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Adjusting for adjustment: the impacts of internal migrant assimilation, adaptation, disruption and selection in a context of regional variation, the case of Russia.

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Abstract

Russia's population has declined by at least four million people since the early 1990s; however, this has not occurred uniformly across the country. Further, the regions of the country with the greatest natural decrease have also experienced the highest rates of out-migration, while regions with more stable rates of natural increase have experienced in-migration. Some methods of population projection account for migration in their metrics of change, but they ignore its potential impact in altering fertility and mortality patterns. This paper will project population change in Russia and incorporate the net interchange between sub-national regions of the country to explore the consequences of four models of migrant fertility schedule adjustment - assimilation, adaptation, disruption, and selectivity - on the country's population potential. Results suggest that internal migration and migrants' fertility adjustments may play a significant role in determining growth trajectory, particularly under assumptions of medium- to high-fertility.

Long Abstract

Introduction

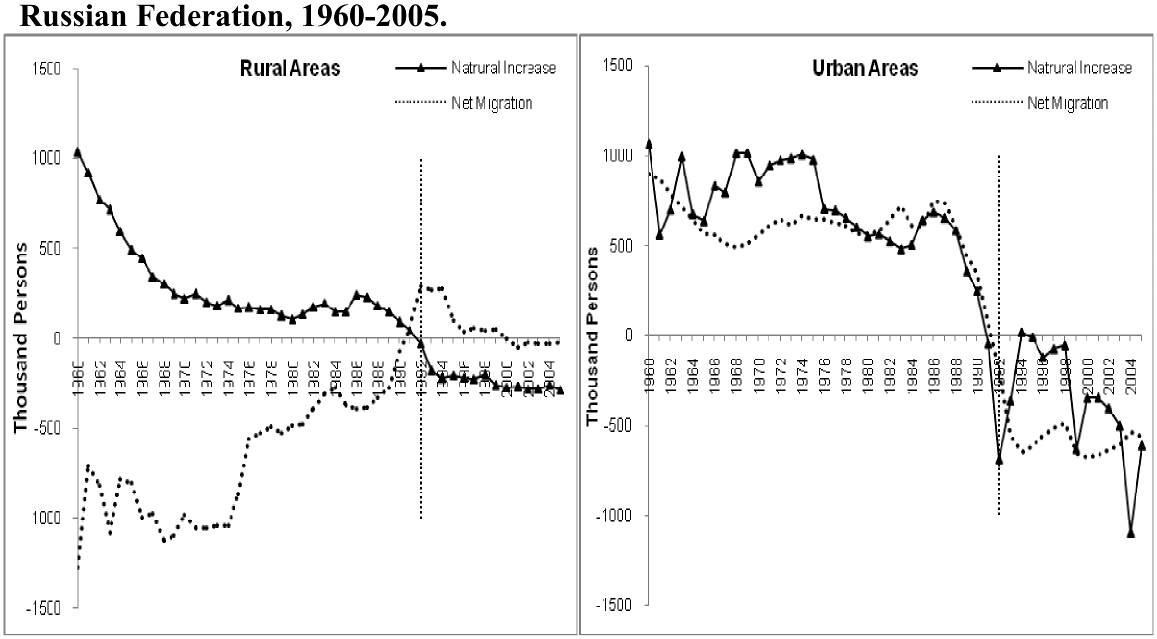
The Russian Federation's population has shrunk by over four million people since the dissolution of the Soviet Union. However, these losses are less than they might have been as the country has experienced a net influx of millions of migrants since 1990 (Eberstadt 2004; Rybakovsky 2005). In both popular and academic circles these trends have given rise to discussions of a depopulated Russia and what this might imply for regional security, international relations, and the global economy (Anderson 2002; Ambrosio 2005). In addition to retrospective studies examining how and why this decline has occurred, a number of authors have sought to build population projections to estimate the extent of its impacts. However, the inferences that can be deduced from a projection are only as valid as the theoretical and empirical scenarios upon which it is built, their "quality is determined by… whether they accurately and consistently model relations among demographic variables" (Preston, Heuveline, & Guillot 2001: 118).

In this paper I argue that most contemporary projections have failed to accurately model the relations among two basic demographic variables – fertility and migration. Specifically, by ignoring sub-national variation in the country they have not interpreted Russian trends in their historical perspective. Those that have accounted for this have focused on growth (or its negative, decline) without distinguishing natural increase from net migration and considering their interrelationship. In projecting the future of a country as diverse as Russia, it is important to consider migration's potential impact on fertility. In other words, are there noticeable adjustments in migrants' fertility schedules and levels of completed fertility after they migrate, and to what extent might these affect long-term population growth? To explore these issues, I will describe regional variation in Russia and theoretical models of migrant fertility adjustment. After this, I will present the results of a population projection that explores implementations of different assumptions drawn from these models about the potential fertility adjustments migrants may make.

