

REGIONAL POPULATION DEVELOPMENT IN RUSSIA 1990-2009: TRAJECTORIES OF CHANGE AND PATH-DEPENDENCY

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ABSTRACT

The population crisis in Russia is well-documented. Since there large socio-economic inequalities between Russian regions, one would expect to find regional variation in demographic developments as well. This paper sets out to analyse the differences in population change between the regions of the Russian Federation; to identify the “ideal types” of trajectories of regional population change during the past 20 years and to analyse the initial (1990) conditions in the regions in relation to their later development in order to identify path-dependencies in their population change. The data used originates from the Russian statistical agency, Rosstat. Q-analysis is utilised to identify the different trajectories of regional population change during the research period. Next, multinomial logistic regression is applied on the dataset of the initial conditions in relation to the ensuing changes. The results show that, first, there indeed exist clearly identifiable trajectories of regional population change, four major paths could be distinguished. The regression analysis shows the initial conditions do play a role in determining the path region would take in its population development – at least up to a certain time-point in the 1990’s.

EXTENDED ABSTRACT¹

INTRODUCTION

Population demographic and health crisis in Russia throughout the 1990's and 2000's has been amply documented (e.g., Anderson, 2002; Andreev, McKee, and Shkolnikov, 2003; Brainerd and Cutler, 2005; Eberstadt, 2004; Main, 2006; Shapiro, 1995). It is agreed that Russia has experienced “a shock unprecedented in peacetime to its health and demographic profiles” (Tragakes and Lessof, 2003: 10). “Demoscope Weekly” presents the simple Russian demographic arithmetic: according to the statistically generated “Population Clock” in Russia there is one birth every 18 seconds, but one death every 16 seconds (Demoscope Weekly, 2011)². The last year of a positive natural growth (births exceeding deaths) was 1991³. Until 2009, the natural decrease in population could not even be fully compensated by the more or less stable foreign migration.

The causes of this phenomenon have been extensively analysed over the years (Shapiro, 1995; Shkolnikov *et al.*, 1998), and they range from alcohol consumption (Pridemore *et al.*, 2010; Treisman, 2010; Zaridze *et al.*, 2009) to lifestyles (Cockerham, 1997; Cockerham, 2000) and socio-economic factors (Cockerham, 1999; Kislitsyna, 2009). However, investigating the literature on socio-economic development within Russia, i.e. the regional⁴ and local trends, it would seem that the transition years were accompanied by rapidly increasing inequality, not only between individuals, but between regions as well (Becker and Hemley, 1996; Dolinskaya, 2002; Fedorov, 2002; Hanson and Bradshaw, 2000; Hanson, 2006). Hence, if the demographic and health crisis is even partially caused by socio-economic and lifestyle factors, and at the same there are large regional inequalities in Russia, then inevitably it must be expected that the demographic and health transition had to take strongly diverging paths across Russia's 83⁵ federal subjects.

The analysis of the regional health-related and demographic differences in Russia has not yet become a vastly popular topic among the researchers in the field. Only few studies have been conducted in particular populations and regions (e.g. Shkolnikov *et al.*, 2004; Vlasoff *et al.*, 2008), or analysing the economic determinants of mortality across regions (e.g. Walberg *et al.*, 1998), recently also regional demographic diversity (Prendergrast, 2004; Rybakovskii, 2010). Comprehensive and systematic analyses of the regional diversities of population change patterns are still needed.

¹ Full paper will be submitted for publication and can be later on available on request.

² As of January, 15th, 2012.

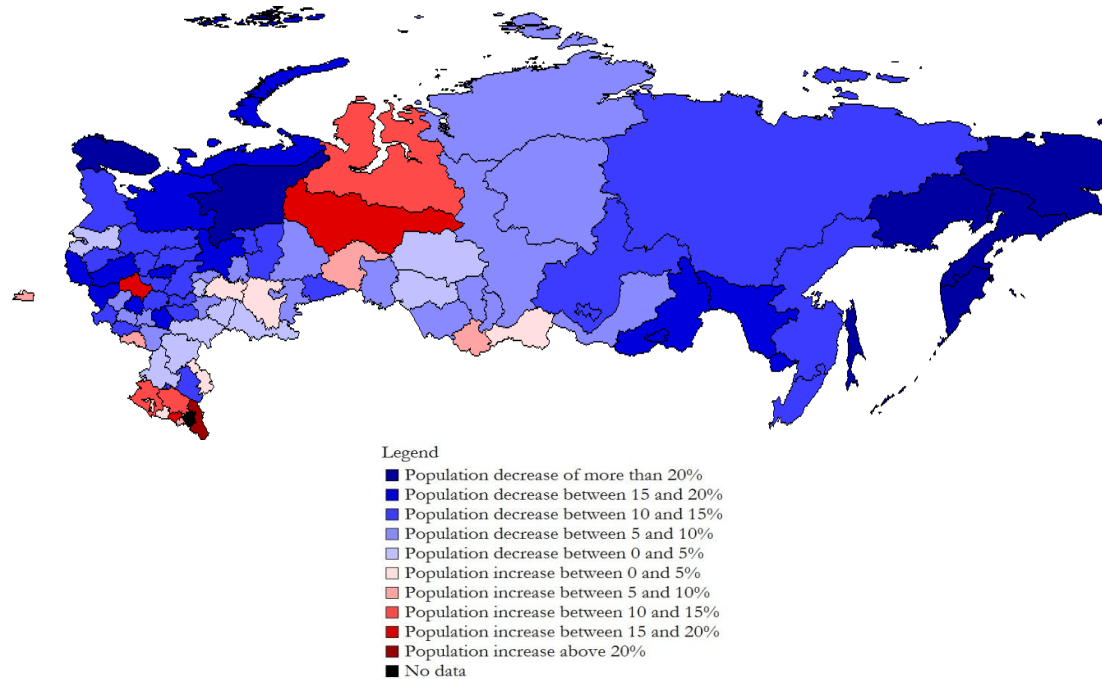
³ As of January, 15th, 2012.

