

Demographic crisis as destabilizing factor of region development

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Abstract. Factors and tendencies regarding demography dynamics of Tambov oblast' within the last seventy years, based on the Russian Statistics Office, are analyzed. The considered time period may be roughly divided into three ones, including the Soviet time period (1959–1991), the 1990s reforms (1991–2000), and the current time period (2001–2022). Each of them has some unique features that define the population of Tambov oblast'. The correlation of the overall birth rate and overall death rate, as well as the intensity and direction of migration flow influenced by socio-economic conditions within the region, are found. Recent changes in the social sector and in the regional economy are found to be insufficient to overturn the population decline, which serves as partial evidence of a discrepancy to the criteria of development sustainability.

1 Introduction

The ways to achieve the sustainable development of civilization have been considered for almost fifty years. Yet, there's no overall agreement on mechanisms and approaches that should be put in place to ensure sustainable development. Nevertheless, the concept of sustainable development requires large-scale cooperation worldwide as well as within countries and their regions in tackling environmental, economy-related and social issues. Only a balanced solution to them can give stability to the existence and development of mankind.

According to the concept mentioned earlier, the sustainable development of any territory requires economic growth while maintaining favorable environment and social sectors. Since the end of the twentieth century up to this day the Russian lawmakers have come up with legislative initiatives addressing the issues of sustainable development in all areas dependent on it. Yet, when the action is taking place at the local and federal level, a lot of these initiatives cause imbalance between economy, social sector and environment due to a lack of complexity and forethought put into it. Though Russia has achieved some improvement in tackling social and environmental issues, the economy is still prioritized that keeps social and environment-related problems mostly unresolved. A great deal of these problems evolved a long time ago, but recently they've become more pronounced and hence, the measures to stabilize and fix them need to take place.

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2 Materials and Methods

In this research the demographic dynamics data of Tambov oblast' were considered and analyzed. Contemporary tendencies of change in demographic dynamics and their causes, as well their possible influence on Tambov oblast' economy are estimated. The Russian Statistics Office demographic data was used as a source material in this research.

3 Results and Discussion

One of the main issues in the social component of sustainable development is a problem of rapid population growth around the World in the second half of the twentieth century. The causes of this phenomena are well defined and studied. These causes are still found in contemporary society and influence all of the areas of it. Nevertheless, the opposite is also found in some parts of the world that manifest itself in population decline which might put significant restrictions on economic development as well as be a reason for a wide range of social problems. One of the states facing this issue is Russia. Despite being the biggest country in the World by land, Russia has insufficient population density which makes it difficult to supply the economy with enough human labor force. Moreover, this problem is typical not only for remote regions characterized by harsh climatic conditions, which are forced to use temporary workers from other regions, but also for territories of a temperate climatic zone that have been well developed and used for several hundred years. Tambov oblast' is one of such regions, located in the central part of European Russia that is generally recognized for its favorable climate and fertile soil which makes it great for the agriculture industry. Besides, the dominance of the agriculture sector in the economy of the oblast' is linked to the settlement history and territory development that is currently known as Tambov oblast'.

The issue of declining population growth, as well its absence, has existed in Russia for more than a decade and has repeatedly become the object of research by sociology and demography scholars. It is mostly prominent in some regions of central part of European Russia which Tambov oblast' is a part of.

The demographic dynamics of Tambov oblast' as well as other nearby regions is characterized as the one experiencing persistent tendency to population decline. Ever since modern Russia appeared on the contemporary political map of the World, the population of Tambov oblast' dropped for 25,4% from 1312283 in the year of 1991 to 979171 in 2023. Even though population decline is an undeniable fact attributed to Tambov oblast', the analysis including a longer period starting at the year of 1959 up to 2020 gives a different view on the issue [1-3].

Throughout the entire period that is being considered in this research, the tendency to population decline is characterized as persistent with an exception of the 1980s, since the census of 1989 found the positive demographics dynamics change and 11800 population increase when compared to 1987 from 1309000 to 1320763 residents. Unfortunately, this tendency didn't gain population momentum and in the statistics of the year of 1991 shows population decline that continues to this day [4-7].

The dynamics of population is comprised under the influence of vital (the ratio between fertility and mortality) and migration movement (the ratio between arrivals and departures of registered population). The period that is considered in this research is characterized by inconsistent ratios.