Regional Variation and a Projection

Internal mobility is shifting Russia's population in important ways. On the regional level, it is bringing migrants from the high fertility, high mortality regions of the North and Far East to the low fertility, low mortality regions of the South and West (Heleniak 1997, Heleniak 1999). One of the most important patterns is the general (but not uniformly dominant) movement of people away from cities and towards the countryside (Wegren and Drury 2001; Zayonchkovskaya 1996). Figure 1 depicts net migration levels for urban and rural areas from 1961 to 2005, with comparisons to their relative levels of natural increase. As can be seen, there are similarities in the trends of natural increase in both regions, but a divergent pattern emerges regarding migration. This internal movement of people is certainly altering the relative population share that different regions of the country contribute to the national total, but might it be important in other ways? By looking at the last decade in this figure, two recent trends become evident. Firstly, rural areas are shrinking less quickly than urban areas, and they are not losing nearly as much population due to migration. Secondly, both trends in rural areas appear to have stabilized and flattened, while natural increase and net migration in urban areas continue to fall further below replacement.

Figure 1. Net Migration and Natural Increase in Rural and Urban Areas of the Russian Federation, 1960-2005.



Notes: Prior to 1992 data is for the RSFSR of the Soviet Union while after 1992 it is for the Russian Federation. A hashed, vertical line denotes dissolution of USSR.
Sources: Years 1960-1989 from Goskomstat 1999: 20-21; years 1990-2005 from Goskomstat 2006, 21-22.

With such regional variation, the potential for internal migrants to undergo significant changes in their rate schedules and completed fertility levels is quite large if they experience fertility adjustment. Four dominant theories have emerged to explain a causal relationship in which migration may impact fertility (Edmeades 2006). These are typically characterized as the assimilation, adaptation, and disruption hypotheses (Stephen and Bean 1992; Hervitz 1985; Singley and Landale 1998; Lindstrom and Saucedo 2002), which are countered by the possibility that migrant selectivity may be driving the relationship (e.g. Landale, Oropesa, and Gorman 2000). In assimilation theory, migrants slowly (Lindstrom and Saucedo 2002) acculturate to their new location and pick up local ideas of when to marry and have children, and how many children are desirable (Stephen and Bean 1992; Edmeades 2006; Rumbaut 1997; Ford 1990). In contrast, hypotheses of adaptation hold that migrants deliberately alter their behavior to conform to the norms of their new environment and reap the benefits that may accrue from this (Hill and Johnson 2004). Thus, while the effects of assimilation are considered to grow stronger as time in the country increases and to be the most strong inter-generationally, adaptation would cause rapid changes in fertility outcomes that may or may not last between generations. Disruption hypotheses point out that migration might interrupt fertility behavior and cause temporary delays in childbirth resulting from spousal separation or financial precariousness due to the move (Hervitz 1985; Singley and Landale 1998). Finally, selection hypotheses simply posit that whatever makes individuals more likely to migrate also makes them more likely to alter their fertility (Lansdale, Oropesa and Gorman 2000; Hendershot 1971).

Thus, assimilation, adaptation and disruption hypotheses conceive of migration as altering fertility behavior, but they posit change in different directions and at different speeds. The principal difference between assimilation and adaptation hypotheses is the speed at which this change will occur, and its eventual duration. For the purposes of this paper, I will exaggerate this distinction by referring to an intergenerational convergence of fertility patterns as assimilation, and a rapid, intra-generational convergence of fertility patterns as adaptation. Theoretically, adaptation and assimilation could produce either positive or negative changes in migrant behavior, though positive changes have rarely been studied. In contrast, hypotheses of disruption reference the origin and clearly posit a negative change in fertility behavior for a brief time after migration. Finally, hypotheses that the relationship is driven by selection bias suggest that migrants would have the same fertility whether they moved or not. The projection presented in figure 3 uses these terms to examine the importance that these processes may have on long-term population growth.

Data and Methods

To explore the consequences of different trajectories of fertility adjustment among internal migrants, I undertake a series of population projections. In their simplest forms, population projections move people between categories of age and the corresponding risks of entry and exit associated with those categories. In more advanced forms (such as those that work at sub-national levels or incorporate educational attainment) migrants may move between exposure and risk sets while still moving up the age-structure, thus becoming exposed to different rates vertically and potentially horizontally (Plane and Rogerson 1994). Simpler models of projection are hampered in their ability to incorporate assimilation, adaptation, disruption and selectivity assumptions because they do not examine the population interchange between places.

As a solution to this problem, I have incorporated origin-destination pairs for movement at the federal district and urban–rural scales. Guided by the theoretical models of fertility adjustment, I use the “cohort-component” method of projection (cf. Preston, Heuveline, & Guillot 2001: 119-131) to model a series of four assimilation scenarios that attempt to mimic hypotheses about adaptation, assimilation, disruption and selectivity. These scenarios cover the hypotheses that: 1) migrants immediately *adapt* to the fertility, mortality, and migration propensities of their new environments; 2) migrants' children *assimilate* to the demographic propensities of their new environments, while migrants themselves retain the propensities of their original places; 3) migrants experience a temporary period of *disrupted* and hence lowered fertility immediately following the act of migration; and 4) migrants are *selected* on characteristics that make them behave in ways that are demographically similar to those which predominate in their future destinations, and therefore they retain the behavioral probabilities of their origins, which are assumed to incorporate the migrant's propensities.