⁴ ‘Regional’ hereafter refers to the main division of the Russian Federation into so-called “federal subjects”, not to the particular type of federal subject.

⁵ As of 2011. Originally after the disintegration of the Soviet Union the Russian Federation had consisted of 89 units of federal division, however, some of the federal subjects were merged, resulting in 83 regions. The final (latest) federal division is used throughout the paper.

In terms of general population composition, it is well acknowledged that the Russian regions have been very different in size and population ever since the times of the Russian Empire. However, the differences have become if anything exacerbated during the past 20 years as well. Figure 1 shows the differences between the regions in their population development since 1990. While most of them have experienced population decrease between 1990 and 2009, it is evident that there are some areas where the population has increased. The population crisis might not touch the entire country in a similar manner.

Figure 1. Population change in per cent in 2009 (in comparison to 1990).



NOTE: Change in per cent between 1990 and 2009.

One of the ways to analyse cross-unit changes over time is to develop a classification based on the type of change. In life-course research the dynamics of change is often described with the help of ideal-typical *trajectories*, which the individuals follow over time. In developmental science, the units' following one trajectory or another depends on the original pre-conditions and the processes occurring during the course of the development (Elder, 1998). Here, the notion of trajectory is used for non-human entities, but similar dynamics (within a limited time frame) with certain pre-conditions determining the starting point of a trajectory, and perhaps also its further course can be hypothesised

AIMS OF THE PAPER

The aims of this paper are twofold. First, the differences between the federal subjects' population developments between 1991 and 2009 are analysed and potential trajectories over time are identified. Given the existence of such trajectories, the second aim is to relate them to the social and economic conditions at the beginning of the 1990s in order to assess to what extent the population development patterns could have been pre-determined by these.

DATA AND METHODS

The data are taken from Rosstat (2011), which provided the main variable under scrutiny: “Population of regions of the Russian Federation as of 1st January” for each year. Since the regions are very different in terms of the size of their population, the changes are studied in proportional relation to the initial year (1990). All the following years’ population figures are expressed as per cent of those in 1990.

To disentangle the most important components of population change in the regions, a set of independent variables was measured at the initial time point. It includes, for all regions studied, *mortality* (all-cause death rate per 1000 population) and *nativity* (birth rate per 1000 population), *net migration* per 1000 population, *percentual population change between 1959 and 1989*; and also some *socio-economic characteristics*: religion in the form of *percentage of Muslim* population, the *number of cars* per 1000 people (a proxy for wealth), *alcohol poisoning* per 1000 people (a proxy for alcohol consumption), *homicides* per 1000 people, and, finally, *remoteness* – the *distance of the regional capital from Moscow* in kilometres.

At first, a principal-component Q-analysis was performed in order to group the regions according to their relative annual population changes. After identifying the main types of change, the regional paths were graphed in line-plots in order to assess whether and how well they would fit in a visual analysis and whether further detailed grouping would be necessary. After the trajectory types have been established, the effect of the independent variables on the regions’ falling into different categories of development was analysed using multinomial logistic regression (MLR) with maximum likelihood estimation.

RESULTS

The Q-analysis identified three main types of population change in the Russian regions⁶. The first of them comprises the regions with more or less steadily increasing population. The second group consists of regions, whose population first increases, and then starts a slow decline some time during the latter half of the 1990s; hence, their time path draws an inverted U. The last group follows a less favourable trajectory, where the population has steadily declined. They were further divided into two subgroups: Trajectory 3, with a decline up to 15%, and Trajectory 4, which represents the largest decline in population between 1990 and 2009.

In the next analysis, the role of the initial conditions in determining the four trajectories of population development in the regions was investigated. First, the effects of the initial demographic conditions (nativity, mortality, and migration) were put into the model, then the initial socio-economic conditions, while still controlling for natural growth and migration.

It was found that regions following the Trajectories 1 and 2 (i.e. not declining) tended to have both higher natural growth and immigration in 1990 than those with subsequently declining populations. There seems to be a pattern that at the very least

⁶ All detailed results are available on request.

separates between these two groups of regions already before the analysed developments actually take place.

In terms of socio-economic initial conditions it is found that religion plays an important role, particularly in combination with natural growth and migration of the population, while the economic situation in the regions in the 1990s did not influence the further trajectories of population change. Summing it up, it seems that the initial conditions did have an influence on the later developments in the regions, but that the further, shifting conditions are mainly responsible for the details of further development.

DISCUSSION AND CONCLUSIONS

It was found that, *first*, the Russian regions did indeed follow certain identifiable trajectories in their population development; in the majority of cases the pattern is quite clear. *Second*, the initial conditions had some influence on the trajectories: e.g., regions that were initially successful in demographic and economic matters tended to have a population increase. Some part of the decrease – higher or lower – was also predefined already by the demographic and socio-economic conditions before 1991. In other words, despite the massive social changes, the demographic tendencies existing prior to 1991 could not be easily reversed.

Third, we also find that the initial economic conditions, security, or alcohol consumption did not play a very significant role in the regions' subsequent fates. The distance (or remoteness) was a significant predictor however. Among all the indicators tested, religious composition of the population within regions is the most significant one for future population trajectories: regions with a larger proportion of Muslim population tend to fare better in terms of population growth.

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