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Population change in the regional centres and internal periphery of the regions in Russia, Ukraine and Belarus over the period of 1990-2000s

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Abstract. The paper looks into the dynamics of the population size of Russia, Ukraine and Belarus after the census of 1989. Regions and cities of these countries were the focus of the research (territorial units level NUTS-3). The analysis addresses the question to what degree the remoteness from the regional centre, i.e. the position in the core-periphery system, influences the dynamics of the population size of the territorial units of the given level. For the analytical purposes the distinction has been made between the regional centres including adjacent suburban areas and internal regional periphery comprising districts and cities. The main indicator employed was the distance between the periphery areas and regional centres.

The results of the analysis show that in spite of the depopulation of all three countries and severe transformational crisis, there was a steady growth of the population size in the regional centres, while the periphery areas of the regions continued to lose the population. The mentioned differences are primarily determined by migration flows, since the fertility rates are below the replacement level in all the countries' territories. Population tends to concentrate in the regional centres, which means urbanisation has not been completed yet. While similar patterns of population decline are observed in the periphery areas of Ukraine and Belarus, in Russia the depopulation rates are negatively influenced by the factor of remoteness of a periphery area from the regional centre. All three countries experienced rural population decline everywhere but suburban areas of the regional centres.

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1. Introduction

It has been over two decades since Russia, Ukraine and Belarus became independent states. During this period a number of researchers addressed the issues of population distribution and demographic trends in these countries, although cross-country comparative research remained rare. In this paper a comparative approach is proposed to study the so called «small-scale areas», i.e. cities and administrative territorial units. At the moment, this is the lowest level of analysis possible taking into account the availability of statistical data.

The analysis addresses the population dynamics since the last soviet census of 1989 and the changes in the population distribution patterns. The core-periphery gradient perspective was chosen for description and analysis of the changes within some administrative units (krai, oblast, republic). The hypothesis to be tested was the following: within each region the population dynamics of the small-scale areas depends on the area remoteness from the regional centre. The same approach was successfully tested on Russia some time ago. The authors are interested in testing it against the cases of Ukraine and Belarus in order to find out if the core-periphery gradient is applicable for the population settlement dynamics of these countries and explore the major similarities and differences between the three countries.

2. Background

Population size is the most dynamic and easily accessible demographic characteristic that impacts all major parameters of population distribution. When the population growth is relatively stable, this impact is somewhat obscured, while other factors get more visible against the background of the unchangeable demographic landscape. The contemporary situation is however different.

Similarly to many countries of Eastern Europe, mortality and fertility trends observed throughout the 20th century in the former Soviet republics in Europe resulted in the depopulation by the early 1990s. This trend affected both urban and rural population in most regions of Russia, Ukraine and Belarus, though with a different intensity. The timing of this demographic phenomenon coincided with the collapse of the Soviet Union and the challenging transformational crisis which spread all over the post-soviet countries. These processes were accompanied at some point by migration outbursts, both between and within the countries. Emigration to the western countries, earlier practically banned, started to develop. Later on both internal and external migration flows subdued, mainly because of the growing popularity of numerous types of temporary migration, which however remains difficult to capture.

In general, migration (no matter whether with a positive or negative surplus) started to play an im-

portant role in influencing the dynamics of population size at all levels - from the national territory to the cities and districts (NUTS-3). At the same time, the location of the small-scale areas (for example, the proximity to or remoteness from the major cities, national borders, and tourist zones) can cause the effect of border disappearance, making dynamics of the population size in cities and rural settlements invisible.

At any territorial level migration flows impact the population size through the redistribution of people between cities and small-scale areas; more importantly, though, migration changes the population age structure. This impact gets especially noticeable in the long term perspective.

In the USSR the most significant population decline was observed in the Central regions of Russia, where population shrank by 44% in 1959-1985. During the same time period, rural population decreased by 21% and 7% in Ukraine and Belarus, respectively (Zayonchkovskaya, 1988: 48). Since the population decline was caused mainly by youth emigration, it facilitated a rapid population decline and aging (Zayonchkovskaya, 1991: 67). On the other hand, the inflows of young people to urban areas with a number of vocational schools and wider labour market opportunities made population age structure younger and in general improved the demographic situation in the cities. Such tendencies were not unique to the post-soviet counties under discussion, as internal migration had the same impact on the population of Germany (Swiaczny et al., 2008), Czech Republic (Vobecka, 2010), and Sweden (Amcoff, Westholm, 2007).

Demographic transformations were accompanied by the emergence of some new features in the urbanisation processes. Urbanising post-soviet countries still had to do a lot to catch up with the countries not only in Western Europe but also in Eastern Europe. For example, suburbanisation in the USA and Western Europe during the 1960s-1970s (Vining, Pallone, 1982) was taken over with some lag by East-European countries (Szymańska, et al., 2009; Illner, Alois, 1994; Kupiszewski, et al., 1998; Andrusz, et al., 1996), but Russia, Ukraine and Belarus were barely touched by this trend (Mahrova, et al., 2008; Nefedova, Trejvish, 2002). The resettlement of the city residents to rural areas in the early 1990s had no lasting effect (Nefedova, Trejvish, 2001; Pribytkova, 1999; Petrakova, 2010) (in Belarus there was no negative migration surplus of urban-rural migration, but the decline of the urban population was still observed (Shahotko, 1999). There was no significant outflow of people from cities and therefore those resettlement cases could not be treated as the start of suburbanisation; they rather signalled the instability of the urban economic situation. Later, due to the agricultural crisis, scarce financing of the rural territories, and restructuring of the social protection organisations, the outflow of population from rural areas resumed and has remained stable up to date.

The suburbanisation process in the former USSR countries took a different shape if compared to the countries of Eastern Europe. In some areas of Poland, the Czech Republic and Hungary the collapse of the socialist system led to the dissolution of the previous models of population concentration and facilitated construction of low-rise apartments in the suburbs. The analysis of the contemporary Polish model (Kupiszewski, et al., 1998: 280) points out that «the introduction of the free market economy and relative economic prosperity of Poland in 1993–1994 have contributed to the creation of an embryonic middle class with incomes comparable to the incomes of middle class in Western Europe and similar aspirations and consumption patterns». Population growth in rural communes was also observed within 30 km from the borders of Budapest in 1990-1997, as shown in the works of Brown and Schafft (Brown, Schafft, 2002) and others.

In the former USSR republics the newly created middle class also demonstrated demand for suburban housing. However, in the vast majority of cases such suburban housing was simply «additional», it was a «dacha», one more place to live (to spend time at the weekends). Therefore people did not change the place of their residence officially, they remained residents of Moscow or Kiev, and were not covered by population statistics of Moscow or Kiev regions. This is how the dissolution of the previous population concentration patterns occurred in the post-soviet countries and that is why it is different from the European case. Such a post-soviet model of suburbanisation with no impact on population change was also characteristic for other countries, for example Estonia (Raagmaa, 2003). Nevertheless, the analysis of the Moscow agglomer-

ation showed that population tends to concentrate in the nearest proximity to Moscow (Ioffe, Zayonchkovskaya, 2011). It should be noted, that the analysis of the movement of people between the cities is complicated because actual population size often does not correspond to the official statistical numbers. The researchers from Eastern Europe face the same challenge (Steinführer, et al., 2010).

The growth of the cities and increase of people concentration leads to the emergence of the «core-periphery» structure. This model has been modified and elaborated a lot (Richardson, 1973; Todd, 1974 and others) since its introduction (Friedmann, 1972), but the basic postulates have remained the same. The core and periphery are linked by compound relationships. The stronger the core, the stronger, more intensive and longer its connections with the surrounding territory are, and the bigger the core's control over these territories are. At the same time, the big centre tends to pump out more resources from the adjacent territories to satisfy its needs, one of such resources being people. The centers and periphery approach is applicable in various contexts: global, national (intra-regional), regional. Modern European research is focused mainly on the national level, defining major centres and analysing interconnections between periphery and centre (Viñuela, Vázquez, 2012).

