

## DEMOGRAPHIC CHANGES IN RUSSIA - PAST AND FUTURE

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### Abstract

Many important demographic indices have sharply changed in Russia during the last 10 years. The total fertility rate between 1987 and 1996 has decreased from 2.20 to 1.28. The life expectancy for males between 1987 and 1994 has fallen by more than 7 years, for females - by more than 3 years; afterwards, life expectancy began to rise again, but by 1997 the loss for males was restored by only 45%, for females by 60%. The natural increase of population became negative in 1992 and despite positive net-migration the population of Russia began to decline. During 1992-1997 it decreased by 1,6 million persons. The population decline will continue and, according to different forecasts, by 2010 the total losses can reach from 2,4 to 12,8 million persons.

What all this means is that Russia is experiencing a serious demographic crisis. Its constituent elements are different by nature and require different reactions from society.

Fertility in Russia fell below replacement level several decades ago and hence the emergence of a negative population natural increase was unavoidable. Its emergence predicted by population forecasts elaborated in the 1980s was only slightly accelerated by the sharp fertility decline in the 1990s. But a fertility decline to a very low level in the 1990s, typical for many European countries, is not a specific Russian phenomenon. Nowhere can it be explained by the fluctuations of political or economic conditions. None of the European countries has found efficient measures to raise fertility.

On the contrary, with respect to the level of mortality and its trends, Russia is in a very bad position compared to all Western industrial countries. This rise of mortality is absolutely unusual for them. The unfavourable differences for Russia have a long-term character and also cannot be properly explained by the political or economic conditions of the 1990s; this situation only aggravated the long-term Russian mortality crisis building up since the mid-60s. Judging by the most recent trends, the period of aggravation is over but the long-term crisis continues and the prerequisites for overcoming this crisis are not in place.

The growth, or at least the stabilisation, of the size of Russian population during the first decades of 21st century is possible only on condition that the net-migration be positive for Russia and important by its size. But taking into consideration the economic and political reality, it is unlikely that this condition should be realised. More probably the size of the Russian population will decline.

# DEMOGRAPHIC CHANGES IN RUSSIA - PAST AND FUTURE

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Oral version

The recent demographic trends in post-soviet Russia have the profound roots in the Russian history of 20th century. The rapid destruction of the peasant society from the late 1920s, as well as mass rural-urban migration, resulted in a break with the traditional demographic behaviour and in an accelerated demographic transition. The demographic evolution in Russia was almost the same as in Europe or North America but with a delay and with certain significant, special features. In spite of rapid modernisation, demographic behaviour of a large part of the population maintained archaic features and, as a consequence, the level of fertility and mortality in Russia for a long time was higher, and the population was younger than in the West. Nevertheless, the post-war decades became a period of increased convergence in the demographic evolution across Russia and the West.

In the early 1990s Russia arrived at a turning point in her demographic evolution. The depopulation which took place until this period in the latent form became evident, the rate of natural population increase became negative. Though this situation is a result of a long-run and, by and large, normal evolution, in actual political circumstances the public opinion misapprehend it as a something disastrous, as a "demographic catastrophe".

In actual fact, if some "catastrophic" features are present in the demographic development of Russia, they are likely to be due precisely to a delay in implementing reforms, for example, reform of the health care system. While the new realities of demographic and family behaviour make their way, Russia faces the same challenges, as most industrial nations (danger of depopulation, population ageing, fragility of families, etc.) and needs to find adequate answers to these challenges. A delay in implementing reforms hampers adaptation of social institutions to new demographic situation.

**Fertility decline** is one of the major constituent elements of this new situation. Pre-Revolutionary Russia stood out as having a very high level of fertility in comparison with the other countries. After certain reduction provoked by the shocks of the World War I, Revolution and Civil War, this high level was restored for a while. But since the late 1920s, as the demographic transition was accelerated, fertility rapidly declined. During several decades in the middle of the 20th century, Russia followed the path already traversed by all industrial societies. Russia did it at an accelerated pace, and in the 1970s has attained the same fertility level as many of the Western countries. But the trajectories of the fertility decline in Russia (as everywhere in Eastern Europe) and in the Western countries were different throughout the recent decades. The fertility in the two parts of Europe decreased in waves and the phases of these waves did not coincide.