Tambov oblast', belonging to the Central Black Earth region, was considered to have a pretty high density of population and prevalence of agriculture industry. That's why the region served as a source of labor force needed for settlement and development of various parts of Siberia and the Far East. In 1950s-1980s young people from Tambov oblast'

actively participated in building industrial, transport and social infrastructure across the Northern part of the country, Siberia, the Far East, and former soviet republics of Central Asia. It led to intense lasting migration flow out of oblast' from the end of 1950s to the end of 1980s resulting in 15,3% population decline. Amid a 15,3% population decline, the natality rates started to plunge hitting negative numbers by the end of 1970s and -1,4‰ in 1980 [4-7].

In the 1990s-2010s the ratio between vital and migration movement of population influence on the demographics dynamics experienced profound changes. Migration outflow is still present, but its causes are different and are related to socio-economic conditions including limited employment opportunities that made people move to other regions across the country looking for jobs. At the same time, the influence of negative natality rates on demographic developments became more significant ultimately leading to a mortality rate to overtake fertility rate. Natural decline of the population was rapidly gaining momentum. For instance, during the 1980s the negative natality rates were not significant with changes within the range of -1,4...-2,0‰, but in the 1990s and, specifically, the beginning of 2000s we observed a sharp decline in natality rate decline. In 1995 it reached -8,9‰ and decline continued, hitting the lowest natality rate of -10,7‰ in 2000 and -11,5‰ in the year of 2003 within the entire observed period. [1-3, 8]

At this point we can conclude that the population decline in Tambov oblast' is influenced by two factors, namely migration outflow and natural decline of population. In the year of 2022 general natural decline accounted for 75,8% of population decline and migration outflow accounted for 24,2% respectively of overall population decline in the oblast'.

The population is decreasing most rapidly in rural areas. Between 1991 and 2022, in 16 out of 23 municipal districts, the population decreased by an average of 35%. In some of them the reduction amounted to 45-50%. For example, in Bondarsky Municipal District the population decreased by 45,5%, in Inzhavinsky Municipal District by 46,4%, and in Rzhaksinsky Municipal District by 45,2%. The absolute leader in population loss was the Mordovian Municipal District - minus 50,3 percent as compared to 1991. [1-3, 8]

As mentioned above, one of the main reasons for the depopulation of the Tambov Oblast' population is the excess of mortality rates over birth rates. Fertility of the population in the Tambov oblast' has a rather complex picture: if in the first half of the twentieth century the main indicators of this demographic process were quite high in 1940 the total fertility rate was about 30‰), then later there was a gradual decline - in 1958 it was 23,5‰, in 1969 - 12,5‰, in 1985 - 13,3‰, and in the 1990s fell below 10‰. This value characterizes fertility as very low, insufficient to ensure at least mere replacement of the generation of parents by the generation of children. During the 1990s-2020s in the region, the indicator of the total fertility rate fluctuated between 6,7‰ and 9,8‰ [9-10].

The main reasons for fertility rate decline might be the following:

- increased migration outflow to other regions of Russia of people of marriageable age that promotes age distribution change towards older age groups;
- conscious intra-family regulation of number of children;
- population demographic behavior change that is caused by increased education attainment, urbanization, more women are involved in economic activities, declining religiosity, and etc. All of these factors contribute to demographic behavior change that ultimately influences fertility rates. The concept of "family" has become more vague as well as its role weakened in the processes of population reproduction. More children are born out of marriage (in Tambov oblast' it's some 22 to 24%); the number of single-parent families have increased; it's no longer out of norm to live together without being officially married.

The total mortality rate in the Tambov Oblast during the twentieth and the first half of the twenty-first century also experienced significant fluctuations. In the 1920s-1930s, the mortality rate decreased by more than 2 times compared to the beginning of the twentieth century, which was the result of a significant improvement in socio-economic conditions. This trend continued until the end of the 1960s. Then this indicator began to gradually increase, reaching its maximum values in 2021, when its value amounted to 21%, which corresponds to a high mortality rate. One of the main reasons for the increase in mortality rates is the aging of the population of the region, so in 2022 the share of persons of older age groups in the population structure amounted to 28,5%. Also to the reasons causing the increase in the overall mortality rate should be attributed certain shortcomings of healthcare coverage of the population. This problem is especially pressing in rural areas, which are characterized by a lack of medical equipment; not always available emergency medical care; lack of specialized medical personnel. The staffing level of specialists in the majority of medical institutions in the municipal districts is about 50%. Optimization of the regional healthcare system, which was actively carried out in the 2000s - 2010s, has significantly complicated the situation with medical care of the population. The number of inpatient beds was reduced, which led to a shortage of places in hospitals and, as a consequence, to the need to send patients to neighboring districts, as well as to the capital city of oblast' [4-5, 8, 11-12].

