Types of Demographic and Economic Development of Russian Cities in Post-Soviet Period

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For long time, the applicability of economic theories of cities, urbanisation and urban development as well to Russian cities was hampered by the lack of data beyond population figures. Since 1990, some contributions of Richard Rowland with regard to urban development in Russia referred to certain classes of cities (metropolitan cities, rapidly growing cities, declining cities or secret cities).[1] However, with the exception of secret cities (Zakrytye Administrativno-Territorial'nye Obrazovaniya, ZATO),[2] these classifications are derived from purely size characteristics. Mykhnenko and Turok (2008) analyse the long term population patterns of 150 East European cities over 200000 inhabitants in 19 countries, among them 56 Russian cities. Kauffmann (2010a) analyses growth rates of population of about 3000 Russian cities and urban settlements between 1993 and 2004 with regard to the predictions of a certain class of New Economic Geography models. But, since 2004, further social indicators for cities with more than 100000 inhabitants (and for some smaller cities with regional capital function, as well) are published by ROSSTAT annually in „Regiony Rossii vol. 3“. From this data source, geographers already provide descriptions of demographic as well as economic development of larger Russian cities. For example, Zubarevich (2013) displays indicators of urban social and economic development for 94 cities with more than 200000 inhabitants and for 12 smaller administrative centres as well; but she does not undertake any attempt of classification.

The objects of consideration are cities for which the required data (see below) are available. The selection of data and cities was a process in a sequence of stages. At the end,

[1] Rowland (1995a, b, 1996a, 1997, 1998)

[2] Rowland (1996b, 1999)

156 cities remained in the sample. The cities of Moscow, St. Petersburg and Grosny are not included, because (irrespective of missing data) each of them would present its own cluster.

Data included into analysis

The selection of variables was an iterative process that was driven by the goal to get meaningful, interpretable clusters on the one hand, and that was restricted by the availability of data on the other hand. The aim of clustering is to group cities with regard to their economic development. In the long run, urban economic development is related to the development of its size – by population and by area as well. The time period of consideration is divided into two subperiods that are slightly overlapping: 1989–2004 and 2002–2010. The reason for overlapping is that the first data set was prepared for another analysis.[3] The data source was "Chislennost' naseleniya po gorodam i poselkam gorodskogo tipa" that was not published for 2002 (the census year). From this source, data for all cities and urban settlements of Russia were used in Kauffmann (2010a), particularly from 1989 (the last Soviet census) and 2004.[4] However, this overlapping should not be seen as a really problem. More problematic could be that the population data for 2004 are not corrected with regard to mergers of municipalities. Some cities have been extended for the territory of adjacent urban settlements during the respective time period. But, the number and volume of territorial mergers was relatively small. For the population data from Regiony Rossii vol. 3, for many cities figures have been corrected with regard to territorial mergers. In some cases, for both days of censuses 2002 and 2010 the territory of the core cities is considered, in other cases, for both periods the population of the core city is added by population figures of its surroundings, but in no case figures with regard to the core city and the city region are mixed.

To include some variables into analysis that refer to economic processes more directly, unemployment rates, nominal wages and pensions are included. Unemployment rates have been computed as the relation of official acknowledged unemployed to the population that should be able to work. All three economic variables have been computed for three time periods: an early period 2002–2005, a late period 2007–2010, and the year of maximal utilisation of the production potential 2008. The variables for the early and late periods have been computed as average of the annual values of the respective periods (in case of wages and pensions weighted by a national price index). The nominal pensions are only included into the

[3] It was the basis for the empirical part of Kauffmann (2010a).

[4] The reason was that between 2004 and 2005 the number of urban settlements has diminished dramatically.

computation of a variable called "earnings" that is the average amount of money that every inhabitant of the city earned either as wage or as pension.

Regiony Rossii vol. 3 contains a lot of further variables that might be included into analysis. However, many of them are not complete for cities and/or time periods, or the method of preparation (or computation, respectively) has been changed.