As it is unclear which region's demographic indicators to use with these rates – the level of migrant assimilation in these regions – I have modeled the aforementioned adjustment scenarios. For ease of calculation, in each scenario, I have assumed that migration efficiency is 100%; that is, migrants do not leave their new areas of residence. This assumption is erroneous as a marked increase in migration efficiency has both been observed and is projected by Goskomstat (1999: 8), the Russian statistical bureau. Under the adaptation scenario, migrants immediately assume the characteristics of the age-sex bracket of their new area at the next time period. In the assimilation scenario, migrants forever retain the characteristics of their places of origin, but their children assume all of the characteristics of their new places of residence, including the propensity to migrate. Under a disruption scenario, female migrants have no risk to bear children for one projection period. Under a selection scenario, migrants and their children forever retain the characteristics of their places of origin. This is conceptually equivalent to a model that does not include intra-regional migration in its specifications (Andreev *et al.* 1998). In sum, these assumptions lead to four fertility scenarios; constant rates of mortality; zero external migration; constant rates of internal migration and four fertility adjustment scenarios for each Federal District differentiated by urban and rural residence.

Using federal district data on the age-sex structure and urban-rural shares of the population; age-sex-specific fertility and mortality rates; and intra- and inter-district migration rates between origins and destinations, I used the cohort component method to nest the aforementioned assimilation, adaptation, disruption and selection scenarios within four fertility scenarios, and constant 2002 mortality and migration rates. Calculation of the 2002 baseline populations and rates were primarily achieved through the use of the 2002 All Russian Population Census and recent demographic yearbooks of Russia. Populations and rates were decomposed by sex and age groups for each region by urban or rural residence. Five year age groups were used (excepting infants and children 1-4, which were treated separately as is standard practice). Data concerning the age-sex structure of mortality in Russia are not readily available in detail at the regional level; because of this, I proportioned the numbers of deaths in broad classifications for each region (i.e. infant mortality, under five mortality, working age-mortality) into specific age groups given the age distribution of deaths in urban or rural areas Russian population respectively. The same method proportioning method was used for migration; however, the available data was more specific causing less bias in proportionality.

Age-specific fertility rates in the baseline year were derived from the listed age-specific fertility rates for each province according to 2002 data (Goskomstat 2006). Scenarios projecting changes in these rates were derived from the United Nations' Population Division's (UNPD) projections of likely high, medium and low fertility scenarios (at five year intervals) facing Russia as a whole between 2000 and 2050 (UNPD 2006). As the baseline year for fertility was 2002, and this is nearly the midpoint of five year intervals, the average of intervals was used. Changes between time periods at each age in the UN data were assumed to operate in the same way for each province. Thus, the average at each age of age-specific fertility according to the UNPD between 2000 and 2005 was taken as one and multiplied by the provincial rate in 2002, and the product of the average at each age of age-specific fertility between 2005 and 2010 divided by the aforementioned age-specific average between 2000 and 2005 was multiplied by each province's distribution in 2002, and so on.

My projections diverge from some of the previous ones in that I assume zero net international migration. I wanted to examine the effects that internal migration and migrant adaptation, assimilation, disruption, or selection may have on Russia's demographic future under a closed system. However, this assumption rests on the premise that (official) external migration currently comprises a relatively small percentage of demographic change in Russia. This has been so in the recent past *(cite), excepting a brief period of large-scale immigration in the early 1990s which some believe has dried up stocks of potential migrants (Radnitz 2006). Data for migration between origin-destination pairs are the observed number of migrants between each pair in 2002 divided by the population at risk of migrating from the origin (Goskomstat 2006). For the same reason that international migration was excluded, I have used constant 2002 interchange rates between regions to simplify the number of scenarios calculated.

Results

Figure 2 presents the results of these projections; the four panels represent the fertility scenarios while the four lines within each panel each represent an adjustment scenario. As can be seen, fertility adjustment due to migration may have a large impact on growth trajectories over the long term, depending on the fertility assumptions used. A comparison between the low and the high fertility scenarios presented above clearly demonstrates the importance of this point. Under the United Nation's high fertility scenarios, assumptions about whether internal migrants will adjust their fertility in line with adaptation, assimilation, disruption or selection hypotheses leads to either a growing, a stable or a declining population. Under lower fertility scenarios, the trajectories differ in magnitude but not direction. Similarly, disruption as an adjustment scenario has a much greater impact in high fertility settings than it does in low fertility settings. The reasons for this are obvious; with a larger number of children born on average, migrants forbearing children for one time period after they migrate will have a more profound impact on population growth. These projections are not to be taken as literal forecasts of what Russia's population future will resemble; rather, their purpose is to demonstrate the importance that internal migration and migrant fertility adjustment may have on the long term growth trajectory of a large and diverse country.

Figure 2. Absolute population size for the total population under four fertility scenarios with models of the assimilation assumptions, 2002-2052.