## **Figure 1. Total fertility rate in Russia and selected Western countries**

**Recent fertility decline.** As figure 1 shows, the decline of total fertility rate in Russia after 1987 was extremely rapid. The public opinion has a tendency to attribute such an unprecedented decline to the direct influence of the social and economic crisis of the 90s. However, even if such influence does exist, it determines not alone the phenomenon of fertility decline but with other, perhaps much more important factors.

The fertility decline is due, among others, to the timing effects. Against the background of general European trends, the rise of fertility in Russia (as well as in the other former Soviet republics) in the 1980s looks artificial. There is a very high probability that the "transversal" fertility indices increased due to the conjuncture factors (in

particularly, to pronatalist policy measures in early 1980s), but it did not lead to the corresponding growth of the "longitudinal" indices. The age at which women gave birth to the "planned" children shifted, but it did not lead to the increase of the average number of birth per woman in different female cohorts. Consequently, the period of increase in total fertility rate was bound to be followed with a period of its decline. It was indeed the case in the late 1980s and early 1990s.

Moreover, the timing effects were accompanied by other factors which did exist before but became more visible under influence of reforms carried out in Russia. The paternalistic-state mechanisms regulating people's economic, social and demographic behaviour has weakened opening the way to the market mechanisms and, in terms of demographic behaviour, Russia also is drawing closer to the countries with market economies. The actual total fertility rate is perceived in Russia as something disastrous; it is really low but not lower than in Germany, Italy or Spain. No one of these countries cannot explain its low fertility by the acute political or economic crisis, they need to look for other explanations, more profound and complicated, and Russia too.

The level of fertility is very important criterion of convergence of procreative behaviour in Russia and in the West. At the same time, the Russian model of procreative behaviour still differs from the Western one in important features.

**Mean age at childbearing.** In contrast to the recent developments in most Western countries, the decrease in total fertility rate in Russia was accompanied by a simultaneous decrease of the age at marriage and at birth. The mean age at first marriage decreased, and the mean age at birth, after a certain increase in the late 1980s, resumed its decline (Fig. 2). The contribution of mothers under 25 in total fertility rate has increased from 32% in 1960 to 42% in 1970, to 50% in 1980, to 53% in 1990 and to 59% in 1995. Such dynamics is not only typical for Russia, but the "juvenilation" of nuptiality and fertility can also be observed in all European post-Soviet states.

**Figure 2. Mean age at childbearing in Russia and selected European countries**

**Family planning.** Another important distinctive feature concerns birth control methods. In Russia, contrary to most countries that have already passed through the demographic transition, induced abortion remains one of the main methods of family planning. Even according to official figures, rather underestimating the number of abortions, the proportion of conceptions ending in abortion in comparison with 1980 or 1990, has not diminished (Table 1).

**Table 1. Legal abortions in Russia, 1970-1996**

	1970	1980	1990	1991	1992	1993	1994	1995	1996
Number of abortions, thousands									
Total	4670	4506	4103	3608	3437	3244	3060	2766	2652
Without "mini-abortions"	...	...	3128	2760	2551	2386	2266	2071	2006
Abortions per 1000 women aged 15-49									
Total	133	123	114	100	95	88	82	73	69
Without "mini-abortions"	...	...	87	77	71	65	61	55	52
Abortions per 100 live births									
Total	245	205	206	201	216	235	217	203	203
Without "mini-abortions"	...	...	157	154	160	173	161	152	153

In 1996 in Russia 203 abortions per 100 live births were officially registered - significantly more than in other post-Soviet states having also very high level of abortions

(Ukraine - 150, Estonia - 127, Latvia - 122) and much more than in Western Europe (UK - 24, Italy - 26, Germany - 13, Netherlands - 11, Sweden 30, Finland -16) .