The authors' previous research devoted to Russia (Karachurina, Mkrtchyan, 2013), as well as works on the USA (Partridge, et al., 2006) and Central and Eastern Europe (Degórski, 2006), showed that when dealing with territorial disparities, the core-periphery model works best for the analysis of the population change within regions. The legacy of the soviet model of the spatial organisation and management in Russia, Ukraine and Belarus makes administrative centres of the regions function as the centres of territorial organisation. With really rare exceptions, regional capitals are the largest cities by population size and the most progressive ones in terms of economic development. The territories around them are near and far periphery. The periphery is defined on the basis of the geographic distance between the centre and periphery. Of course, the distance is not the only measure of the territorial disparities. However, this indicator is quantifiable and serves well to diagnose risks and time required for the distance to be covered, besides – in case of hierarchical space (as it used to be in the USSR and remains so in the post-soviet republics) – this indicator also shows the availability and density of linear infrastructure.

3. Data and research methods

The research relies on the data on the population size of small-scale areas. In the case of Russia this category includes municipal regions and districts (cities and territories of city subordination); in Ukraine and Belarus small-scale territories refer to the regions and cities with a special status (independent administrative units of national or regional subordination). These territories belong to the same territorial level in all three countries; in Russia, though, a different term is used after the municipal reform of 2003.

In the frameworks of the research the authors analysed the data on 1,751 municipal regions and 498 city districts in Russia, 118 regions and 13 city councils of Belarus, as well as 490 regions and 180 cities with the special status in Ukraine. These administrative territorial units (ATU) correspond to the level NUTS-3; the more disaggregated comparable data were not available. Besides, the analysis of the urban population dynamics was based on the data on 1,069 cities of Russia, 112 cities of Belarus, and 459 cities of Ukraine. These did not include urban settlements without the city status (usually called «urban-type settlements») because during the last two decades the number of such settlements decreased significantly in all three countries – some of them turned into rural settlements, others were incorporated into bigger cities.

Population size numbers were compared based on the censuses of 1990, 2000 and 2010. The earliest date is January of 1989 when the All-Soviet Population Census was held in all three countries. The following censuses were held in 1999 in Belarus, in 2001 in Ukraine and in 2002 in Russia. The most recent data refers to the results of the Belarus census of October 2009 and Russia census of October 2010. In Ukraine the census planned for 2010 was cancelled, and therefore the authors used the population size data as of the beginning of 2011, taking into account natural decrease and migration flows in 2001-2010 (administrative data).

In the process of the compilation of the statistical data for analysing the dynamics and size of population between the censuses a number of challenges have been faced:

1. In Russia in 1994 the statistics on closed administrative-territorial units (CATU) became available, while before 1994 the population size data on CATU was considered confidential and was not disclosed. Since the census data of 1989 was not revised, it was possible to include these CATU into the analysis only for the period 2003-2010. During the census of 1989 the population of CATU was counted as population of other ATU but the methodology was never disclosed due to its confidential status. It is known that quite often the population of CATU was counted as population belonging to a different federal district of the Russian Federation (Tolts, 2008). However, the authors managed to revise the data on big cities where population size in the 1989 census was exaggerated due to the additional CATU population. The adjustments concern 21 regional centres and 15 big cities of the regional subordination. This helped partly to solve the problem of the population size misrepresentation at the lowest territorial level. This problem was not relevant to the next inter-censual period. In Belarus and Ukraine the population size data was revised to include the CATU population figures and was published in the 2000s, so it was possible to use the official comparable data.
2. At the regional level an important administrative-territorial transformation took place in the inter-censual period, including the change of borders of the ATU. For example, rural settlements turned into urban settlements, and vice versa, or settlements merged, some ATU changed their borders, and several ATU were combined into one. The authors did their best to take into account such changes in order to ensure the accuracy of comparison.
3. In Russia four regions were not covered by this research – the Republic of Dagestan, Ingush Republic, Kabardino-Balkaria and Chechen Republic. According to the estimations of the expert community, the population size data in these regions is seriously misrepresented. The figures of the 2002 census and figures based on the administrative data sources differed as much as one million (population). The same effect was observed with the results of the 2010 census. Therefore, it makes no sense to compare the data on these regions.

When analysing the population size it was assumed that population dynamics of regional centres and regional periphery has certain peculiarities. This is the methodological basis of the research. Moreover, the periphery area is not homogeneous; its variety may depend on its remoteness from the regional centre. Therefore the ATU were divided into two categories.

1) Central ATU («centre») which include a regional (republic, krai) centre with adjacent settlements and «central» (pristolichniy) area. In cases when a regional centre shared its border with more than one administrative unit, they were considered as one «central area». This approach was reasonable because each such case is in practice an example of a common labour market characterised by intensive circular migration so that the neighbouring settlements form an agglomeration. Moreover, within the period covered by the analysis regional centres and neighbouring areas were affected by administrative-territorial transformations more often than other ATU.

It should be noted, however, that in the current paper the term «centre» does not refer to a central city alone but to a city with its suburbs. It is because the focus is not on the population dynamics within urban agglomerations, i.e. population exchange between the core (cores) and the nearest neighbouring territories. Instead, the authors are interested in comparing population dynamics in such centres with the adjacent periphery. Therefore, when growth/decline of the population in a centre is observed, it is treated as a change of the population size of the core together with all the adjacent settlements (the term «centre» will be used to denote them in tables and other illustrations).

In each region there is only one centre despite the fact that besides the capital city there may be other big cities, which are included into the periphery system of the centre. In some cases big but not capital cities can function as the local centres attracting population. This

issue will be discussed in more detail further below.

2) The peripheral ATU were divided into several zones according to the remoteness criteria - periphery zone of the 1st rank, 2nd rank, ... 8th rank. The position in the ranking makes a difference: the distance between the 1st rank area and the regional centre is about 30-50 km, which implies that the links with the centre are quite strong, providing for steady circular labour migration, regular tourist trips, as well as for establishment of social and business connections. However, in northern and eastern regions of Russia even the 1st rank areas are located very far from the regional centre – 100 km and farther – this factor weakening the links with the centre. Anyway, the greater the distance between the regional centre and a neighbouring settlement, the weaker the links and the higher the rank are. The same approach was used to group the data by regions and major parts of the three countries.

In order to describe the population dynamics in terms of the core-periphery gradients, in addition to the ranking the authors also applied the remoteness (physical distance) criteria measuring the distance between a small-scale ATU and a regional centre in kilometres. Such an approach complements the ranking, as the remoteness indicator is actually less sensitive to the size and level of ATU which is important when we need to compare the areas with low- and high population density. Finally, the remoteness indicator provides more opportunities for more detailed grouping.

In this paper the case of Russia has been analysed more thoroughly (with a special focus on federal districts) because its territory is less homogeneous than the territory of the two other countries.

4. Justification of the selection of countries

Russia, Ukraine and Belarus are the closest neighbours tied by common history, with wars and other catastrophes having great impact on the population. These countries were selected for the analysis due to the availability of the comparable statistical data. The census of 1989 used as a starting point for the analysis was conducted in all three countries simultaneously; the same questionnaire was used and the same organisational principles were observed. Moreover, the countries used similar approaches to collect demographic data, including the data based on administrative sources. Other similarities include the principles of the administrative-territorial division which were defined long ago and never changed, as well as the approach to population grouping (urban/rural population, etc.). Besides, the countries are comparable in terms of the demographic profile, and trends in the natural population decrease.

