorial approach for investigating economic space, which makes it possible to explore each of its levels - National, regional and local spaces. Considering a periphery as integral part of an economic space, with a variety of its levels, the authors provide rationalization for a poly-scale approach in the research of a periphery. The article explores the influence of the three forms of the space compression (implosion, polarization of space, and physical space compression) observable in Sverdlovsk oblast on its periphery. The authors single out the patterns of different types of space compression using statistical and mapping methods as well as a historical analysis. There has been identified the following evidence of space compression on peripheral areas: Depopulation, decrease in the number of enterprises and organizations, improvement of transport communication. The authors demonstrate the spatial differentiation of regional socioeconomic characteristics in Sverdlovsk oblast, by comparing the contribution of the administrative center and the periphery into the regional economy. There are offered the principal directions of improvement of the regional policy in relation to the peripheral areas.

Keywords: Economic Space, Peripheral Territories, Space Compression, Region, Regional Policy
JEL Classifications: O18, R1, R38

1. INTRODUCTION

Economic space can be considered in terms of a territorial approach, which makes it possible to distinguish global, national, regional and local economic spaces. Economic space of any level is composed of a center and a periphery. Therefore, one can speak about a periphery at the macro- (global periphery), meso- (macro-regions of the world, such as Europe), micro- (national periphery) levels. At the same time, at the country level, a periphery can be considered "on a small scale - as an outer periphery, i.e., regions and cities located far from the national capital; on a middle-size scale - as an intraregional periphery (districts and towns, municipalities away from the centers of the Russian Federation subjects); on a large scale - as a local periphery (rural areas, at a distance from cities)" (Nefedova, 2011) (Figure 1).

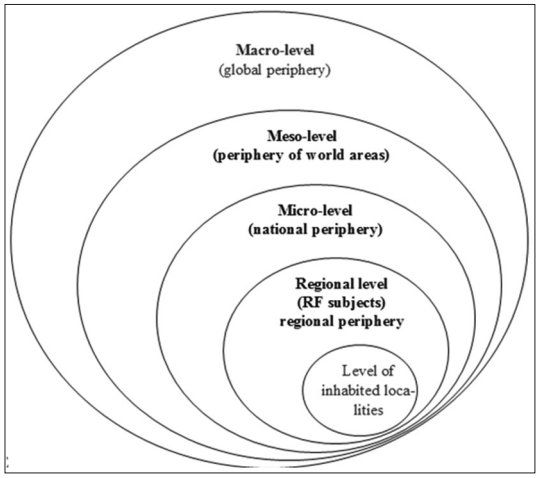
In terms of the theory of spatial development, peripheral territories at a sub-national level can be seen as "a zone of influence of the center; as a component of the global system; as an economic space within certain limits; as part of the economic space opposing the center; as an integral economic element of the more complex spatial formations" (Dvoryadkina and Kaibicheva, 2015). Thus, the development of peripheral territories, their evolution is closely linked to the spatial development of the subject of the Russian Federation, and a change of its economic space.

2. MATERIALS AND METHODS OF RESEARCH

The authors applied statistical methods (the methods of average and relative values, methods of analysis of time series, etc.), a mapping method, a historical analysis of the socio-economic phenomena. The research materials used were the official statistics, produced by the Federal State Statistics Service.

By peripheral areas the authors mean territories, distant from the administrative center of the region, with a limited economic

Figure 1: Poly-scale approach in the research of a periphery



potential and low level of economic development (in contrast to other parts of the region). The method to determine a composition of peripheral areas is based on transport accessibility, level of socio-economic development and own economic potential of municipalities. Peripheral areas of Sverdlovsk oblast meet the following criteria: (1) Being located at a distance of over 3-h ride from the administrative center of the region; (2) demonstrating the level of socioeconomic development or economic potential below 70% and 20% of the regional average respectively.

3. RESEARCH OUTCOMES

Speaking about spatial development of a region (in terms of space development), some basic approximation allows to identify three stages. First - A natural extension of the area, as a rule, associated with the economic development of the territory. Second - A certain stabilization of the economic space. Third - A compression of the previously domesticated social and economic space for a variety of reasons (economic, political, technogenic, natural, etc.). Some scholars identify more stages in spatial development (Figure 2).