There are no signs of serious changes in the attitude of the population to abortions. According to the results of a poll carried out by the National Centre for Study of Public Opinion (VTsIOM) in 1994, the answers to the question "What would you do in case of unplanned pregnancy?" had the following distribution: "Would keep the baby" - 13%, "Would have an abortion" - 40%, "Don't know " - 47%. The readiness to have an abortion was the same for both urban and rural dwellers. The question appeared to be too embarrassing to 51% of the respondents claiming adherence to the Orthodox religion, and to 71% of religious Muslims; they answered, "I hardly know what to answer".

This mass attitude of population to abortion is in a striking contrast with the activity of certain part of political establishment and public opinion, not only insisting on an interdiction of abortion, but manifesting its negative attitude to the propagation of contraception.

**Mortality** is the second major process which determine the actual demographic situation and it is precisely mortality that really justifies the image of demographic crisis in Russia. The actual population's health and mortality situation in Russia reflects the incompleteness of epidemiological transition.

The main success in the mortality lowering in Russia at the earlier stages of this transition was due to the drastic restriction of the role of the exogenous causes of death - infectious and parasitogenic diseases, tuberculosis, diseases caused by starvation and malnutrition, epidemics, infant mortality, etc. But even in the fight against the exogenous factors of mortality the success should not be overestimated. The efficient control of exogenous mortality requires large funds, peaceful conditions, a generally favourable socio-economic situation. These conditions did not always exist in Russia. The traditional passive attitude to the death, low value of a human life, typical for all agrarian societies, did not completely disappeared. In the last decades of the Soviet period the growth of the expenditures for the health care was too slow to provide against the high risk of death owing to many exogenous factors and did not permit to promote a wide fighting programme against the main endogenous factors.

In 1990 the per capita expenditures for the health care in the US were 18 times greater than in 1960, in France - 39 times greater and in the USSR - only less then 5 times greater. Taking into consideration that enormous difference already existed in 1960 one can understand that the lagging behind in lowering of mortality in Russia was not an accidental phenomenon.

**Table 3. Growth of the expenditures for the health care in the USSR, in the USA and in France, 1960-1990**

Year	Per capita expenditures			Growth		
	USSR, roubles	USA, \$	France, francs	USSR	USA	France
1960	27	143	242	1	1	1
1970	49	346	816	1,8	2,4	3,4
1980	72	1064	3566	2,7	7,4	14,7
1990	124	2601	9521	4,7	18,2	39,3

The main tasks of the earlier stages of epidemiological transition in Russia could not be carried out in full, and the exogenous factors continue to be of the great

significance. And in the same time and for the same reason, the tasks emerging in the course of the completion of the epidemiological transition are tackled in an unsatisfying way. the control of endogenous factors of mortality is not efficient. These both aspects of incompleteness of the epidemiological transition have determined the long-term crisis of mortality in Russia.

**Life expectancy: the long-term trends.** After the World War II, the level of mortality in Russia decreased quite rapidly and life expectancy grew, approaching levels comparable to those of major industrial countries. In the mid-60s, the gap between life expectancy in Russia and in Western countries reached its smallest point. Unfortunately this trend soon changed. The life expectancy in Russia stagnated or even declined, and the gap between Russia and the majority of industrial countries widened again (Figure 3).

### Figure 3. Life expectancy in Russia and selected European countries, 1970-1996

The anti-alcohol campaign that was launched in 1985 briefly managed to reverse this decline. In 1987, life expectancy at birth reached its highest level in the history of Russia: 65 years for men and 74.6 years for women. By 1988, however, the trend reversed once again and in the early 1990s Russia knew an unprecedented increase in mortality. The sharpest change occurred in 1993 when life expectancy decreased by 3.1 years for men, and by 1.6 years for women. By 1994, life expectancy had fallen to 57.4 years for men and 71.0 years for women. Since 1995 mortality in Russia declined again and life expectancy grew to 61 years for men and 73.1 years for women in 1997. Although the level of mortality continues to fall, in 1997 it is <sup>was</sup> at its highest point for males since the end of 50s, and for females since the later 70s (the female life expectancy was 73 years in 1975-1976 and 1979-1980, 73.1 years - in 1976-1977, 1978-1979, 1980-1981).