The differences are also observed. First of all, it is the size of the countries, because Russia is among the largest countries in the world, and the population distribution across its territory is far from homogeneous. In some cases the difference in population distribution indicators between countries is many-fold. While dividing Russia's territory into European and Asiatic parts (Tab. 1) helps making the indicators more comparable with those of Ukraine and Belarus, the European part of Russia still appears to be less populated with the uneven population distribution due to the unfavourable climate conditions in the northern territories.

At the same time, the share of urban population and the degree of the population concentration in big cities are similar in all three countries, and the same pattern is observed in the processes of the city network development. The countries are comparable in terms of the average population size of small-scale territories. To a great extent this is a result of the unified approach used for the administrative-territorial division based on the principle of governability. Besides, the average population size of regional centres is also approximately the same. However, the results of the comparison can be somewhat distorted due to the different size of the capital cities and the share of capital cities' population in the regional centres' population. Minsk is too big for Belarus and increases the average size of a regional centre. Moscow is not that significant in terms of the country population size but it is still much bigger than other regional centres (such as St. Petersburg). Without capital cities and their adjacent areas the regional centres in the three countries are rather comparable.

Table 1. Some characteristics of the ATU and settlements in Russia*a*, Ukraine and Belarus, 2010

	Russia	European part	Asian part	Ukraine	Belarus
Average size of the territory, sq km					
Region	211.1	73.4	486.4	24.1	34.6
Administrative district (urban areas)	7.3	2.5	17.0	0.9	1.6
Number of cities per 100 thousand sq km	6.4	19.8	2.4	76.1	54.4
Population density per 1 sq km	8.4	26.5	2.9	75.8	45.8
Urban population share, %	73.8	73.6	75.3	68.8	74.3
Share of the population (%), living in:					
Capital	8.1	-	-	6.1	19.3
City with population over 1 mln people	19.8	22.0	13.6	13.7	19.3
Regional capital cities	37.5	38.9	33.6	31.0	38.7
City with population over 100 thousand people	49.2	50.0	46.7	39.6	50.2
Average population size of administrative districts (urban areas), thousand people	61.1	67.2	48.7	68.3	73.1
Average population size of a regional center, thousand people	661.5	758.1	468.1	568.3	613.3
Average population size without capital cities, cities of federal subordination and capital adjacent areas	470.1	471.1	468.1	459.4	368.6

Explanation: *a* - calculations for Russia do not take into account the ATU of the Republics of Dagestan, Ingushetia, Kabardino-Balkaria and Chechnya

Source: Data of the Federal State Statistics Service (Rosstat); National Statistical Committee of the Republic of Belarus; State Statistics Service of Ukraine

In all three countries depopulation started almost at the same moment (in 1991 in Ukraine, in 1992 in Russia, and in 1993 in Belarus) and coincided with the collapse of the Soviet Union. Between 1990 and the 2000s the three countries had death numbers exceeding the births, population aging, rural population decreasing, and shared other similar trends in key demographic indicators. Yet in Ukraine the population declined faster than in Russia and Belarus which had almost the same pace of natural decrease. During the last several years the population decline has slowed down in all three countries.

The countries differed in terms of migration. Russia and Belarus had migration surplus which partly compensated for the depopulation losses, while in Ukraine international migration up to the mid-2000s added to the population decrease (Palij, 2009). In the early 1990s the countries looked equal in terms of the standards of living, but soon the processes of socio-economic development took different directions. Not the least role in that twist was assigned to the export of resources that allowed Russia to make progress in a number of key socio-economic indicators (primarily, in population income level). Evidently, some serious inequalities within the regions, as well as between the regions, also affected the population distribution in the countries.

5. Results

5.1. General patterns of change of the population of the centres and periphery

In this research the division of regions and cities of Russia, Ukraine and Belarus into central and peripheral (depending on the remoteness from the regional centres) shows similarity in the dynamics of population size in central and peripheral areas. Both in Russia and Belarus population of the centres increased during the inter-censual period; in Ukraine population in central areas reduced, but at the same pace as in the periphery. This is probably the result of the difference in the international migration surplus (in Ukraine the surplus is negative), as emigration abroad was considered as alternative to internal migration to the regional centre from the periphery

area. At the same time, for Russia it is a rule that the farther from the regional centre the city or administrative district is, the more intensive its population decline (Tab. 2), whereas in Ukraine and Belarus, there is no connection between the remoteness and population dynamics.

Table 2. Population increase or decline in ATU grouped by remoteness rank (1990s, 2000s), % to the beginning of the period

	Ukraine	**Belarus**	**European part of Russia**	**Asian part of Russia**
1990s				
Total	93.7	99,0	99,4	93,4
Center	96.2	102,5	102,7	99,1
Remoteness ranking				
1st-rank	92.5	94.1	97.6	91.7
2nd-rank	92.2	98.1	96.4	90.5
3rd-rank	92.2	96.6	96.4	88.0
4th-rank	92.0	97.9	97.1	88.4
5th-rank and lower	92.2	99.2	94.2	88.8
2000s				
Total	94.4	94.6	98.6	96.1
Center	98.7	105.2	103.4	102.4
Remoteness ranking				
1st-rank	92.3	87.0	97.2	95.3
2nd-rank	91.2	88.2	94.3	92.7
3rd-rank	91.9	87.7	94.0	89.3
4th-rank	91.4	88.1	92.8	89.4
5th-rank and lower	92.9	89.6	90.5	89.3

Source: Data of the Federal State Statistics Service (Rosstat); National Statistical Committee of the Republic of Belarus; State Statistics Service of Ukraine

Taking into account the size of Moscow and St. Petersburg and the fact that these cities influence the dynamics of population in Russia as a whole, the calculations were made for the central areas relying on the data with and without these major cities. It turns out that only these two cities (Moscow and St. Petersburg) contributed to the population increase by 2.9 pp in the 1990s and by 2.1 pp in the 2000s. However, it should also be acknowledged that without these two cities the population growth rates in the central areas were significantly lower than in the central areas in Belarus.

Moscow's influence on the neighbouring areas is much stronger than that of Kiev and Minsk. The proximity to Moscow provides for the population growth in most cities and districts of the Moscow region, with the population growing faster in those cities than in Moscow. In the 2000s in the Kiev region, few cities demonstrated an increase in the population size, while all the districts remained unchanged or registered population decrease by 10% or more. During the same period in the Minsk region, the population growth was noticeable in a few cities and areas neighbouring the capital, while the majority of the districts lost over 10% of their population. Thus, it can be concluded that the capital regions in Ukraine and Belarus do not differ from the rest of the regions in the countries in terms of population dynamics, despite the fact that they often neighbour other big cities. Therefore, Ukrainian and Belarus capital regions rather resemble non-capital regions of Central Russia.

In all three countries the differences in the population dynamics in the 2000s intensified in comparison with the 1990s. Yet, in the case of Russia the population dynamics increased as the distance from the centre grew; while in the two other countries (Ukraine and Belarus) the differences in population growth between the central and peripheral areas were insignificant. In the 1990s the most stable periphery population was that of Belarus. However, in the 2000s the situation changed drastically:

depopulation rates in Belarus are currently higher than in two other countries. This can be linked to the acceleration of the economic activity in Minsk (Pirozhnik, Antipova, 2013), which stimulated the inflow of people attracted by new opportunities. The consequences of this population shift are very much felt in the rest of the country, which would never be the case in Russia or Ukraine because the capitals there do not dominate over the rest of the territory in such a way as in Belarus. In Russia, despite all the differences in the population dynamics in the central and peripheral areas, in the 2000s the dynamics of the peripheral population was declining at a slower pace than in the neighbouring countries.

In some sense, it would be more correct to compare Ukraine and Belarus not with the whole of Russia (with its considerable territory and large population), but to do a separate comparison of these countries with the European and Asiatic parts of Russia. As it is seen in Table 2, during the 1990s population dynamics in the regional centres and periphery areas located in the European part of Russia was similar to such dynamics in Belarus. The population dynamics in the regions in the Asiatic part of Russia is similar to such dynamics in Ukraine. In the 2000s the peripheral areas of the European territories of Russia had the highest rate of population dynamics, while the periphery areas in Belarus had the worst rates of the population dynamics.