Finally, following data were used in the analysis:

- *Growth rate of population 1989-2004* (g_pop89)
- *Births 2002–2010 per inhabitant (4), Deaths per inhabitant 2002–2010* (births02_10, deaths02_10)
- *Balance of migration 2002–2010 per inhabitant:* (bom02_10)
- *Longitude* (lon)
- *Population 2002* (pop02)
- *Averaged nominal wages 2002–2005 and 2007–2010* (wage02_05, wage07_10)
- *Sum of averaged nominal wages and pensions 2002–2005 per inhabitant 2002 and 2007–2010 per inhabitant 2010* (earn02_05, earn7_10)
- *Averaged acknowledged unemployment rate 2002–2005 and 2007–2010:* (uer02_05, uer07_10)
- *Nominal wage 2008:* (wage08)
- *Sum of nominal wages and pensions 2008 per inhabitant 2010* (earn08)
- *Acknowledged unemployment rate 2008:* (uer08)

Interpretation of Principal Components:

The first seven Eigen values of the correlation matrix are {6.2, 3.2, 1.8, 1.1, 0.9, 0.8, 0.3}. The sharp break after the sixth Eigen value indicates that the principal components 1-6 (representing 92.7% of the total variance of the sample) already are able to describe the features of elements and groups, as well, of the sample. The following table displays the correlations between PCs 1-6 and the respective variables, and provides short interpretation:

Table 1: Correlations between Principal Components 1-6 and variables

PC	Strong correlated with:	coefficient of correlation	Weak correlated with:	coefficient of correlation	Interpretation
1	wage02_05 wage07_10 wage08 earn02_05 earn07_10 earn08 births02_10 lon deaths02_10	+0.97 +0.96 +0.94 +0.96 +0.95 +0.97 +0.51 +0.43 -0.39	pop02 uer07_10 uer08	-0.15 -0.11 -0.11	„**Endowment with natural resources**“ (raw materials extraction, wage premium for rough climate: +, „old“ European economy: -)
2	uer02_05 uer07_10 uer08 bom02_10 g_pop89 lon pop02	+0.87 +0.91 +0.93 -0.63 -0.42 +0.26 -0.27	wage08	-0.12	„**Allocation of human capital**“ (push factors: +, pull factors: -)
3	g_pop89 births02_10 deaths02_10 pop02 bom02_10	-0.81 -0.68 +0.64 +0.24 -0.20	uer02_05 uer07_10 uer08	-0.21 -0.11 -0.17	"Growing cities" (-) vs. "Shrinking cities" (+) or "Diseconomies of agglomeration" (if size is large, +): „**Growth of population**“
4	pop02 deaths02_10 bom02_10 lon	+0.73 -0.47 -0.43 +0.32	uer02_05	-0.13	"Suburbian peripherality particularly in the west" (-) or "fast growing periphere small cities" (-) or "fast aging small cities" (-) vs. „Centres of

					Urbanisation“ [east: „Islands of population“] (+): „**Position in the urban system**“
5	lon births02_10 deaths02_10	-0.77 -0.31 -0.27	bom02_10 pop02	-0.12 +0.14	"**Trap situation**" (-) vs. "Retirement from the East“ (+) or „Urbanisation in the West" (+) [The latter case may occure due to rural-urban migration, particularly in the West, where birth and death rates may be as average due to immigration from rural hinterland as well as from the East.]
6	pop02 bom02_10	+0.54 +0.55	uer02_05 uer07_10 uer08 deaths02_10 births02_10	+0.20 +0.22 +0.15 +0.21 +0.11	"**Economies of agglomeration**" (Large cities, positive b.o.m.: +, small cities, negative b.o.m.: -)

Source: Computation by authors.

The interpretation of the **PC 1** is related to the division of Russia by geography into the European (including the Ural mountains) and the Asian Russia. Both parts of the country display different structures of settlement as well as of the economy: While the western part of the country has more similarities to higher centralised western countries (higher density of population, higher importance of manufacturing and of the service sector), the Siberian part of Russia as well as the Russian Far East display a settlement structure that is unique: the distances between the islands of population in an ocean of land are huge; the main transportation route is the Transsiberian Railways in the South of Siberia and Far East (added by the Baikal-Amur Mainline). Almost all cities that are located besides the main transportation routes are linked to natural resource exploitation, if their function is not limited to defence or administrative purposes. One reason for the weak density of human population

in Siberia and the Russian Far East is, of course, the harsh climate in this part of Asia. Remoteness and raw climate conditions require some monetary equivalent to attract people to work in these areas. Therefore, the highest wages (and rents, as well) are paid in the most northern cities of Siberia and the Far East. Wages, income (as the mean of the sum of wages and rents in a city) and longitude are strongly correlated with PC 1, that may be therefore interpreted as **"endowment with natural resources"**, or, more generally, as **"physical geography"**.