On the whole, with the exception of the years 1985-1987, the period between mid-60s and the mid-90s has been characterised by negative trends in mortality and life expectancy in Russia. During this same period, life expectancy in most industrial countries has grown, leaving Russia catastrophically far behind (figure 3). Thus, it may be said that Russia has been experiencing a prolonged mortality crisis for the past three decades

**Age-specific pattern of recent mortality evolution.** The ups and downs in mortality <sup>case</sup> during the early and middle 1990s were not homogenous. They did not concerned every age group. The children did not practically experienced the increase of mortality, the infant mortality rate (17.4 deaths per 1000 live births in 1996) is now lower then ever in the past in Russia, (though it is three times grater than in the average in the European Union and four times grater than in Japan). The mortality of the elderly after 75 years has risen but not so much and now mortality rate of elderly men in certain ages is also even lower than before the mortality increase of early 90s. The main victim of this increase was adult population in age between 30 and 60 years, especially males. The subsequent decline of mortality also affected these age groups but until now was not sufficient to restore the level of 1991 (see Figure 4).

### Figure 4. Age-specific mortality rates in 1994 and 1996 in comparison with 1991

**Causes of death.** The understanding of the Russian mortality crisis can be refined with the analysis of the causes of death. As since the 1960s Russia clearly has failed in

the modern stage of the epidemiological transition, the archaic structure of mortality by causes of death stagnated and even began to worsen. Unlike the progressive changes in the industrialised world in the second half of the 20th century, the long-term trends in Russia have moved in many cases in the opposite direction.

The special features of Russian mortality pattern become evident when we compare the age and causes-of-death structure of the Russian mortality with the corresponding structure in the other industrial countries. This structure is aptly described by a two-dimensional distribution, defined, on the one hand, the distribution of the chances of eventually dying from different causes, and, on the other hand, the distribution by the mean age at death of every cause. Both parameters are taken from the tables of mortality by causes of death.

As it is easy to see from table 4, the both distributions are very different in Russia and in the "West" (synthetic model based on the averaged data for four industrial countries: the USA, United Kingdom, France and Japan in 1989-1992).

**Tables 4. Chances of eventually dying from different causes of death and mean age at death from these causes. Russia, 1995**

	Chances (per 1000) of eventually dying		Mean age at death, years	
	Males	Females	Males	Females
	Infectious and parasitic diseases			
Russia	21	6	43.7	40.9
West	14	12	66.9	77.0
	Malignant neoplasms			
Russia	142	125	63.0	66.1
West	277	213	72.5	74.6
	Diseases of the circulatory system			
Russia	460	689	67.5	77.6
West	404	476	77.3	83.9
	Diseases of the respiratory system			
Russia	66	36	60.2	65.0
West	117	108	80.1	84.4
	External causes			
Russia	228	72	42.2	49.2
West	63	40	54.2	68.8

Russia stands out sharply against the background of Western model by relatively low chances of dying from the cancer and diseases of circulatory system and high chances of dying from the cardiovascular diseases and especially from the external causes. As for mean age at death, the Russian indices for every cause of death are much worse than Western ones. It should be emphasised that the dynamics of the both indices in Russia during last three decades was very unfavourable.

**Chances of eventually dying: long-term trends.** Changes in chances of eventually dying from large classes of causes of death were generally negative during period under examination although there were some positive upheavals. For example, a continuous decline in the probability of dying from "available" causes of death, such as infectious or respiratory diseases, was accompanied by a simultaneous increase in the probability of dying from diseases of the circulatory system - cause of death with prevalent endogenous nature and relative high mean age at death. Only in the first half of the 1990s these positive trends reversed - the chances of dying from infectious or respiratory diseases began to grow and the chances of dying from diseases of the circulatory system to decline

**Figure 5. Chances of eventually dying from 7 large classes of causes of death. Russia, 1965-1995, number of eventual deaths per 100000 new-born**

The most unfavourable trend has been an increase in the chances of dying from accidents, poisoning, injuries and violent causes of death ("external causes"). The general reduction of mortality in the mid-80s was accompanied by a brief decline in the probability of dying from external causes, but high chances of dying from these causes soon returned and even increased. The long-term increase in probability to die from external causes has been strong enough to outweigh most positive or neutral upheavals which took place and made the Russian profile of chances of dying from different causes particularly unfavourable.