The decrease of the population in the periphery areas of Ukraine in the 1990s is almost as large as the depopulation of the far periphery areas of the Central and Siberian districts of Russia (neighbouring the centres of third and lower/higher ranks). During the 2000s, the dynamics of the population decrease in the periphery areas of Ukraine and Belarus was similar to that of the far periphery areas of the Central, Volga, Urals and Siberian districts of Russia (0.7-1.2% annually).

The population rate dynamics of the Russian, Ukrainian and Belarusian administrative units (which were grouped by the distance to the regional capitals (in km)) are similar to the one that was received when the regions were grouped according to their proximity to the regional centres (cf Tab. 2 and Fig. 1). In all three countries the regional centres are clearly separated from the periphery, because of the differences in the dynamics of the population rate. The most abrupt transition to a rapid decline of the population rate was observed already at a distance greater than 30 km from the regional centres. A similar, 30-kilometers «step», was noted by Hungarian researchers (Brown, Schafft, 2002): they noted that such distance can be easily overcome while reaching the centre.

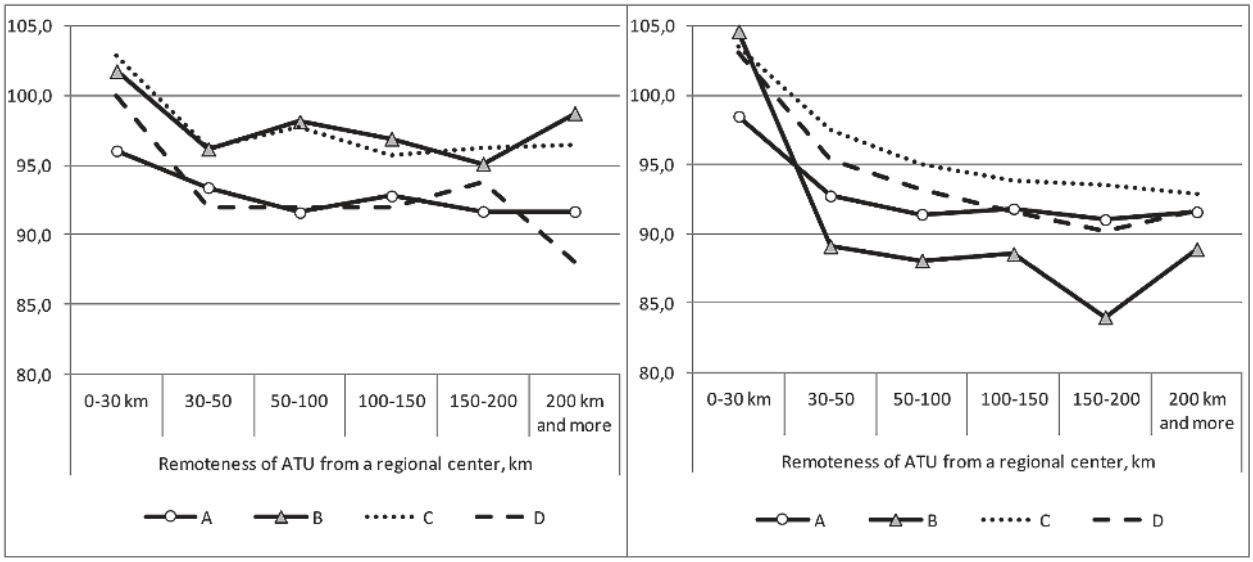

Fig. 1. Changes in population in small administrative entities in accordance with the ranking order of the distance from the regional centre (km) (1990s and 2000s), % by the beginning of the period. Explanation: A – Ukraine, B – Belarus, C – Russia, European part, D – Russia, Asiatic part

Source: Data of the Federal State Statistics Service (Rosstat); National Statistical Committee of the Republic of Belarus; State Statistics Service of Ukraine

The calculations show that 40% of the population lives in regional centres (including the areas which are located up to 30 km away from the centre); during the last two decades this share has increased (Tab. 3). This indicates that population is concentrated in the regional centres and adjacent areas, while outside of these territories population rates decline. This overlap of the agglomeration effects and institutional factors occurs in the regional centres, and this «the sum» outweighs the benefits of deconcentration.

Table 3. Share of population (%) in ATU in accordance with the ranking of remoteness from the regional centre (km), by the date of the census

	Ukraine			**Belarus**			**Russia**		
	1989	**2001**	**2011a**	**1989**	**1999**	**2009**	**1989**	**2002**	**2010**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Remoteness of ATU from a regional center (including other centers), km									
0-30 km	38.8	39.8	41.5	38.9	40.0	44.2	42.4	44.4	46.7
30-50	9.8	9.7	9.6	5.7	5.5	5.2	5.4	5.2	5.3
50-100	25.7	25.1	24.3	17.6	17.5	16.3	12.4	12.3	11.9
100-150	16.7	16.5	16.1	21.2	20.8	19.5	11.3	11.0	10.3
150-200	6.6	6.4	6.2	8.6	8.3	7.4	7.2	7.0	6.6
200 km and more	2.5	2.4	2.3	7.9	7.9	7.4	21.4	20.2	19.1

Explanation: *a - estimates as of the beginning of the year, based on administrative sources data*

Source: Data of the Federal State Statistics Service (Rosstat); National Statistical Committee of the Republic of Belarus; State Statistics Service of Ukraine

There is a significant difference in the sizes of regions in Russia, Ukraine and Belarus, and this causes major differences in the approachability of regional centres. In 2009-2011, 2.3% of the population of Ukraine, 7.4 % of the population of Belarus and 19.1 % of Russian residents resided in spaces which are located at distances greater than 200 km from the regional centres. In Russia, a substantial part of the population resides in the areas located at a distance greater than 500 km from regional centres. In 1989 the amount of such residents was 5.7 million, in 2002 - 4.4 million, in 2010 - 3.9 million. Thus, already almost unpopulated areas in Siberia and in the Far East have lost over one third of their population during the last two decades. The most significant loss in population of the most distant periphery in Russia occurred in the 1990s, when the settlement system established in the north and east of the country in the Soviet period started deteriorating. The leaders in the absolute population decline were such cities like Vorkuta, Inta, Norilsk, Igarka, Tynda, Nerungri. The cartograms in Figures 2-4 show population changes in ATU in Belarus, Ukraine and the Central federal district of Russia (comparable in territory and population size to the other analysed countries) during the entire post-soviet period. Based on the observed dynamics, future changes can be projected. Population is getting concentrated near regional centres and is fleeing periphery. This trend is especially clear in the regions where the location of capitals coincides with the geographic centre of the region. Therefore, in the future depopulation of the periphery within the regions will be even greater than now, although currently the population density gradients decrease is also rather significant.

