RESEARCH ARTICLE

Migrationally attractive municipalities in the regions of the Central Federal District (excluding regional centers)

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Abstract

In the absence of economic and demographic growth in most small and medium-sized towns outside the largest and major urban agglomerations of the Central Federal District, it is important to identify migrationally attractive municipalities, which, through the use of their competitive advantages, could become promising for the regions' economic development in the near future. The purpose of this article is to identify migrationally attractive municipalities within the regions of the Central Federal District outside the regional centers. For this purpose, theoretical concepts of importance for explaining the migration attractiveness of territories have been studied, the dynamics of migration growth in the municipalities of the Central Federal District has been analyzed. The database of indicators for municipalities of the Central Federal District in Russia in 2011-2016 serves as the initial data for analysis (Kalabikhina et al. 2019). As a result, the migrationally attractive municipalities beyond the regional centers are allocated in 50% of the regions of the Central Federal District.

Introduction

The main patterns of development of the country's territory are prescribed in the Spatial Development Strategy of the Russian Federation until 2025 (hereinafter Strategy). According to the text of the Strategy, the general vector of spatial development of Russia in recent years was associated with the strengthening influence of centers of economic and demographic

growth, which include the largest and major urban agglomerations. In the latest version of the Strategy, as one of the problems, the authors highlight the lack of economic and demographic growth on the periphery, in small and medium-sized towns (population up to 100 thousand people), rural areas outside the largest and major urban agglomerations. This leads to an outflow of population, of 4% for small and medium-sized towns over the past 10 years. Another problem is low interregional and intraregional mobility of the population, which has a negative impact on intraregional labour markets.

According to the Strategy, in the near future it is planned to develop growth centers through the individual territories' competitive advantages realization and the development of specializations that could become perspective for these territories. According to the document, the centers of economic growth in the Central Federal District include regional centers, municipalities of Belgorod, Bryansk, Voronezh, Kursk, Lipetsk and Tambov Oblasts specializing in agriculture, as well as the city of Obninsk as a science town. But on the territory of the regions of the Central Federal District there are also other municipalities attracting the population (Patsiorkovsky et al. 2019). Using their advantages, they attract the population from the territory of a particular oblast and the neighboring one, which continues even during crises (Alekseev and Zubarevich 2000). These municipalities could become promising for regional economic development in the near future. Barinov (2013) singled out groups of regions where during the intercensal period of 2002-2010 there was a very favorable situation regarding the population size of cities: the municipalities of the Central Federal District regions bordering the Moscow Oblast; and the regions of Chernozem (except for the Tambov and Kursk Oblasts) and the Non-Chernozem (Kaluga, Bryansk, Lipetsk, Voronezh and Belgorod Oblasts).

The purpose of this article is to identify migrationally attractive municipalities within the regions of the Central Federal District outside the regional centers. For this purpose it is necessary to study the theoretical concepts required for the development of the methodology, and to develop a methodology of allocation of municipalities within the regions of the Russian Federation, alternative to regional centers regarding the economic development prospects of the region. Two regions of the Central Federal District — the city of Moscow and the Moscow Oblast — were excluded from the analysis, as Moscow and many cities of the Moscow Oblast, which are part of Moscow agglomeration, were included in the list of promising centers of economic growth. In addition, the change of Moscow and Moscow Oblast borders in 2011-2012, as well as the lack of data on many urban districts of Moscow Oblast (Patsiorkovsky et al. 2019) force excluding these regions from the study during the period under review (2011-2016). The database of demographic, economic and geospatial indicators for municipalities of the Central Federal District in Russia (excluding the city of Moscow and the Moscow Oblast) in 2011-2016 serves as the initial data for analysis (Kalabikhina et al. 2019).

In order to understand what processes occur in the study area, it is important to regard the ideas suggested in John Friedmann's "core — periphery" model, the diffusion of innovations theory by Torsten Hägerstrand and Herbert Giersch "volcano" model.