The decrease in the total birth rate, while maintaining a fairly high mortality rate, has led to the fact that at present the Tambov region continues to experience population decline. According to official statistics, in 2022 the natural increase/decline rate in the region amounted to -10,1%. The natural population decline started in 1977, when the statistics recorded negative natural increase rates. However, this demographic indicator began to decline at the fastest rate since the 1990s and reached its minimum values in 2021, when the total natural increase rate amounted to -13,7%. Natural population decline is characteristic of all municipalities of the Tambov Oblast without exception. However, there are a number of peculiarities. The lowest indicators of the total natural population loss rate are characteristic of the Tambov (-6,3%), Pervomaisky (-9%), Rasskazovsky (-9,5%) and Michurinsky Districts (-10,2%), as well as the cities of Rasskazovo (-7,1%) and Tambov (-7,3%). The highest indicators of the total natural population decline rate are characteristic of the Sosnovsky Municipal District (-21,6%), and among the cities - of Uvarovo (-15,8%). In most municipal entities of the Oblast, the value of the total natural decline rate fluctuates within -11,3%...-17,8% [4-5, 13].

Along with natural processes, a significant contributor to population decline of Tambov oblast' is migration outflow. This particular process is one of the most important factors, having the strongest influence on the population as well as the process of population reproduction. It's mostly linked to the fact that young and middle-aged people are highly involved in migration outflow, particularly men. As a result, we can see drastic changes in sex and age population groups that also brings in a change in population reproduction process.

For a number of reasons, the Tambov Oblast, with its historically high concentration of population, has always been characterized by negative indicators of population migration (more people left the region than arrived). However, up to the second half of the twentieth century, this was compensated by a sufficiently high birth rate and positive indicators of natural population movement, which, in general, ensured population growth in the region. The situation begins to change in the 1990s, when in the conditions of deteriorating socio-economic situation the out-migration from the region not only persists, but also the gap between arrivals and departures increases. Thus, in 1995 this difference was still positive (migration balance +8197 persons), but in the 2000s the migration balance became negative. In 2005, this indicator amounted to -2051, and the highest value of migration

outflow of population was noted in 2015 -5400 people. Subsequently, the situation improved somewhat - the migration balance in 2022 amounted to -1946 people [14].

If in the middle of the twentieth century labor migration from the territory of the region had a kind of idealistic character - the development of new territories. At the beginning of the twenty-first century the reason was different. First of all, it is the decline in the economy, both in the agricultural and industrial sectors, which led to a reduction in the population's income and increased unemployment. As a result, the able-bodied population had to look for work in other regions. Very often this was accompanied by moving to a permanent place of residence [15].

As a result of intensive migration outflow, the demographic situation in the region has become even more complicated. The most active participation in labor migration is taken by people of young and middle age groups, which are characterized by active participation in the process of population reproduction. The outflow of this part of the population leads to a deformation of the sex and age structure with an increase in the share of elderly people which ultimately leads to an increase in mortality rates and an additional decrease in the population.

In the nineties and early 2000s in the Tambov region, as in many other regions of Russia, such a form of labor migration as the "shift method" prevailed. In this type of migration, the labor process is carried out in another region for a short period of time, most often two weeks. Then the worker returns to the region of permanent residence. The main regions where the flows of labor migrants from the Tambov oblast' were close and economically more prosperous regions of Russia.

Labor migration "on shift method" made it possible to keep a part of the able-bodied population of the region from moving to other regions. But, on the other hand, this type of migration "preserved" the depressive socio-economic state and, in some cases, led to the destruction of family and marriage relations, which also had a negative impact on the overall demographic situation.

Interregional migration flows were characteristic primarily for municipalities located on the periphery of the oblast', as well as for the capital of oblast' and adjacent territories. This is due to both their geographical location and the presence of developed transportation infrastructure, which facilitated movements. In addition to quite intensive migration outside the region, during this period there were also population movements within the region. It was mainly directed from rural areas to larger settlements, including the city of Tambov. As a result, currently more than sixty percent of the population of the region lives in cities and urban-type settlements [16].