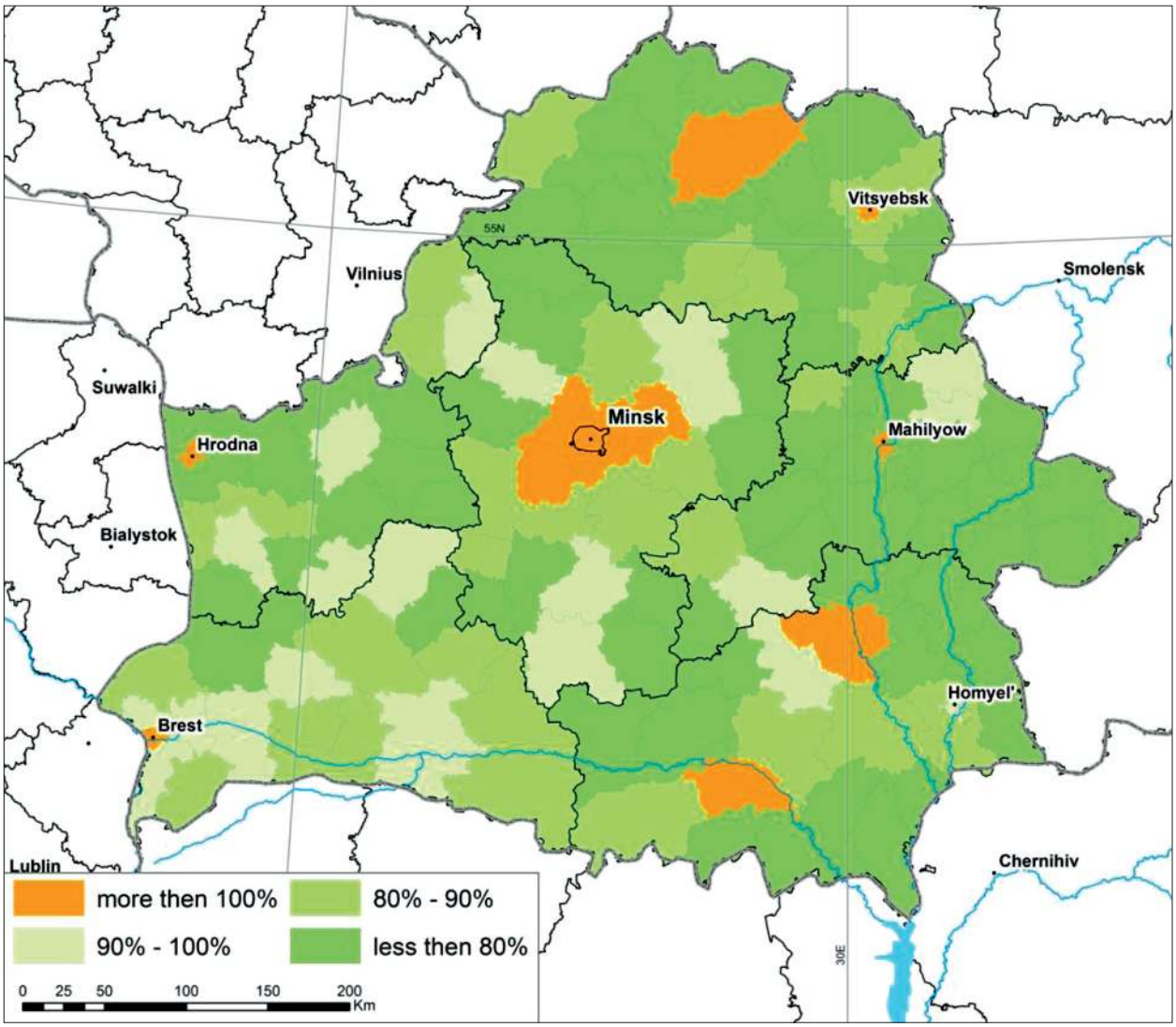

Fig. 2. Population dynamics, Belarus, 2009 by 1989, %

Source: Data of the National Statistical Committee of the Republic of Belarus http://belstat.gov.by