The concept of "space compression" was introduced by D. Harvey. Most of the researchers (Treyvish et al.) now identify two forms of economic space compression - A communicative space compression, which implies "an increase in the permeability (accessibility) of some geographical area" (implosion of space) (Treyvish, 2010), and a reduction of the economic oecumene or physical compression of the "active" space. Some scholars (Ridevsky) single out a third form of economic space compression - space polarization (Table 1).

Let's consider in what way the current dynamic of space compression in Sverdlovsk oblast/region has affected its peripheral territories.

4. IMPLOSION OF SPACE

Implosion of space is reflected by the reduction of time and finance costs of covering distances or sending information by using modern means of communication, that can be clearly illustrated by the achievements in communications. In 1999, 100 families (the town of Krasnoturyinsk) had 73.5 landline phones, in Sverdlovsk oblast it made 47.3 phones, whereas in 2005 the figure was as high as 79.7 and 54.4, respectively.

With the advent of cellular communication (since 1996 a new phone provider "MOTIV" has been operating in the region), the coverage of the region's leading phone providers (namely, JSC "Rostelecom") has increased and reached the level of 85% of the population. As a result, communication with peripherals via phone has become much easier and more affordable.

As regards long distances, the construction of new highways and railways allowed to minimize the commuting time costs. From 1970 to 2014 the length of highways in the region increased by 20,890 km, that of railways by 175 km, with the focus on the construction of top quality roads, hard-surface roads. The share of the roads in question grew in 2014 to make 77.5% of the total highway mileage, the figure is by 47.2% higher than in 1970. There were constructed new highways linking peripheral territories with the center and other regional municipalities: "Sysert - The border of Sysert district," the territory of "Gary – Tabori," "51 km - The village of Maslovo," the arterial road "Serov-Sosva – Gary," a bridge crossing (the river of Tura) for the motorway "Turinsk-Tavda," the highway Ivdel - Khanty-Mansiysk and others. The year of 2000 saw the most intensive construction of the regional hard-surface roads (101.6 km), with 78.7 km of well-reconstructed motorways (Table 2).

The commuting time costs have been optimized by the development of the road infrastructure, higher car ownership, and an intensive use of high-technologies in the automobile manufacturing. While in 1970 according to Local Agency of the Federal State Statistics Service (2015) there were 8 cars per 1000 inhabitants in the region, in 2004 the number grew to as many as 148 cars, and in 2012 - to 243.

There was a marked growth of car owners in 2008 against 1980 in the regional capital of Ekaterinburg (+462,200 cars), Nizhny Tagil (+42,756) and Kamensk-Uralsky (+30,084). As regards the peripheral areas, the largest growth of car owners was registered in Talitsky (+8145) and Turinsk (+4342) districts.

In several outlying areas, though part of the Sverdlovsk oblast periphery, there are still several inhabited localities, where people have no regular connection even with the administrative center. According to the figure of 2014, they account for 1.08% of the periphery population or 0.05% of the Sverdlovsk oblast population (Table 3).

The shortcomings of the transportation network and transport infrastructure are partially leveled by the enhancement of mobile communication and the internet. Currently, within the framework of the federal program aimed to eliminate digital disparities, Sverdlovsk oblast is carrying out a project designed to set up points of access to the internet. "The length of the new network in the region is to make nearly 1600 km. The amount of the federal investment into the project in question is nearly

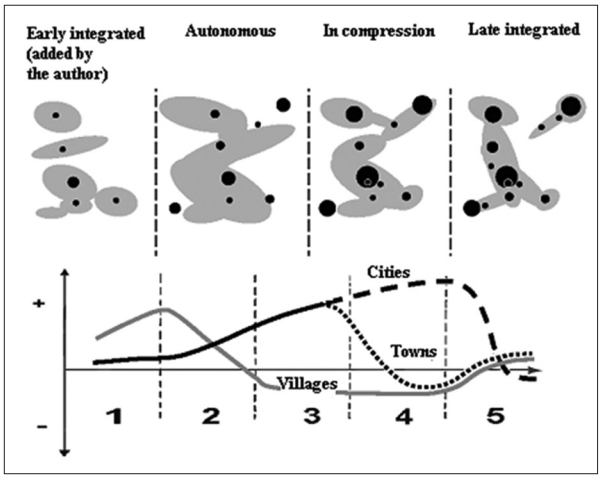
Table 1: Major scientific conceptions and indices of the three patterns of space compression adopted by geographers (Ridevsky, 2010. p. 50)