The difference in the geography of migration flows established in the municipalities of the Tambov Oblast has led to the fact that they have been included in the main migration movements with different degrees of intensity. As a result, it is possible to note significant differences in migration activity in different municipalities of the region. Most of them are characterized by negative indicators of the migration balance coefficient, and the lowest ones can be observed in Znamensky (-17,6‰) and Nikiforovsky (-10,1‰) municipal districts, and among the cities the highest migration outflow of population is characteristic of the city of Kirsanov (-12,9‰). However, a number of municipalities are characterized by positive coefficients of migration balance: Staroyuryevsky (0,7‰), Pervomaysky (1‰), Pichaevesky (0,4‰), Gavrilovsky (2,3‰), Kirsanovsky (0,7‰), Umetsky (0,2‰), Muchkapsky (4,2‰) and Sampursky (1,1‰) municipal districts, as well as the cities of Kotovsk (1,8‰) and Uvarovo (6,4‰). In subsequent years, with the improvement of the economic situation in the country, the intensity of migration flows slightly decreased, but this had virtually no effect on the overall demographic situation in the Oblast [14].

For many years the state has been trying to influence the birth rate through demographic policy. One of the main instruments of this policy is the payment of the so-called

"maternity" capital. According to Federal Law No. 256-FZ of December 29, 2006 "On Additional Measures of State Support for Families with Children", families that have given birth to or adopted a second (third and subsequent) child are entitled to receive this payment. The financial resources received can be spent on improving housing conditions, education, and the mother's pension savings.

The Tambov Oblast also has a regional legislative act providing for material incentives for birth rate - Regional Law No. 11-Z "On Social Support of Large Families in the Tambov Oblast". It provides for a payment of 100 thousand rubles to families with the status of "large family". This status is assigned to a family with three or more children under the age of 18. This payment can be spent only on improving housing conditions.

On the one hand, such legislative initiatives had and have a positive effect, as the share of families who decided to have a second child increased (in the early 2000s, the share of second children in the family in the structure of newborns was 23%, and in 2015 it increased to 37-38%). However, as the analysis of demographic statistics shows, material stimulation of fertility rate within the Tambov Oblast did not allow to achieve a significant increase in this indicator, and it was not possible to overcome population decline - the birth rate is still below 10‰, which does not overcome the threshold of negative trends [2].

To reduce mortality in the region, certain measures are also being taken, primarily aimed at improving healthcare access and providing medical institutions with modern diagnostic equipment. However, in most cases this does not bring the desired result due to poor intra-oblast transportation and lack of qualified medical personnel. Attempts to solve the latter problem by attracting graduates of medical schools and providing them with financial assistance for moving and settling in a new place are also ineffective. Thus, despite all the measures taken to increase the birth rate and reduce mortality, it is not possible to change the demographic situation in the region in the near future, primarily due to the significant inertness of demographic processes.

4 Conclusion

Summarizing all of the above, the following conclusion can be made. The demographic situation in the Russian Federation as a whole and in some of its regions is quite complicated. The downward trend in both absolute population size and population density remains and there are no real prospects for its change at present. Amid ongoing economic changes, the lack of labor resources and population aging become factors of instability and do not allow to fully implement the transition to sustainable development in its social and economic components. This is particularly evident in some regions, including the Tambov Oblast'.

Here, as in the Russian Federation as a whole, the slowdown in population growth and then its decline began in the second half of the twentieth century, which most researchers attribute to the consequences of the Second World War. This situation worsened in the nineties, when mortality exceeded the birth rate. As a result, as well as due to migration outflow, the population of the region began to decline rapidly.

One of the results of the population decline in the Tambov region at the end of the twentieth and beginning of the twenty-first century is the change in the geography of the region's population distribution, which is seen in the decrease of the average density. If in the eighties of the last century the region was one of the densely populated areas: the average population density was 40 people per 1 km², five times higher than the national average, then by 2023, due to the decrease in population, the region can be classified as medium-dense populated: the average population density is 29,21 people per 1 km².

At present, even though the economy can be described as relatively stable, the evidence of which can be found in the steady growth of gross regional product, and measures taken

both at the federal and regional levels to stimulate the growth of fertility rate and reduce mortality, the situation cannot be changed. This indirectly indicates the unsustainable nature of the region's development.

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