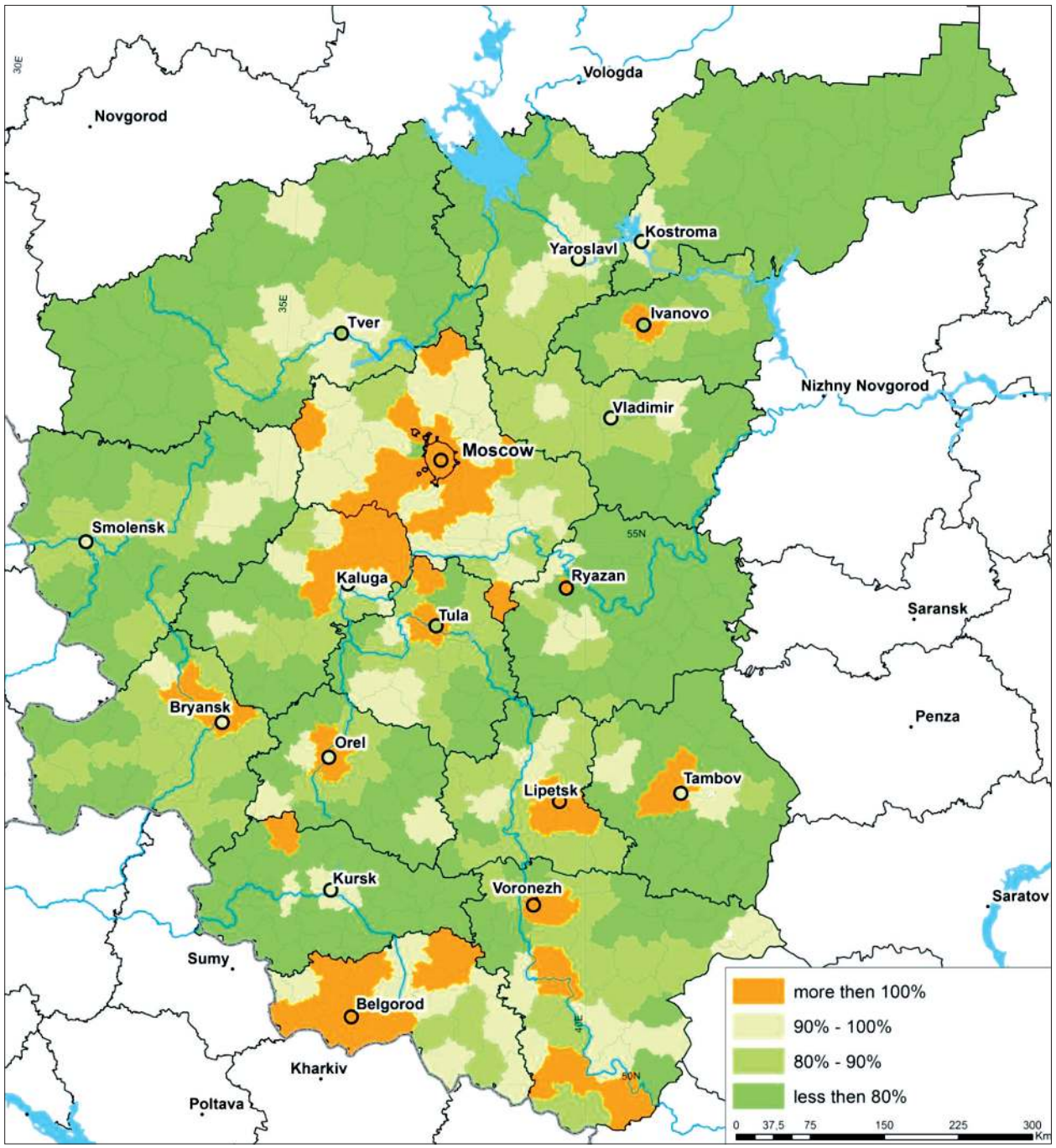

Fig. 3. Population dynamics, Russia, 2009 by 1989, %

Source: Data of the Federal State Statistics Service (Rosstat) http://www.gks.ru

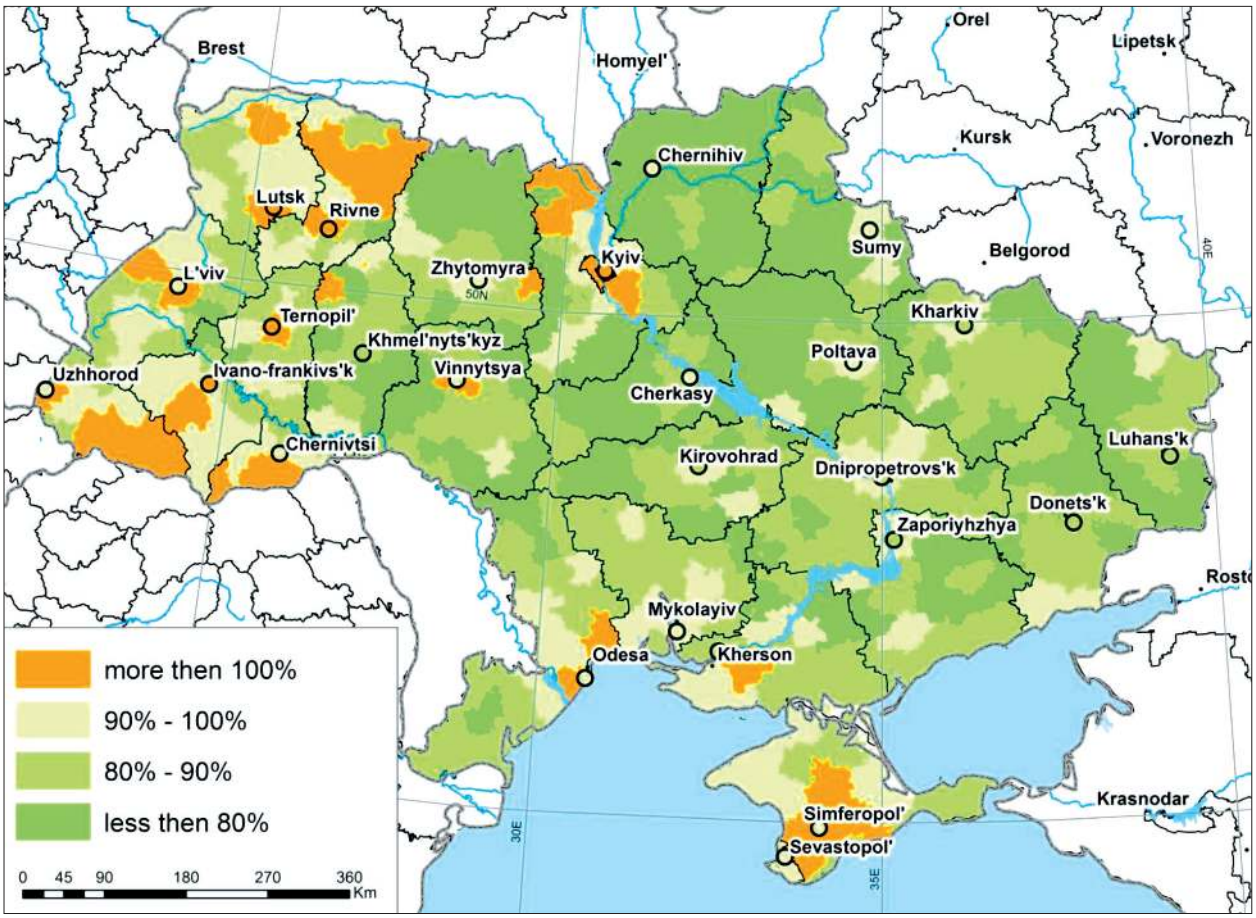

Fig. 4. Population dynamics, Ukraine, 2009 by 1989, %

Source: Data of the State Statistics Service of Ukraine http://www.ukrstat.gov.ua

5.2. Population dynamics of cities of different size

The intra-regional periphery appears to be heterogeneous, constituted of settlements of different size and status. The authors believe that the cities of different size and rural areas differ in their population dynamics. Such cities may function as population concentration centres of a lower order (in comparison with regional centres), as they attract people from the surrounding rural settlements.

Figures 5 and 6 below present the population dynamics in the cities and rural areas taking into account the criteria of remoteness from the regional centre. The comparison of population dynamics in the 1990s and 2000s reveals that, first of all, the remoteness factor hardly affects urban population, but rural population in the remote periphery decreases faster than the population of the areas closer to the regional centres. This formula turns to be especially true for Russia. Secondly, in the 1990s urban population dynamics varied from city to city, but in the 2000s the indicators levelled off. On the other hand, the decline of the rural population in the 2000s varied across the three countries quite significantly due to the intensified population reduction in Belarus.

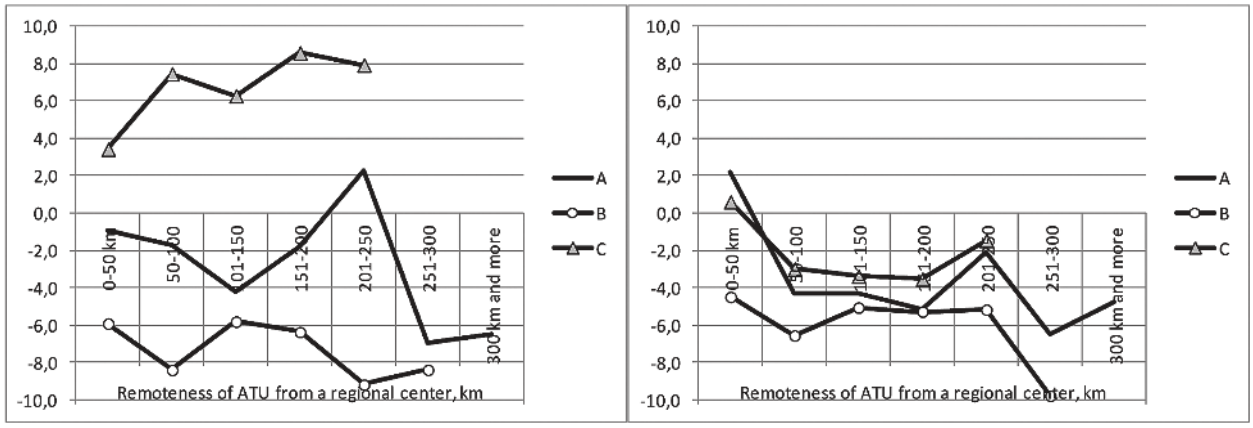

Fig. 5. Urban population dynamics (%) taking into account the criteria of remoteness from the regional centre (km)

Explanation: A – Russia B – Ukraine C – Belarus

Source: Data of the Federal State Statistics Service (Rosstat); National Statistical Committee of the Republic of Belarus; State Statistics Service of Ukraine

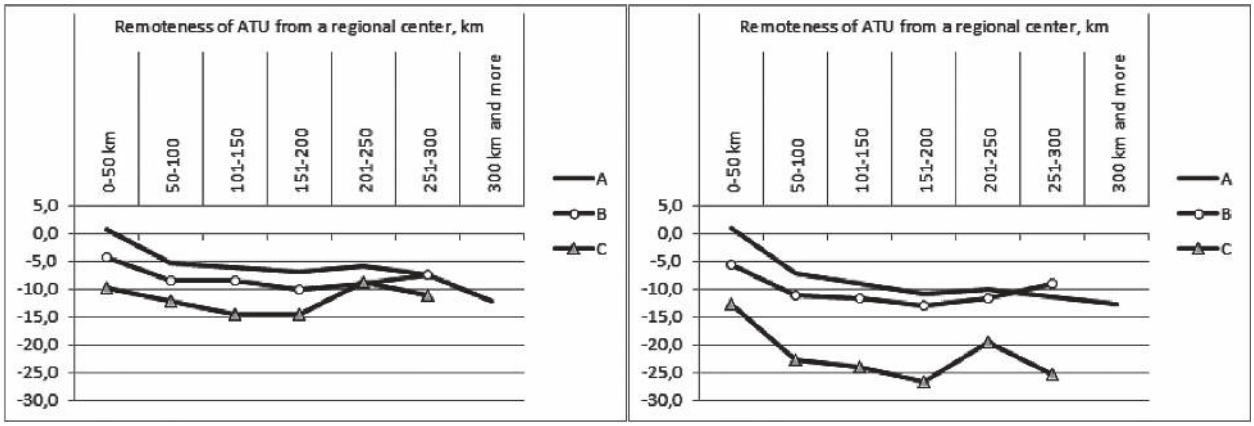

Fig. 6. Rural population dynamics (%) taking into account the criteria of remoteness from the regional centre (km)