Patterns of space compression	Major scientific conceptions and leading scientists	Key indices of space compression
Implosion of space	Conception of the compressing world (Humboldt et al.)	Time to cross space by different transportation means (past and present), travel and communication expenses (past and present)
Polarization of economic space	Concept of core (center) and periphery (Friedmann), world city theory (Hall and Taylor) Conception of regional development: Central-place theory (Christaller and Lösch), growth poles theory (Perroux and Boudeville), diffusion of innovation theory (Hagerstrand), development axes (Potier and Lappo), region clusters theory (Porter and Enright), of region-polization (Alayev) and others	Proportion of countries, regions, cities, centers and peripheral territories in manufacturing/service, population size, number of events per unit area, indices of population quality and living conditions in central and peripheral areas
Physical compression	Conception of polarized biosphere (Rodoman), of compression of intensively used space (Pivovarov), of concentration of Russian ethnos (Skopin)	Boundaries and proportion of economic oecumene to a territory extent, number of events per unit area

Table 2: Length of rail- and motor-ways in Sverdlovsk Oblast (km)

Year	Railways	Motorways	Includes hard-surface roads
1970	3349	9485	2836
1980	3514	8707	6079
1990	3543	9043	8068
2000	3569	11,088	10,457
2010	3547	13,313	11,983
2013	3524	29,363	22,649
2014	3524	30,375	23,528

Figure 2: Population patterns in evolution by Gibbs and Zaionchkovski (Treyvish, 2010)



RR 500 mln" (Small Inhabited…, 2015). Implementation of the project will focus largely on one of the municipalities - Talitsky District - which belongs to the periphery of Sverdlovsk oblast.

In other words, the development of telecommunication services locally has significantly "neared" the peripheral territories to Ekaterinburg, to other cities of the region, country, and the world. The level of car ownership has raised physical mobility of people and reduced the time costs of travel. However, some inhabited localities still lack proper transport accessibility, which is caused by the inadequate condition of the motorways, (in some cases, their lack of) or cancellation of some intercity bus routes. Thus, certain inhabited localities have not only "got closer" to the center, but, just the opposite, moved away from it, which has increased their peripherality.

5. POLARIZATION OF ECONOMIC SPACE

The best way to evaluate the scale of polarization of the economic space in Sverdlovsk oblast is by comparing the share of the center (the city of Ekaterinburg) and that of the peripheral areas in the socio-economic indices of the region.

The identified periphery of Sverdlovsk oblast unites 10 municipalities (Pelym district, Volchansk district, Verkhotursky district, Garinsky district, Novolyalinsky district, Sosva district, Makhnevo municipal unit, Tavda district, Talitsky district, Turinsk district) and accounts for 5% of the region population. Yet its contribution into the socio-economic indices of the region is rather limited (Table 4). Moreover, within the period under consideration (2008-2014) the share of the periphery in the population size as well as its retail trade turnover tend to decline, with the increased share of the regional center.

The compared contribution of the center and the periphery into the regional economy proves a highly polarized development of the region, where a single municipality unit is able to ensure up to a half of the contribution into the vital regional indicators.

6. PHYSICAL COMPRESSION

"The third model of space compression implies an immediate physical compression, the process associated with depopulation of a territory and lowering intensity of its economic use" (Ridevsky, 2010). Physical compression can be evaluated based on the following indicators: Density of population, intensity of business activity (number of enterprises and organizations, turnover of organizations per unit area).

Table 3: Proportion of population living in localities with no regular bus and/or railway connection with the administrative center to the total urban district population (%), (Sverdlovsk oblast municipals database)

District	2008	2009	2010	2011	2012	2013	2014
Verkhotursky district	1,2	12	1,2	0,9	0,9	0,9	0,9
Garinsky district	23,6	53,6	38	24	20	19,25	18,56
Novolyalinsky district	0,8	1,47	1,35	1,35	1,35	1,35	1
Sosva district	8,8	5,2	9,2	8,4	0,6	1,8	1,5
Tavda district	0,5	0,24	0,24	0,24	0,25	0,25	0,25
Talitsky district	2,6	0,9	0,9	0,9	0,9	0,4	0,4
Turinsk district	1,8	1,2	1,2	1,2	0,8	0,13	0,13
Volchansk district	N/A	N/A	N/A	0	0	0	0
Pelym district	0,4	N/A	N/A	N/A	0	0	0
Makhnevo municipal unit	-	-	3,7	3,7	3,7	14,3	5,4
% of the periphery population	2,62	3,73	2,50	2,05	1,26	1,48	1,08
% of the oblast population	0,13	0,19	0,12	0,09	0,06	0,07	0,05