PC 2 is strongly related to unemployment rates and (in opposite direction) to the balance of migration and to the growth rate of population 1989-2004. PC 2 indicates a migration behaviour that is in accordance to expectations: Cities with high growth of population 1989-2004 (that is positively related to their balances of migration in this period) as well as cities who display high migration surpluses 2002-2010 are faced with low unemployment rates (and vice versa). PC 2 combines a possible reason to emigrate (high unemployment) with its consequence – population losses due to emigration, or low unemployment with migration surpluses, as well, respectively. Additionally, it indicates that unemployment does not increase due to immigration in the respective cities. Therefore, this PC may characterise cities where population dynamics is highly determined by **"Allocation of human capital"** with regard to the labour markets.

PC 3 refers strongly to the growth rate of population 1989-2004 and to the birth rate 2002-2010 and (in opposite direction) to the death rate of the same period, but not (or only very weak) to balance of migration 2002-2010. However, the growth rate 1989-2004 encompasses also balance of migration, and therefore, one may conclude that migration processes in the early transitional period follow different patterns than migration processes later. It is possible, that the share of young people who moved (particularly from Far East and Siberia) was higher in the early period. In this case, emigration leads to higher birth rates at locations of destination later. Hence, PC 3 may be interpreted as **"Growth of population"** due to migration in the early transition period and natural growth 2002-2010.

On the other hand, high death rates may occur due to immigration or low emigration, as well, of retired people. If people are free to migrate from noxious locations (as, for example, Noril'sk), one can neglect the possibility of high death rates due to damaged environment as well as due to bad medical care (investigations of social-medical indicators displayed that the medical system is organised hierarchical and concentrated to regional

capitals). Particularly the interpretation of PC 4 and 5 rests on this simplification. **PC 4** is mostly related to the size of cities, but also (with opposite sign) to death rate and balance of migration, as well. Other than in PC 3, the latter variables are correlated with PC 4 in the same direction. Therefore, negative values of PC 4 may indicate small cities, but also cities with high death rate due to immigration of old people. PC 4 is highly negative particularly in clusters that contain suburbs of large cities (high emigration surplus probably from the central city, high death rate *because people stay there until they finish their life*: cluster 7, 3 and 5). In the central cities itself (which are of large size), PC 4 is positive. Therefore, PC 4 may indicate centrality vs. peripherality or, other said, the **"Position in the urban system"**: positive PC 4 is typical for large cities; it takes negative values particularly if the cities are suburbs of large centres.

PC 5 is not (directly) related to the balance of migration variable. However, it is important particularly for groups of cities where the migration is almost balanced. Although low balance of migration may also occur if migration turnover is high, a balanced migration is more likely if the number of migrants who leave or arrive is low. This may be the case in cities where PC 5 displays highly negative values. In that case, both death rates and birth rates may be high. PC 5 is mostly related to longitude, but (with the same direction, but rather weak) to birth and death rates. It takes negative values if cities in the East display high death rates and high birth rates as well. Normally, cities in Siberia and the Far East display low death rates because many people move from there to warmer parts of the country if they have earned enough money. Birth rates are high in almost all cities in the East due to the high share of young people (that will move after some years). But not all people have the possibility to leave these locations (of course, not all people are willing to leave Siberia or the Far East; but the share of those who wish to leave should be high. Therefore, high death rates in cities that are located in Siberia and the Far East may indicate a **„Trap situation“** that is described e.g. in Göler (2005) or Andrienko/Guriev (2004, 2005): Many people would leave these places but cannot buy the ticket to the West, or they don't find job opportunities or a flat in other parts of the country (see also the World Bank report ...).