According to John Friedmann's model, economic growth is concentrated exclusively in cities as centers of growth. The author singles out four stages of formation of such growth centers: 1) emergence of local cores with its own zone of influence; 2) formation around the most prosperous and dynamic cores of a polarized area, which becomes the main core of the territory surrounded by vast periphery; 3) ripening of conditions for growth of regional cores in some peripheral areas, the emergence of new production areas, gradual transforma-

tion of the monocentric territorial structure into a polycentric one; 4) fusion of cores into a single polyareal structure with a powerful periphery. As a result of the intensification of the use of space in the counter "spread" of cores, large urban formations with high density of economic activity arise (Friedmann 1966).

In the diffusion of innovations theory Torsten Hägerstrand distinguishes four stages of the innovation wave. The first of them (the initial stage of diffusion processes) is characterized by a sharp contrast between the centers — sources of innovation diffusion and the periphery. In the second stage the process of diffusion of innovations begins in the direction from their source. New developing centres emerge in remote areas, while regional contrasts are being reduced. The third stage is characterized by the same expansion in all three locations (center- semiperiphery-periphery). In the fourth stage there is a general slow asymptotic rise of development to the maximum. As a result of diffusion of innovations, qualitative characteristics of the economy and population are improved first of all in semi-peripheral and peripheral territories. According to Torsten Hägerstrand, diffusion of innovations is a decisive factor in attracting migratory flows to the semi-periphery and periphery. It follows different scenarios, often spreading like a volcano eruption (Hagget 1968).

According to Herbert Giersch's "volcano" model, an agglomeration with a developed industry, a powerful scientific base and the highest per capita income expands its sphere of influence, receiving the flow of people from nearby oblasts and municipalities and at the same time the agglomeration "spills" everything it cannot "digest" (production, population) onto the periphery and beyond its territory. Simultaneously with the economic growth of the central city of the agglomeration (usually manifested in the growth of income of the population) the welfare of the surrounding areas — the semi-periphery and periphery — usually improves. (Gajiyev 2008).

Taking into account the models and theories mentioned above, it can be concluded that at a certain stage of development of the central city of the agglomeration, outside its borders one or more migrationally attractive territorial formations (a city, urban district) emerge. That is, we can assume that the more developed the regional center is, the more likely it is to find migrationally attractive municipalities in the region. We will include among such territorial entities the municipalities that can be quantified, as since 2007 on the Rosstat website in a special section a database of indicators of municipalities is published. Among all types of municipalities, we are interested in urban districts and cities within municipal districts.

The municipalities we allocate should not be in the zone of influence of the agglomerations of regional centers, as in this case they can intercept migrants seeking to enter the regional center. To determine the boundaries of agglomerations of regional centers, we use the methodology of the Institute of Geography of the Russian Academy of Sciences. According to this method, we can consider a 1.5-hour isochrone line as the boundary of the existing agglomeration of the regional center (Polyan 1988). Thus, for our research cities or urban districts, which are located at a 90 or more minute distance from the regional center, are of interest.

To characterize the migration attractiveness of a municipality, we suggest using the values of the migration growth index according to the moving average in 2011-2013 and 2014-2016.

From 2011 to 2016 migratory movements in the municipalities of the Central Federal District were often characterized by a negative indicator. We shall analyze the average indices of the migration growth rate for 2011-2013 and 2014-2016 (Figs 1, 2).