**Mean age at death: long-term trends.** Changes in the mean age at death, the second major component of the structure of mortality, were even more disappointing than changes in the probabilities of death. Progressive, positive change consists of increase in the mean ages at death, namely in shifting deaths to older age groups. In Russia, between the 1960s and 1990s, there was no sign of serious increases in the mean age of death for any class of the causes of death. In fact, with the exception of a short-term rise during the second half of the 1980s, the prevalent tendency was a **decline** in the mean ages of death - a rejuvenation of mortality (fig. 6). This tendency most seriously affected diseases of the circulatory system which are the cause of death for approximately half of men and more than two thirds of women.

**Figure 6. Mean age at death from 7 large classes of causes of death. Russia, 1965-1995**

**Age- and cause-specific groups of risk.** The situation with mortality in Russia is not homogeneous. There is a limited number of risk groups which decisively determine the unfavourable trends of mortality and life expectancy. Such groups were derived through comparisons between the life table death numbers categorised by large classes of causes of death at different ages in Russia and the "West". The difference between the numbers of death in Russia and the "West" represents the **excess** number of deaths in each group. In the tables 240 five-years age- and causes-specific groups were considered based on the combination from 15 age groups - from 0 to 70 years - and 16 causal groups.

In 1995, the overall excess number of deaths for males in ages under 70 years was 385 per 1000 deaths in all ages. Within that figure, 51.4% of all excess deaths related to 20 from 240 specific age- and causes-specific groups. The main risk groups for males were 40-70 years old with ischemic heart disease and 50-70 years old with cerebrovascular disease. These two "risk zones" alone were responsible for 31.2 % of all excess deaths in 1995. The next highest risk came from external causes which are responsible for almost 20% of all the excess deaths. Beyond these two major "risk zones" there is a group of high mortality from "other diseases" for boys on the first year of life.

For females under 70 years old the excess number of deaths was much lower than for males but it was also more concentrated. In 1995 the excess number of deaths for women was 174 per 1000 deaths, of which 53.6% were concentrated in groups, comprising less than 4% of the total number of groups. Indeed, one third of all excess deaths for women were related to only four of the 240 age-causal groups.

The main risk groups for females were 55-70 years old with ischemic heart disease and cerebrovascular disease. In 1995 these groups were responsible for 42.1%

of all excess female deaths. The impact of external causes on the excess mortality for females is much lower, than for males and not so significant in comparison with the impact of the cardiovascular diseases. The number of infant deaths for girls from "other causes", is also very high, though lower, than for boys. For both sexes, mortality from "other causes" is a major component of excess infant mortality and of infant mortality in general (in 1995 it comprised 72 % of all deaths under age 1 year for boys and 70 % for girls).

The knowledge of age- and cause-specific groups at excess risk is of more than theoretical interest, it is <sup>permitted</sup> necessary to modify the current strategy of fighting against mortality and to make it more target-oriented. However many other important determinants of population groups at risk are still unknown. The major social and socio-cultural categories of the Russian population with the highest mortality as well as the socio-economic circumstances associated with the excess deaths in these groups have not been sufficiently studied. This does not permit the public health care system to be effective in targeting efforts to lower the major part of the excess Russian mortality and to overcome the long-term mortality crisis in Russia.

### Population growth

Because of the catastrophic increase of mortality during the periods of the Revolution, the wars and other social cataclysms, a population explosion did not accompany the demographic transition in Russia, as it was the case in most countries where a demographic modernisation took place comparatively late.

Nevertheless, <sup>in spite of the long-term fertility decline</sup> until the early 1960s the total fertility rate in Russia exceeded 2.5%, and the natural increase of population was relatively high (1.7 - 1.8% per year). This natural increase was the main factor determining the population growth over the entire post-war period. But the decline of fertility has long ago predetermined the cessation of this growth.