The fourth PC that is related to balance of migration is **PC 6** that is also the last PC with larger importance, with regard to its Eigen value or its variance, respectively. With PC 6, size and balance of migration are correlated in the same direction. Positive PC 6 indicates that people migrate to large cities. In Russia, the largest nominal wages are not paid in the largest cities because of the high wage premium paid at places with extremely hard living conditions.

However, as New Economic Geography claims, people are not moving due to nominal wage differentials but to places where real wage (or utility) is high. Utility is determined also by the heterogeneity of the bundle of goods that is supplied in a city that is larger in big agglomerations. Therefore, PC 6 may be interpreted as **"Economies of agglomeration"** as described in Krugman et al. (1999) or Ottaviano et al. (2002).[5] However, this interpretation may not be true in all cases. PC 6 is also weakly correlated to unemployment rates and death rates as well. In cluster 14, PC 6 displays significantly positive values although balance of migration is (weakly) negative, but death rates are very high. In this case, PC 6 indicates fast aging cities.

Results of "Partition around medoids" clustering

The matrix of 15 variables for 156 cities has been grouped using the "Partition around medoids" algorithm by Kaufman/Rousseeuw (1990). The striking feature of this algorithm is the use of one individual as representative (medoid) of each cluster, which data are located nearest to the centre of the scatter plot of the data of all individuals of the cluster. The results of this algorithm are more stable with regard to small changes in the data as well as to outliers. Starting with clustering into k=2 groups, the number of k was increased until 25, and the results of all clusterings were analysed. As an optimum in sense of stability and interpretability the number of k=15 clusters has proven.

Table 2 provides an overview of the features of these 15 clusters with regard to the principal components that are describing the respective cluster. Then, a more comprehensive description of each cluster is following, providing the names of the cities (the representative of each cluster is highlighted), mean and standard deviation of the principal components, and an attempt of interpretation (in boxes).

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[5] Kauffmann (2010a, 2010b) enhances the model of Ottaviano et al. (2002) with urban costs to n regions (n is an odd number > 2) by means of simulation. Ago et al. (2006) solve a model with the same (quadratic) utility function for three regions, but without urban costs. The outcomes of these models predict migration to large centres if costs of transportation increase. After price liberalization in 1991, a large jump of costs of transportation in real terms has occurred in Russia.

Table 2: 15 clusters of 156 Russian cities (overview)

	PC1	PC2	PC3	PC4	PC5	PC6	Description
1	-0.03	**-0.066**	0.038				Well situated due to regional capital function or to climate, West, South
2	-0.036		**-0.171**			-0.04	Located in ethnic republics, poor, fast growing
3	-0.033	-0.029	**+0.062**	-0.033			Shrinking old industrial centres, low unemployment, West, South
4	-0.047	**+0.084**					Monocities in Europe or Siberia, low wages, high unemployment, migration losses
5	+0.019			-0.025	**+0.052**		Industrial cities in European Russia, suburbs of larger cities, wages above average
6	**-0.054**	+0.032		+0.035			High unemployment, migration surpluses due to amenities or as suburbs of large cities
7		-0.092		**-0.152**			Suburbs of Moskva, well situated manufacturing enterprises, high migration surpluses, high death rates
8	-0.02	-0.045	+0.057	+0.139	+0.033	**+0.142**	Million and almost-million cities: migration surplus, wage and earnings high but not highest
9	**+0.316**	(+0.2)	(+0.064)		(+0.229)	(-0.103)	ost northern cities, very high wages, migration losses
10	**+0.127**	+0.122	+0.074	+0.049			Heavily shrinking cities in the Far East or Russian North, military importance
11	+0.041	-0.034		+0.063	**-0.107**		Large administrative centres of regions with abundant natural resources, trap situation.
12	**0.375**			(-0.104)			Richest cities, Siberia and Far East, not

							large, fast growing, extraction of raw materials
13	**+0.169**	-0.072				-0.092	Rich, Siberia and Far East, large, growing cities,\crlf extraction of raw materials
14		**+0.220**			-0.067	+0.104	Old industrial centres in Siberia, lost main employer
15	**-0.175**	+0.036				-0.048	Poor cities in the Far East, trap situation

In parentheses: Values differ not significantly (95%) from zero.