Table 4: Specific weight of peripheral territories in major socio-economic indices of the region, % of the total

Indicator	2008	2009	2010	2011	2012	2013	2014
Population size							
Periphery	5.0	5.0	4.7	4.6	4.5	4.4	4.4
Center (municipal unit "the city of Ekaterinburg")	31.4	31.7	32.2	32.8	33.1	33.5	33.8
Turnover of organizations							
Periphery	0.4	0.4	0.3	0.3	0.3	0.3	0.3
Center (Ekaterinburg)	26.5	31.2	28.0	27.9	26.6	28.7	26.3
Fixed capital investments							
Periphery	0.4	0.3	0.3	0.7	0.5	0.5	0.7
Center (Ekaterinburg)	35.9	28.4	28.2	40.3	40.1	32.6	40.4
Dwellings put in place							
Periphery	1.4	1.2	2.0	1.6	1.1	1.3	1.3
Center (Ekaterinburg)	56.1	51.3	58.0	57.6	57.5	51.1	43.0
Retail trade turnover							
Periphery	1.3	1.3	1.3	1.2	1.1	1.1	1.1
Center (Ekaterinburg)	68.1	68.2	69.8	70.8	70.8	71.0	70.8

The analysis of the Sverdlovsk oblast demographic indices (from 1959 to 2014) regarding its cities, districts, and municipalities brings to the conclusion that changes in the population size mainly resulted from the dynamics of socio-economic development of the territories, as well as their degree of proximity to the regional capital and other major towns in the region. Cities and districts (later urban districts) belonging to the zone of influence of Ekaterinburg demonstrated a steady population growth throughout the mentioned period. The dynamics of the population size and pattern in large industrial cities and towns was caused by the dynamics of their development. The so-called "fat" years for these territories were characterized by the population increase, to some extent, due to the inflow of migrants, whereas less favorable years saw the population decline and out-migration.

As for the peripheral territories, throughout the given period they demonstrated a downward tendency in the population size. These very territories suffered from the largest population decline (per cent) in both the Soviet and post-Soviet years. In terms of the population size, the proportion of the peripheral areas in the region in the period of 2008-2014 dropped from 5.0% to 4.4%. The population decline in the Soviet era can be partly attributed to the fact that the crucial mineral resources these areas were focused on, appeared used up (e.g. coal in Volchansk). Additionally, it was caused by the abolition of some penitentiary institutions, the decision of "removing non-promising villages" in the 1970-80s, the flight of young people from the peripheral territories to larger cities to get education and employment.

In the post-Soviet years, the population decline was associated primarily with the massive out-migration caused by unemployment (major industrial works - the largest local employers - were closed down). At present, the population decrease bears the consequences of the previous stages of development and the accumulated and aggravated socio-economic problems of the peripheral territories.

It should be mentioned, that most of the inhabited localities, as part of the urban districts concerned, are small villages. Garinsky, Ivdel, Sosva urban districts are at the top of the list in the number of small-size inhabited localities. According to the Government of Sverdlovsk Oblast (2007) in 2006, in 731 villages of Sverdlovsk oblast there live fewer than 100 inhabitants. "On the whole, the number of inhabited localities in Sverdlovsk oblast remains relatively unchanged" (Silin, 2015) (Figure 3).

As for the intensity of economic activity, expressed by the ratio of the number of registered enterprises and organizations to the extent of a municipal unit, the situation is as follows. Between 2008 and 2014 there was observed an increase in the density of businesses in the territory of 29 urban districts of the Sverdlovsk region. The top six of them are: The town of Kamensk-Uralsky, Sredneuralsky urban district, Reft, Aramil, Pyshma and Berezovsky urban districts. As concerns the peripherals of the region, the intensity

Figure 3: Changes in population size of Sverdlovsk oblast cities and urban districts as percentage of 1959

of economic activity declined in all the territories, but the urban district of Pelym and Volchansk.

At the moment, some remote peripheral territories, distant from the administrative center, with the limited economic potential, suffer from the consequences of the processes caused by the physical compression: The population decline due to natural losses and out-migration, the out-movement of enterprises and organizations from the territory, depression of their economic activity.