From the beginning of the 1930s the demographic modernisation has accelerated in Russia, and 30 years later the country entered a period of hidden depopulation. None of the post-war women generations in Russia have provided replacement-level fertility. Throughout the period beginning in the middle of the 1960s to the present (excepting 1986-1988) the net reproduction rate in the Russian Federation has been less than 1. In the early 1990s its decline became sharper. In 1991 it reached the all-time low of 0.821 and continued to fall (0.735 in 1992; 0.651 in 1993; 0.659 in 1994; 0.633 in 1996; 0.603 in 1996).

As the net reproduction rate was below the replacement level during the several decades, the appearance of a negative natural increase was not unexpected. The forecasts made in the early 1980s predicted it though it was not supposed to appear until the beginning of the next century. The recent fertility and mortality forecasts also do not allow much hope for a positive natural population increase in Russia for the foreseeable future. Although general demographic dynamics are determined by an interaction between fertility, mortality, and net migration, the changes in the first two components appear to have only a slight influence on the growth of the population. Consequently, positive growth of the population in Russia is possible only with a steady and high positive balance of external migration.

This situation is absolutely new. In the course of the centuries Russia sent population beyond the limits of historical Russian territory. Centrifugal migration flows were the *condition sine qua non* the colonisation of new regions of Russian and Soviet empire. As far back as early 1970s, the population increase due to migration was negative, but this decrease was more than offset by natural population increase. Only beginning the middle of the 1970s, the increase due to net immigration became positive

but, as a rule, never exceeded 25% of the total increase and usually was considerably smaller. Nevertheless in this period it became clear that the only way to prevent an overall decrease in the population of Russia <sup>in future</sup> was the immigration. In the official forecasts it was assumed that the migrating population would come from other republics of the USSR, in particular from Central Asia.

**Figure 6. Population increase by components in Russia, 1959-1996, in thousands**

In 1990-1992 the absolute annual population increase, owing to positive net migration, was smaller than in the late 1980s and when, in 1992, the natural increase changed into natural decrease, net migration alone was unable to make up for it. The total rate of population growth, as well as the rate of natural increase, became negative and the population size in Russia began to decrease. In succeeding years a sharp increase of net migration took place but the negative natural decrease was growing more rapidly and the population size in Russia continue to decrease at an accelerated pace. To the beginning of 1998 Russian population was reduced by 1.6 millions.

What changes await Russia in the next <sup>decade</sup> 10-20 years? According to estimates of the Centre for Demography and Human Ecology, assuming the most realistically optimistic scenarios for fertility and mortality along with annual net migration at a level 0.3-0.4 million persons, by 2010 the Russian population will reach the level of the early 1990s, after a twenty-year period of decline. For the population size to exceed the 1990 level by the middle of the first decade of the 21st century and continue to grow, one needs to assume high net migration, constantly maintained at a level of about half a million persons per year.

Are these hypotheses realistic? The answer to this question highly depends on the estimates of current trends of migration. In the early 1990s the positive net immigration was growing. In 1994, 1.1 million persons arrived in Russia (compared with 0.7-0.9 million annually during the previous 25 years) and 0.3 million left Russia (compared with 0.5-0.7 million previously). So the net migration figure was about 0.8 million - an unusually high number for Russia. But after 1994 the net migration diminished rapidly (0.5 million persons in 1995, 0.26 million in 1996). The public opinion in Russia is rather against the immigration. According to the different scenarios of the official population prospects of Goskomstat (1997 Revision) the net migration in 2010 will be 4-10 times smaller than in 1996. What all this means is that the high level of net migration capable to maintain the growth or even the stability of Russian population size for next years is unlikely. All population forecasts unanimously predict further decrease of Russian population (table 8).

**Table 8. Population of Russia according different forecasts**

	1990	1995	2000	2005	2010
Goskomstat, 1997	148.0	147.9	144.1 -145.9	139.5-144.8	134.7-143.7
UN, 1996	148.0	147.9	145.8 - 147.1	142.8 - 146.0	139.5 - 145.1
US Bureau of the Census, 1997	148.0	147.9	145.9	144.3	143.9