*Due to employee's taxation at the location of work in Russia, a bias of local wages may occur if a high share of inhabitants of suburbs commutes into the centre. The mean wages reported for these suburbs is based on wages that are earned only in the suburbs.

**The cities are in the sample due to its administrative function as regional capital.

15 Cluster of 156 cities: brief description

The city that is the representing individual of the respective cluster (the medoid, respective) is printed bold faced.

Cluster 1:
Belgorod, Kaluga, **Lipetsk**, Korolev, Odintsovo, Ryazan, Kaliningrad, Krasnodar, Armavir, Novorossiisk, Sochi, Bataisk, Stavropol', Kislovodsk, Pyatigorsk, Volzhskii, Kirov, Orenburg, Tol'yatti, Barnaul (20)

Cities with high immigration surpluses, located in the West particularly in the Centre and in the South (but not in the North). Cities in South Russia may be target cities of workers and retired persons migrating from Siberia and the Far East.

Cluster 2:
Stary Oskol, Makhachkala, Derbent , Khasavyurt, Nal'chik, Elista, Cherkessk , **Neftekamsk**, Sterlitamak, Nizhnekamsk, Gorno-Altaisk, Kyzyl (12)

Almost all cities are located in ethnic republics. High natural growth of population, low wages and incomes (among them the lowest of the sample, measured in Dagestan), high immigration surpluses in small cities.

Cluster 3:

Bryansk, Ivanovo, Yaroslavl', **Kostroma** , Noginsk, Orekhovo-Zuevo, Serpukhov, Smolensk, Tula, Novomoskovsk, Tver', Arkhangel'sk, Pskov, Astrakhan', Novocherkassk, Taganrog, Oktyabr'skii, Salavat, Dzerzhinsk, Orsk, Berezniki, Syzran', Balakovo, Kopeisk (24)

Shrinking cities in the European Russia, low wages, high population losses 1989-2004, negative natural growth 2002-10. Old industrial centres that have suffered due to opening of markets after 1991.

Cluster 4:

Rybinsk, Kursk, Vladimir, Maikop, Vladikavkaz, Nevinnomyssk, Cheboksary, Novocheboksarsk, Naberezhnye Chelny, Zlatoust, Miass, **Kurgan**, Rubtsovsk, Belovo, Novokuznetsk, Prokop'evsk, Achinsk (17)

Cities with high unemployment rates and negative or low balance of migration, low wages and income, low or negative natural growth. The cities of this cluster are located in the Centre, in the South as well as in Western Siberia (Kuzbass), but not in the North or the Far East. Probably, structural changes in the economy of these cities has been delayed or had no success.

Cluster 5:

Obninsk, Shchelkovo, Severodvinsk, **Petrozavodsk**, Syktyvkar, Ukhta, Velikii Novgorod, Vologda, Cherepovets, Volgodonsk, Novokuibyshevsk, Al'met'evsk, Izhevsk , Magnitogorsk (14)

Cities in the North West, the Centre, the Volga region and the Urals with wages and income above average. Balances of migration as well as unemployment rates are as average (one outlier: Al'met'evsk with high unemployment.). Natural growth is negative (1 exception: Al'met'evsk), growth of population 2002-10 is heterogeneous (+/-) but low. Demographic indicators give hints to suburban peripherality as well as western urbanisation patterns (PC5, immigration from elsewhere due to high wages?).

Cluster 6:

Elets, Sergiev Posad, Orel, **Tambov**, Novoshakhtinsk, Shakhty, Ioshkar-Ola, Saransk, Arzamas, Penza, Engel's, Ul'yanovsk (12)

Low wages, high unemployment rates (main differences to cluster 5), located in the West (Centre, Volga region and South). Some cities had lost their main employers as Shakhty or Novoshakhtinsk (closed coal mines). A certain bias may occur due to the special features of Russian wage statistics in case of cities who belong to functional regions of other (large) cities. Therefore, some well-situated suburbs of large cities are members of this cluster. All cities of the cluster are locations of manufacturing, Sergiev Posad is a centre of Tourism and of religious education.