Explanation: A – Russia B – Ukraine C – Belarus

Source: Data of the Federal State Statistics Service (Rosstat); National Statistical Committee of the Republic of Belarus; State Statistics Service of Ukraine

Why does the remoteness factor play no role in urban population dynamics in all three countries? Figure 3 highlights that both in Russia and Belarus the population dynamics of the cities located within 200-250 km from the regional centres turns to be more positive than the population dynamics of the cities located closer to the regional centres. In the authors' earlier research (Mkrtchyan, 2013) this peculiarity was studied in some of the Russian regions. It was found that in the case of Russia a number of large and medium size cities are located within 200-250 km from the regional centre, and those cities function as secondary centres of the population accumulation. Among them there are economically prosperous and sustainable cities with the export-oriented economy (petroleum and petrochemical industries, chemical industry, metallurgy). Cities of such a type can also be found in Belarus, for example, Baranovichi with the well developed industrial sector, and Soligorsk (the «wealthiest» city of the country due to the extraction of potash salt and export of fertilizers). Moreover, the second-rank regional centres in Belarus are also developing thanks to the advantageous «peripheral, non-central location of the four out of six regional centres – both in relation to the territory

of the regions and country in general» (Pirozhnik, Antipova, 2013). In Ukraine, despite the fact that numerous large cities are located far from the regional capitals and have all chances to turn into attractive second-rank destinations, they have never experienced population surplus (the only exception is the town of Belaya Tserkov' in the Kiev oblast, which can be explained by the influence of the migration attractiveness of the country's capital). Many large cities in Ukraine are located in the east, in the former industrial regions, where the population dynamics is even more negative than in the country in general. Population decrease in those cities is most likely influenced by the depopulation of the periphery, as well as by a poor socio-economic situation in the cities.

This finding confirms again the argument that greater distance from the regional centres, paradoxically, ensures stability of the cities. Such cities form their own periphery with weaker connections to the regional centre. However, the stability of the population size is possible only under condition of densely populated periphery with significant share of young people. Belarus benefited from such periphery during the analysed period; Russia could boast the same assets only in the case of the Volga and South federal districts, and most of the Ukrainian periphery regions were affected by depopulation.

The population dynamics of large cities (with over 100,000 people) during both periods (1990s and 2000s) remained almost unaffected by the factor of remoteness from the regional centres. Being densely populated, those cities often interfere with the centre-periphery trends of population dynamics. The analysis of the population dynamics in the cities of different size demonstrates that population density in small towns in Russia still depends on the criteria of remoteness from the regional centre (Table 4). However, this is not true for Ukraine. In Belarus the number of such cities is not large enough to draw any relevant conclusions.

Table 4. Cities which experienced population growth, grouped by population size and criteria of remoteness from the regional centre, % of the total number of cities in the group

Population size of the cities as of the beginning of the year, thousand people	Remoteness from the center, km		
	less than 50	50-100	100 and more
Russia, 1989-2002			
Less than 50	49.5	36.4	26.7
between 50 and 100	33.3	26.9	37.1
over 100	52.6	15.8	43.1
Ukraine, 1989-2001			
Less than 50	32.0	15.6	17.1
between 50 and 100	33.3	7.4	5.6
over 100	0.0	11.1	0.0
Russia, 2003-2010			
Less than 50	36.8	23.3	13.2
between 50 and 100	52.9	24.1	21.1
over 100	47.8	15.8	26.9
Ukraine, 2002-2010			
Less than 50	23.7	16.3	13.3
between 50 and 100	44.4	3.7	5.6
over 100	0.0	22.2	10.0

Source: Data of the Federal State Statistics Service (Rosstat); State Statistics Service of Ukraine

In 1989-2002 in Russia the population surplus in the areas located far from the regional centres was observed in Ľ of small cities, in ⅓ of medium-size cities and in 43% of big cities. During 2003-2010 the share of the cities with the positive population dynamics reduced by almost a half in each group.

In Ukraine, however, no significant changes were observed, because in both periods the share of cities with positive population dynamics was relatively small. Since the issue of low birth rate in all countries has already been noted, the reason is most likely a different impact of migration. During the 1990s Russia recorded a significant population increase as a result of migration, which contributed not only to the population growth in big cities but also in medium-size and small cities, as well as in rural areas. For economic migrants and compatriots who urgently moved from the former Soviet republics to escape conflicts and instability and get settled in Russia, small towns and rural areas were attractive destinations because of low-cost housing and farming possibilities. In Ukraine in the 1990s there were no migration inflows; on the contrary, migration outflows added to the negative trends in natural reproduction so that the population dynamics was worse than in Russia.

The so-called secondary centres were not numerous among the periphery cities. The population of small peripheral cities both in Russia and Ukraine is declining as fast as in the rural areas (Tab. 5). The cities located close to the regional centres remain the only ATU able to keep the population size unchanged or even somewhat increasing. Often these agglomerations «minors» function as bedroom communities by the centres and benefit from the inflows of people and money invested in housing. During the 1990s in Belarus small peripheral cities experienced the population increase due to migration inflows from the surrounding rural areas. During the 2000s those migration inflows declined and small cities started losing population, although not as fast as the surrounding rural areas.

Table 5. Rural population increase/decrease in small citiesa grouped by rank of remoteness from the regional centre, %

		Center	Remoteness from the regional center				
			1st-rank	2nd-rank	3rd-rank	4th-rank	5th-rank and higher
			1990s				
Ukraine	Rural areas	-1.7	-7.6	-7.7	-9.4	-9.1	-7.8
	Small cities	-2.7	-5.0	-7.3	-5.8	0.2	-8.6
Belarus	Rural areas	-7.8	-9.2	-15.4	-10.3	-17.1	-17.6
	Small cities	12.8	4.7	3.6	9.4	11.6	11.7
Russia	Rural areas	2.7	-4.9	-7.3	-7.4	-7.2	-7.4
	Small cities	0.2	-2.5	-4.9	-5.1	-8.6	-6.5
			2000s				
Ukraine	Rural areas	-1.4	-10.1	-11	-12.4	-11	-10.8
	Small cities	-0.4	-5.1	-6.1	-7.4	-4.2	-3.9
Belarus	Rural areas	-18	-23.7	-22.8	-16.7	-26.3	-14.8
	Small cities	1.2	1.0	-5.5	-5.2	-5.0	11.7
Russia	Rural areas	4.5	-6.4	-9.2	-10.4	-11.1	-12.3
	Small cities	8.8	-3.1	-5.8	-5.7	-8.4	-5.9

Explanation: *a* - population less than 20 thousand people

Source: Federal State Statistics Service (Rosstat); National Statistical Committee of the Republic of Belarus; State Statistics Service of Ukraine

On the whole, depopulation of peripheral cities located far from the regional centre intensified in the 2000s in comparison with the 1990s, with Belarus demonstrating the most dramatic decrease. Anyway, the larger the city the more chances it has to retain or even increase population, no matter where it is located – in the centre or regional periphery.

5.3. Rural population dynamics

All three countries were losing rural population (Tab. 6). In order to make the comparison more accurate, and minimise the impact of the different size of the regions and influence of the outliers (such as numerous Russian ATU which are more than 200 km away from the regional centre, and neighbouring areas of the centres of the 5th- or even higher rank), the authors relied on the ranking position as the indicator of remoteness from the regional centre when analysing the rural population dynamics. The most striking difference in the population dynamics is observed in the districts close to the centre (1st-rank neighbouring areas). While in Ukraine and Belarus a greater rank of remoteness is almost never associated with a greater rural population decrease, in Russia the 2nd-rank neighbouring areas already show greater population decline. For the 3rd-rank remote areas the distance from the regional centre makes no difference, since those areas are considered already a far periphery.