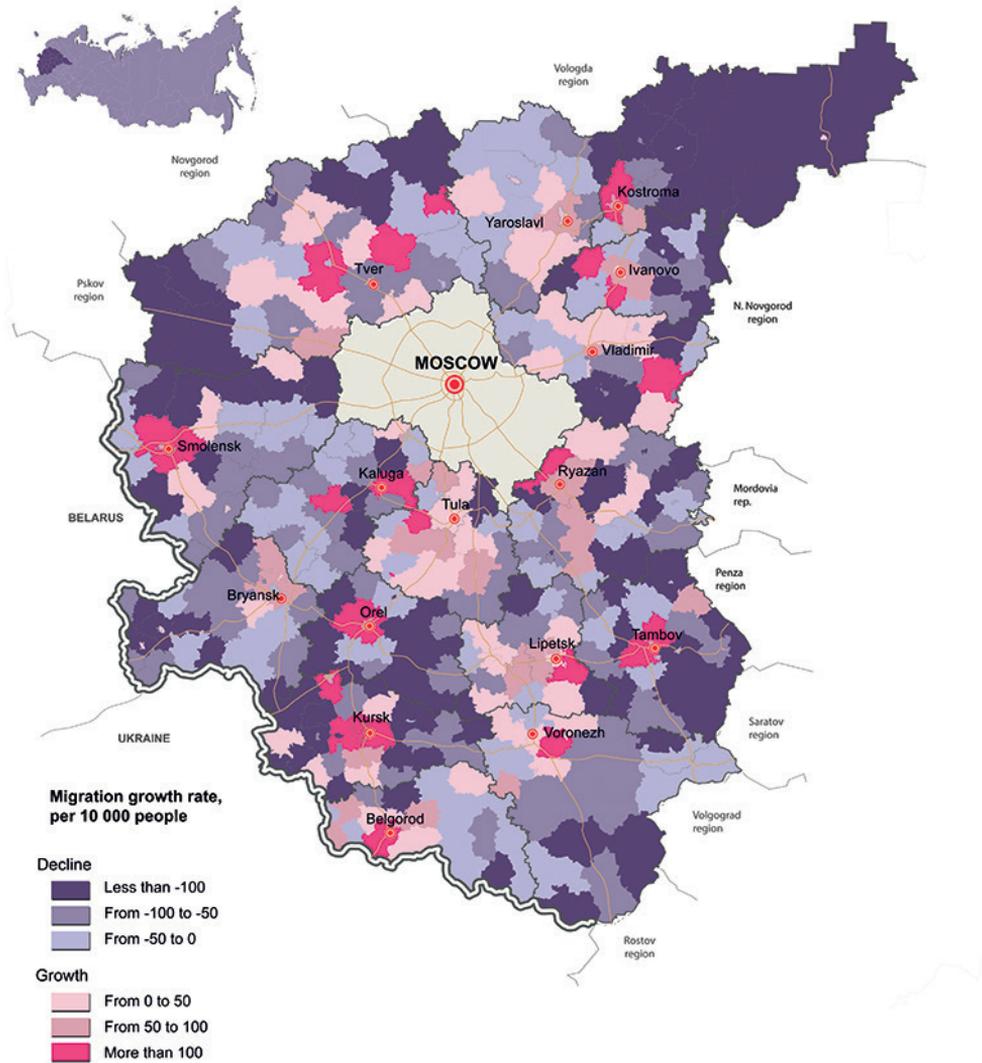## Migration growth rate in the Central Federal District (2011-2013)

Figure 1. Migration growth rate in municipalities in 2011-2013, per 10 thousand people. **Source:** Compiled by the author on the basis of the database of indicators for municipalities (Kalabikhina et al. 2019) with the help of the ArcGISprogram.

A comparison of indicators of average migration growth rate for 2011-2013 and 2014-2016 reflects the processes of population concentration mainly in regional centers and municipalities closest to them. In almost all regions, the share of municipalities with migration growth for the period 2011-2016 did not on average exceed one-half (Table 1).

Only in the Tula, Lipetsk, Belgorod, Yaroslavl Oblasts the share of administrative and territorial units with migration growth slightly exceeded 50%, in other regions it was 27% on average. This suggests that outside the regional centers in the regions of the Central Federal