Cluster 7:

Balashikha, Zheleznodorozhnyi, Zhukovskii, Kolomna, Lyubertsy, **Mytishchi**, Podol'sk, Khimki, Elektrostal' (9)

The cluster contains suburbs of Moskva and are part of its functional region (PC4). Strong and successful manufacturing enterprises are located here, therefore wages are relatively high, and peoples are attracted by jobs (PC2), wages (at least in some cases) as well as the proximity to Moskva. The high death rates may indicate that people stay here until the end of their life (in contradiction to the far East, PC 4). A distinctive feature of these cities in comparison with other cities near to Moskva is the high migration surplus, probably caused also due to successful manufacturing sector.

Cluster 8:

Voronezh, Rostov-na-Donu, Volgograd ,Ufa, Nizhnii Novgorod, Perm', Samara, Saratov, Kazan', **Chelyabinsk**, Ekaterinburg, Novosibirsk, Omsk (13)

The cluster of the largest centres displays strong economies as well as diseconomies of agglomeration. The city of Voronesh is the fastest growing city of this cluster, due to large balance of migration. It seems interesting that the wages in the largest cities are not the highest, even in many cases below the average of the sample. There is an urban wage premium, but no wage premium for bad quality of life due to climate and other factors of first geography.

Cluster 9:

Nar'yan-mar, **Noril'sk** (2)

Two cities where heavy exploitation of raw materials takes place. Naryan'-mar additionally serves as administrative centre of the Autonomous area of Nenets people. Both cities lose population due to balance of migration, because climate and environment conditions are very rough, and human labour force may be substituted partially by technological progress. The city of Norilsk may disappear if Metallurgy comes to an end.

Cluster 10:

Murmansk, Petropavlovsk-Kamchatskii, **Magadan** (3)

Three shrinking cities located in the High North or the Far East with rough climatic conditions. By geography, all three cities are located at the periphery and have had in Soviet times mainly military importance. Due to the loss of military importance, other branches had been introduced, but without success. The cities are depressed and shrinking since 1989. In Petropavlosk-Kamchatskii, fishery went down, in Magadan the introduction of tourism was not successful. All cities are harbour cities (Murmansk: atom icebreakers, also production of oil platforms). For military reasons they have probably some meaning else, therefore they will not disappear. But a equilibrium size has to be found and strategies for planning the processes of shrinking should exist.

Cluster 11:

Tyumen', Abakan, Chita, **Irkutsk**, Bratsk, Kemerovo, Krasnoyarsk, Tomsk, Khabarovsk, Vladivostok, Yakutsk (11)

The cluster contains old cities in Siberia and the Far East with strong features of first geography (raw materials, good position for defence), as well as strong and more or less successful manufacturing enterprises. Earnings are high, but not exacerbating. In some coal mining cities of the cluster wages are rather low for Siberian relations. Some cities of this cluster may shrink in the future and need special strategies. PC5 indicates a trap situation (people do not move from the East before they are growing old). All cities (with the exception of Bratsk) are administrative centres of their region, similarly to cluster 8 the wage premium seems relatively low.

Cluster 12:

Khanty-Mansiisk, **Salekhard**, Anadyr (3)

Cities of cluster12 display the highest wages and very high balances of migration, as well. Additionally, high birth rates and low death rates indicate high fluctuation of population (immigration of young people for some years). The main distinction to cluster 9 are migration surpluses. The cluster contains three small centres of exploitation of raw materials. Probably they are growing due to requirements of labour force. However, they also have administrative functions as regional centres (for this reason they are in the sample despite their smallness).

Cluster 13:

Nefteyugansk, **Nizhnevartovsk**, Surgut, Yuzhno-Sakhalinsk (4)

The cities of cluster 13 display strong effects of natural resource economy (high wages and incomes, location in Western Siberia or in the Far East, resp.). The differences to cluster 12 are larger size, lower balances of migration, lower death rates and lower birth rates. The fluctuation of population seems to be very high. With the exception of Yuzhno-Sakhalinsk, the cities are not administrative centres of a federal subject. That administrative centres of regions are smaller than cities who fulfil only functions of production may be a special feature of some regions in Siberia, the North and the Far East.