7. CONCLUSION

To sum up. In Sverdlovsk oblast there is an on-going process of the economic space compression, in all its diversity (Table 1).

Urban peripheral territories were the first to experience the consequences of the space compression. Space-time convergence promoted "nearing" of some regional territories towards each other. Owing to the development of means of communication and transportation, the peripheral territories have got "closer" to the administrative center of Sverdlovsk oblast and the neighboring regions, therefore, have received additional impetus to advancement. The processes of physical compression are responsible for depopulation of the peripheral territories and the out-movement of economic entities from their territory. Accumulating about 4.4% of the Sverdlovsk oblast population, the periphery, all totaled, does not provide an adequate contribution into the regional indices. The administrative central city of Ekaterinburg dominates in the economy of the region. According to the updated figures of January-September 2015, the specific weight of Ekaterinburg in the retail trade turnover amounted to 70.72%, in the turnover of organizations - 42.26%, in the level of fixed capital investments - 42.08%.

A great diversity of the space compression processes testify some severe underlying problems on the periphery, that is directly associated with the life quality of people living here. In fact, the living standard of the peripheral territories is far behind that of larger cities; part of the reason is an underdeveloped infrastructure (transport, public utility, production, social life, etc.), which makes these areas inconvenient for living and doing business.

This once again proves it very necessary to pursue a specific regional policy in relation to the peripheral areas. Special measures ought to be taken in order to compensate for the inconveniences by improving transport links with both the regional center and other areas, by raising the living standard of people. This might be possible through development of the home economic foundation in the peripheral territories, to benefit from the existing advantages (available natural resources, production capacities), and seek the new ones.

REFERENCES

Dvoryadkina, Y., Kaibicheva, Y. (2015), Peripheral urban area in the context of the theories of local government and space development. Journal of The Ural State University of Economics, 3, 81-88.

Local Agency of the Federal State Statistics Service in Sverdlovsk Oblast. (2015), Sverdlovsk Oblast Over 80 Years: 2015 (Data Book). Ekaterinburg: Federal State Statistics Service.

Local Agency of the Federal State Statistics Service in Sverdlovsk Oblast. (2015), Social-Economic Position of Urban Districts and Municipal Units in Sverdlovsk Oblast between 2010 and 2014: 2015 (Data Book). Ekaterinburg: Federal State Statistics Service.

Local Agency of the Federal State Statistics Service in Sverdlovsk Oblast. (2015), Social-Economic Position of Urban Districts and Municipal Units in Sverdlovsk Oblast from January to September 2015: 2015 (Data Book). Ekaterinburg: Federal State Statistics Service.

Local Agency of the Federal State Statistics Service in Sverdlovsk Oblast. (2014), Social-Economic Position of Urban Districts and Municipal Units in Sverdlovsk Oblast between 2009 and 2013: 2014 (Data Book). Ekaterinburg: Federal State Statistics Service.

Local Agency of the Federal State Statistics Service in Sverdlovsk Oblast. (2006), Time series in transportation 1978-2004: 2006 (Data Book). Ekaterinburg: Federal State Statistics Service.

Nefedova, T. (2011), The polarization of cities and rural areas and expansion of the Russian periphery. Regional Development and Regional Policy of Russia in Transition Period. Moscow: Publishing House of the MSTU Bauman. p280-299.

Ridevsky, G. (2010), Three models of space compression and regional polarization as a process of in-country space compression. Social-Economic Space Compression: New Facts in Regional Development Theory and in Practice of Its State Regulation, Institute of Geography (RAN) Russian Academy of Sciences. Moscow: Eslan. p49-59.

Silin, Y. (2015), Modern tendencies of local government development in the Sverdlovsk region. Bulletin of The South Ural State University, Economics and Management, 9(2), 32-42.

Small Inhabited Localities in Sverdlovsk Oblast to Have Wi-Fi Soon. (2016), Oblastnaya Gazeta. Available from: http://www.oblgazeta.ru/pressreleases/11365.

Sverdlovsk Oblast Government. (2007), Act №1176-PP Dated November 28, 2007. On comprehensive program in social-economic development of Sverdlovsk oblast rural areas between 2008 and 2015. Uralskaya Derevnya.

Treyvish, A. (2010), Space "compression": Interpretations and models. Social-Economic Space Compression: New Facts in Regional Development Theory and in Practice of Its State Regulation, Institute of Geography (RAN) Russian Academy of Sciences. Moscow: Eslan. p16-31.