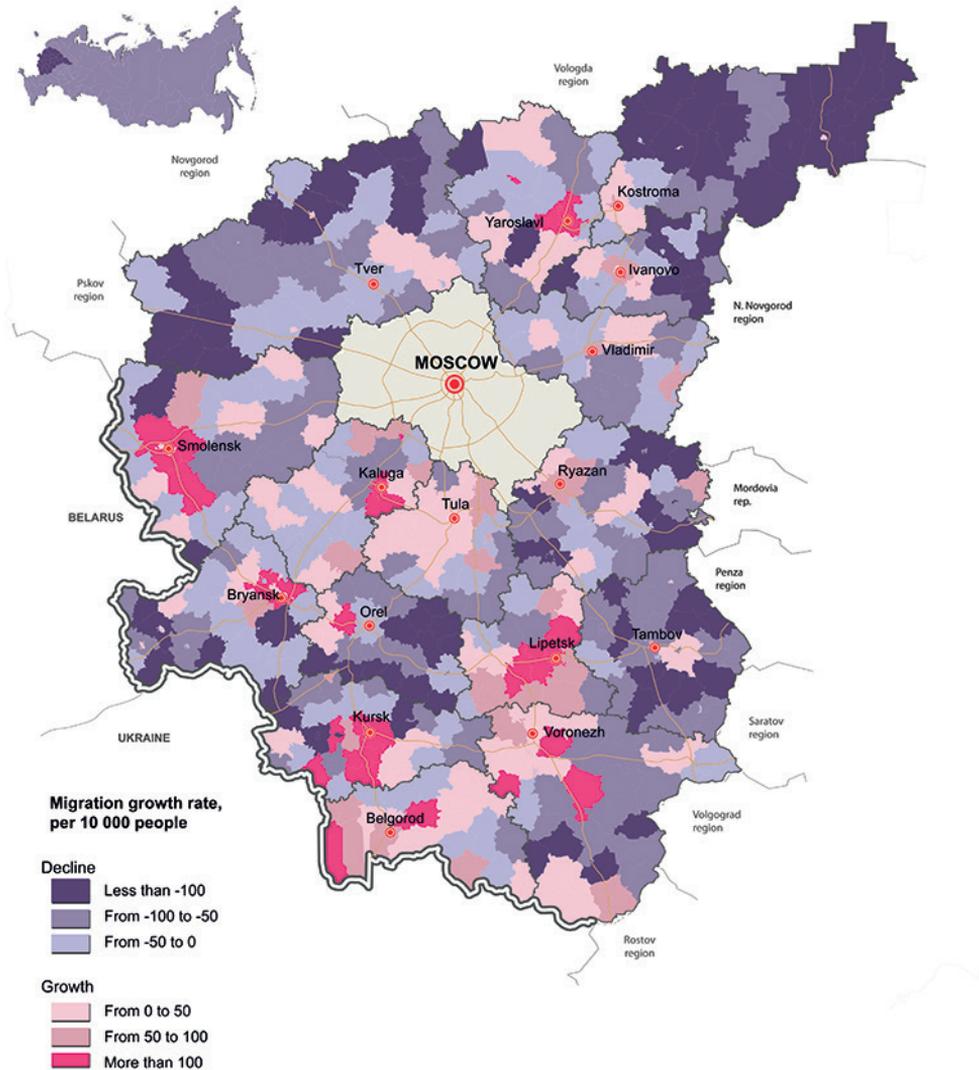## Migration growth rate in the Central Federal District (2014-2016)

Figure 2. Migration growth rate in municipalities in 2014-2016, per 10 thousand people. **Source:** Compiled by the author on the basis of the database of indicators for municipalities (Kalabikhina et al. 2019) with the help of the ArcGISprogram.

District, there are very few migrationally attractive municipalities. Table 2 provides a list of such municipalities (cities and urban districts only) that we have identified.