Cluster 14:

Biisk, **Kiselevsk**, Leninsk-Kuznetskii, Mezhdurechensk, Komsomol'sk-na-Amure (5)

The cluster contains cities in Siberia or the Far East that lost their main employers. Unemployment rates are high, wages as well as incomes are low. Relatively low negative balances of migration together with high death rates indicates trap situation.

Cluster 15:

Ulan-Ude, Angarsk, Blagoveshchensk, **Birobidzhan**, Artem, Nakhodka, Ussuriisk (7)

Cluster 15 contains cities in the Far East where wages and incomes are low, probably due to the loss of employers or of military importance. PC5 indicates clearly a trap situation. Some of the cities are growing despite their bad economic conditions.

Conclusions

Cluster analysis results presented above made it possible to reveal the following types of the cities based on their demographical and economic development:

1. Cities with the increased number of the population with competitive economy, in which income and salaries, as well as development of social infrastructure, are above the average level in the Russian Federation:
    - cities with million-plus population;
    - cities in the regions of oil and gas production;
    - middle-size cities located in Metropolitan Region of Moscow;
    - middle-size cities of the European part of the Russian Federation with the diversified economy.
2. Cities with a population that has income and salaries higher than average in the country, where at the same time the number of citizens is decreasing:
    - middle-size cities carrying out restructuring of the economy, which due to convenient geographical position and good transport accessibility became "donors" of their population for other dynamically developing cities;
    - large cities of the south of Siberia, which are characterized by the diversified economy, high income and salaries, but which do not have inflow of the population due to the lost competition with the cities of regions of oil and gas extraction and cities with a million-plus population of the European part of the country;
    - cities with high salary and income of citizens that find themselves in severe natural and climatic conditions beyond the Arctic circle;
    - cities that are large military bases and fishing centers located in the Far North and that despite high income and well-developed social infrastructure are losing population.
3. Cities located in depressed regions with income and salaries of citizens lower than average level in the country and where the number of population is decreasing:
    - cities with high unemployment and stagnant declining population;
    - old industrial cities of the European part of the country with low unemployment, but with high population outflow;
    - Centers of mining and defense industries of Siberia and the Far East with low unemployment, but high population outflow.

4. Cities located in depressed areas, with the income and wages of residents below the national average, with long-term unemployment and stable population.
5. Cities located in the national republics with low level of economic development and high natural population growth. With very low incomes and wages (relative in comparison with the national average level), as well as large population outflow, we can observe increase of the number of citizens of these cities (due to high birth rates and life duration indices, which are relatively high, if we compare Russia with other countries).

A number of hypotheses formulated in the course of cluster analysis needs further empirical testing (for example, by conducting specialized opinion polls). This applies to hypotheses about migration to the central and southern regions of Russia of elderly population of some mining towns of the North, Siberia and the Far East, the situation of "poverty traps" in a number of old industrial cities (primarily, crisis mono cities) , the surplus population, which does not have sufficient resources to move to other places , where there is a demand for labor force, as well as to different degrees of industrial restructuring in the industrial cities with low-income population that differ in terms of the level of unemployment and migration outflow of the population. An assumption about concentration of elderly people (pensioners) in the cities of the southern part of Russia, as well as Moscow and Saint Petersburg, also needs to be confirmed.

An assumption about the presence of significant positive relationship between the level of human capital, social capital, the effectiveness of institutions and economic development of the cities is an important hypothesis that requires further verification. In further studies on this subject it is expected to consider a wider range of social and economic indicators, as well as to carry out analysis of dynamics and level of development of all urban settlements of Russia, considering small cities separately, for which purpose it is necessary to justify their own typology.

A separate study could be carried out with regard to comparison of dynamics and drivers of urban agglomerations. For this purpose it is necessary to aggregate data from different communities, being part of each of the Russian agglomerations. The implementation of such complex research will make it possible to describe the types of the cities and urban agglomerations of Russia systematically in terms of the dynamics of economic, social and demographic development, to identify the main factors

determining this dynamics (including institutional factors, as well as human and social capital) and to develop recommendations for regional (and local) economic policy for each type of urban settlements. This paper presents only first findings of this research program (for cities with a population of over 100 thousand people).

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