Table 6. Rural population increase/decrease in areas grouped by ranking of remoteness from the regional centre, %

	Center	Remoteness from the center				
		1st-rank	2nd-rank	3rd-rank	4th-rank	5th-rank and higher
1990s						
Ukraine	-1.7	-7.6	-7.7	-9.4	-9.1	-7.8
Belarus	-7.8	-9.2	-15.4	-10.3	-17.1	-17.6
Russia	2.7	-4.9	-7.3	-7.4	-7.2	-7.4
2000s						
Ukraine	-1.4	-10.1	-11.0	-12.4	-11.0	-10.8
Belarus	-18.0	-23.7	-22.8	-16.7	-26.3	-14.8
Russia	4.5	-6.4	-9.2	-10.4	-11.1	-12.3

Source: Data of the Federal State Statistics Service (Rosstat); National Statistical Committee of the Republic of Belarus; State Statistics Service of Ukraine

While comparing all three countries (Tab. 6, Fig. 6) one might notice the dramatic decline of the rural population in Belarus. While some scholars point to the relatively favourable dynamics of rural population in the suburbs (Antipova, Fakeyeva, 2012), the authors' calculations on Belarus suggest the opposite. However, if Belarus is to be compared with the Russian federal districts instead of with Russia, it becomes clear that in the 1990s the rural population dynamics in Belarus was very similar to that of the rural periphery of the Central and North-Western districts. For example, in the Pskov, Novgorod, Tver and Smolensk oblasts of Russia the population decrease was not less than that in the Vitebsk, Grodna and Mogilev oblasts of Belarus, while the Far Eastern district's depopulation even exceeded that of Belarus. During the 2000s the decline of the rural population in Belarus intensified, yet it was still comparable with the situation in the Russian North-Western district. In contrast, more positive rural population dynamics in Russia was demonstrated by the Southern district (both in the 1990s and 2000s) and the Volga district (only in the 1990s). Here rural areas did not experience major depopulation; moreover, these areas turned to be attractive destinations for both internal and external migrants. The Republic of Crimea was the only region in Ukraine where the rural population dynamics resembled that of the Russian South (primarily, Krasnodar krai); thus, the depopulation trend is characteristic for both resort regions of the two countries.

What significantly distinguishes rural areas of Belarus (and to a lesser extent of Ukraine) from those of Russia is the lack of population growth in the settlements close to the regional centres. It looks like in the post-soviet space suburbanisation has worked only in Russia so far. However, this assumption needs supportive evidence which is not easy to get due to the limitations of the available

data. Estonia seems to have a potential for developing substantial suburban areas; however, no projects targeting suburbia have been implemented yet due to economic constraints (Raagmaa, 2003).

6. Conclusions

The analysis of the population dynamics and population distribution in the small-scale territories in three countries – Russia, Ukraine and Belarus – during two recent decades revealed both similarities and differences. With the fertility rates below the replacement level in all three countries, the major differences in the population dynamics are determined by migration exchange between regions and territories, as well as by internal migration affecting redistribution of the population.

While there is a great variability in the population dynamics of the small-scale territories of Russia, Ukraine and Belarus, ***the key principle of the differentiation can be traced through the core-periphery relations.*** The regional centres – usually large cities – were able to increase the population or keep the population size almost unchanged despite the general depopulation trend. Notwithstanding the dramatic transformational crisis in all three countries in the first half of the 1990s, which disrupted sustainable urbanisation - the effect of a few decades of development, the intra-regional periphery with its rural areas, small and medium-size cities, continued to lose population. Similar losses were experienced by all three countries. In some parts of Russia population decline was compensated by migration inflows from the former Soviet republics, mainly from Central Asia and the Transcaucasia.

The population tends to concentrate in the regional centres and the nearest adjusting suburb areas. Due to the Soviet principles of the administrative-territorial division, the regional centres are most likely to be the biggest and most developed cities. It should be noted, that if the regional centres had no status of major cities at the moment they were made capitals, sometime later they would ultimately be recognised as major cities having accommodated political and administrative resources. During the post-soviet phase the political resources were supplemented by financial resources. The analysis of the population dynamics in the regional centres in the post-soviet period shows that the regional centres preserved, and maybe even reinforced, their function of attracting money and people. It is quite evident that population concentration in the capital cities is typical for all three countries; simultaneously, people also tend to settle in the regional centres in adjacent areas. The urbanisation processes in developed countries were never associated with parallel concentration of people both in the regional centres and adjacent suburbs. On the contrary, population used to move from regional centres to the suburbs accelerating population growth and leading to higher population density, while the population distribution pattern in general was deconcentrating. In Russia, Ukraine and Belarus all these tendencies were also observed, but in this paper the authors did not address the issue of the population redistribution patterns in urban agglomerations, cities and adjacent suburbs. Such an analysis would require more accurate methods, as well as different statistical and sociological data. The general conclusion is that living in the regional centres and adjacent suburbs makes a difference – especially in terms of the socio-economic benefits – which stimulates internal migration flows. Population concentration in suburbs is not entirely explained by the suburbanisation processes but rather by the fact that people move from far more distant peripheral areas and cannot afford to purchase housing in a regional centre.

During the time period covered by the analysis ***only regional centres of adjacent areas could escape rural population decline***. It is quite possible that this is the first sign of the suburbanisation process, which is very well noticeable in Russia, to a lesser degree observed in Ukraine and not yet developed in Belarus. So far, even in Russia and Ukraine the scale of suburbanisation is rather narrow; it did not reach out beyond the borders of the ATU adjoining regional centres (suburbs). Therefore, it should be regarded more as the expansion of cities rather than the growing desire of people to live in the low-rise suburbs with better ecology. The observed process could be called «extensive suburbanisation», but anyway it would require a more thorough investigation.

According to the results of the analysis ***the Russian intra-regional periphery is more heteroge-***

neous in terms of population dynamics than the periphery of Ukraine and Belarus. Russia tends to lose more population in more remote areas. Probably, in Russia people living in regional centre periphery (suburbs) are more likely to commute to a regional centre rather than change their place of residence. In Ukraine and Belarus people choose another strategy: they either move to a regional centre or go to work abroad (to Russia or EU countries).

Population decline within the regional periphery is the result of ***the low economic profile of the 2nd-rank centres***. Despite the fact that the regions in all three countries are rather big and in some cases comparable in size with European states, the space tends to be highly concentrated and there are very few cities able to compete with the regional centres in terms of the economic development, population size and labour market opportunities. During the period of sustainable population increase and extensive urbanisation, the cities grew in terms of the population size in all three countries, the main suppliers of the migrants being adjacent rural periphery. The depopulation and migration outflows made the periphery unable to supply additional population to numerous centres, since the human resources were only sufficient for the major regional centres. The examples of successful secondary regional centres are very few but still they demonstrate that success is possible when 1) the influence of the major regional centre is limited due to its remoteness; 2) adjacent rural areas are populated densely enough to supply additional people, mainly the youth.

The core-periphery gradients in Belarus, Russia and Ukraine are highly sustainable: they were noticeable before the depopulation trend started developing, and they are also rather vivid now. No other factor - the proximity to the national borders, tourist attractions or any other uniqueness factor - is able to compete with the significant impact of the centre-periphery interaction. While the centres in all three countries are able to attract and maintain the population more or less successfully, the regional periphery is more heterogeneous: in Russia the proximity to the regional centre matters a lot, but in Belarus and Ukraine the same factor is of little significance, so that depopulation is equally large, no matter the distance from the regional centre to the borders of the region. As a result, the dispersion of the population over the territory of Russia is more fragmented than in Belarus and Ukraine.

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