Migrationally attractive municipalities in the regions of the Central Federal District (excluding the city of Moscow and the Moscow Oblast) in 2011-2016 were: in the Belgorod Oblast — Starooskolsky Urban District, in the Bryansk Oblast — Klintsy urban District, in the Vladimir Oblast — Murom Urban District, in the Kaluga Oblast — Obninsk Urban District, in the Kursk Oblast — Zheleznogorsk Urban District, in the Ryazan Oblast — the city

Table 1. Share of administrative-territorial units with migration growth in 2011-2016

Oblast	Number of administrative units reviewed	Share of ATU (administrative territorial units) with migration growth, %					
		2011	2012	2013	2014	2015	2016
Kaluga Oblast	20	45	30	25	40	55	85
Lipetsk Oblast	18	33	39	46	62	54	77
Belgorod Oblast	22	32	41	46	59	68	64
Yaroslavl Oblast	17	65	47	53	35	47	53
Kursk Oblast	33	–	27	36	30	33	49
Voronezh Oblast	32	31	19	16	22	38	47
Tula Oblast	27	67	48	56	67	54	42
Smolensk Oblast	25	20	16	20	36	36	36
Vladimir Oblast	20	60	35	35	25	25	35
Bryansk Oblast	31	16	18	27	30	39	30
Ryazan Oblast	29	–	38	31	17	21	28
Orlov Oblast	27	19	11	15	11	22	22
Ivanovo Oblast	27	30	30	30	26	15	22
Tver Oblast	40	45	25	30	20	20	20
Kostroma Oblast	30	13	17	10	17	20	17
Tambov Oblast	30	–	23	20	13	20	3

Note: The dash in table's cells means missing data.
Source: Calculated by the author on the basis of the database of indicators for municipalities (Kalabikhina et al. 2019), 2017.

of Ryazhsk with Ryazhskiy Municipal District, in the Tver Oblast — Rzhev Urban District, in the Yaroslavl Oblast — Pereslavl-Zalessky Urban District.

In half of the regions under review, it was not possible to identify migrationally attractive cities and urban districts outside the regional centers because in their territories there are no municipalities that meet these criteria. These are regions such as the Voronezh, Ivanovo, Kaluga, Kostroma, Lipetsk, Orel, Smolensk, Tambov and Tula Oblasts.

Conclusions

To sum up, we will formulate the main findings of the article.

Analysis of theoretical concepts describing agglomerations showed that at a certain stage of agglomeration central city development, one or more territorial units (city, urban district), characterized by migration attractiveness, are formed beyond the borders of the ag-

Table 2. Migrationally attractive cities and urban districts in the regions of the Central Federal District (excluding the city of Moscow and the Moscow Oblast) outside the regional centers, 2011-2013, 2014-2016

Region	Regional Centre	Migrationally attractive municipalities in the region beyond the regional center	Migration growth rate, 2011-2013, average	Migration growth rate, 2014-2016, average
Belgorod Oblast	City of Belgorod	Starooskolsky Urban District	9.9	41.3
Bryansk Oblast	City of Bryansk	Klintsy Urban District	11.6	58.6
Vladimir Oblast	City of Vladimir	Murom Urban District	190.3	55.5
Voronezh Oblast	City of Voronezh	None	–	–
Ivanovo Oblast	City of Ivanovo	None	–	–
Kaluga Oblast	City of Kaluga	Obninsk Urban District	87.3	178.3
Kostroma Oblast	City of Kostroma	None	–	–
Kursk Oblast	City of Kursk	Zheleznogorsk Urban District	85.3	98.4
Lipetsk Oblast	City of Lipetsk	None	–	–
Orel Oblast	City of Orel	None	–	–
Ryazan Oblast	City of Ryazan	City of Ryazhsk and Ryazhskiy Municipal District	50.7	6.4
Smolensk Oblast	City of Smolensk	None	–	–
Tambov Oblast	City of Tambov	None	–	–
Tver Oblast	City of Tver	Rzhev Urban District	23.9	23.9
Tula Oblast	City of Tula	None	–	–
Yaroslavl Oblast	City of Yaroslavl	Pereslavl-Zalessky Urban District	125.6	132.5

Source: Calculated by the author on the basis of the database of indicators for municipalities (Kalabikhina et al. 2019).

glomeration central city. Within the Central Federal District in 2011-2016 such cities and urban districts were allocated in Belgorod, Bryansk, Vladimir, Kaluga, Kursk, Ryazan, Tver and Yaroslavl Oblasts. It was not possible to identify migrationally attractive cities and urban districts outside the regional centers in half of the regions considered.

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