

# A new stage of demographic change: A warning for economists<sup>☆</sup>

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## Abstract

The current stage of demographic changes in all countries that have experienced a demographic transition is characterized by two main features: (1) cessation of population growth; (2) a progressive increase in the total dependency ratio, which until recently, despite the long-run population ageing, was declining. Both of these features are unfavorable from the economic point of view. In Russia, the situation is aggravated by the peculiarities of the population pyramid, heavily deformed by the social and military upheavals of the 20<sup>th</sup> century. The article shows that, for a long time, the demographic trends in Russia favored its economic development, but now the country is entering a long period of unfavorable demographic changes. The cessation of growth of the Russian population, the reduction in the working-age population and its ageing and the increase in the dependency ratio will have a deterrent effect on economic development and, at the same time, make it more difficult to solve social problems. In particular, these factors will create greater problems for the pension system for people older than working age. The issue of using the migration resource to mitigate the negative consequences of demographic changes is discussed.

*Keywords:* Russia, demographic changes, population growth, natural increase, net migration, population ageing, ageing of the labor force, retirement age.

*JEL classification:* J11.

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## 1. Introduction

This article intends to direct the attention of economists (especially those thinking about the strategic prospects for the Russian economy) towards the changing role of demographic factors in economic development. The issue is relevant be-

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<sup>☆</sup> This article is based on the findings of the research project “Peculiarities of Russia’s demographics in 2005–2015 in the light of long-term demographic trends” performed as part of the HSE fundamental research program in 2016.

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cause Russia, along with other countries that have largely completed their demographic transition (from high to low fertility and mortality), is entering a new period in which its demographics have become less favorable from an economic point of view. This change, happening before our eyes, requires deep reflection as it brings about new challenges while aggravating old ones. The article uses statistical data since the mid-20<sup>th</sup> century and demographic projections till the middle and, in certain cases, till the end of the 21<sup>st</sup> century.

## 2. Cessation of population growth as an economic challenge

The contemporary stage of demographic development for all urban post-industrial societies is characterized by two main features. The first is that, in all such societies, natural population increase has ceased or, in many cases, is becoming negative (Fig. 1).

The decline of natural increase, or even the natural decrease of population in developed countries is offset to a certain extent by immigration, which plays an ever-growing role. In particular, this is the case of EU countries that are not traditional immigration destinations like the United States, Canada or Australia.

Until the late 1980s, the EU population within its current borders (EU-28) had been increasing mainly due to natural increase, with net migration typically contributing less than  $\frac{1}{4}$  of the total growth (Fig. 2). However, the situation changed dramatically in the 1990s, when rising immigration became the main driver for total population growth. From 1985 to 2016, the net migration in the EU-28 to

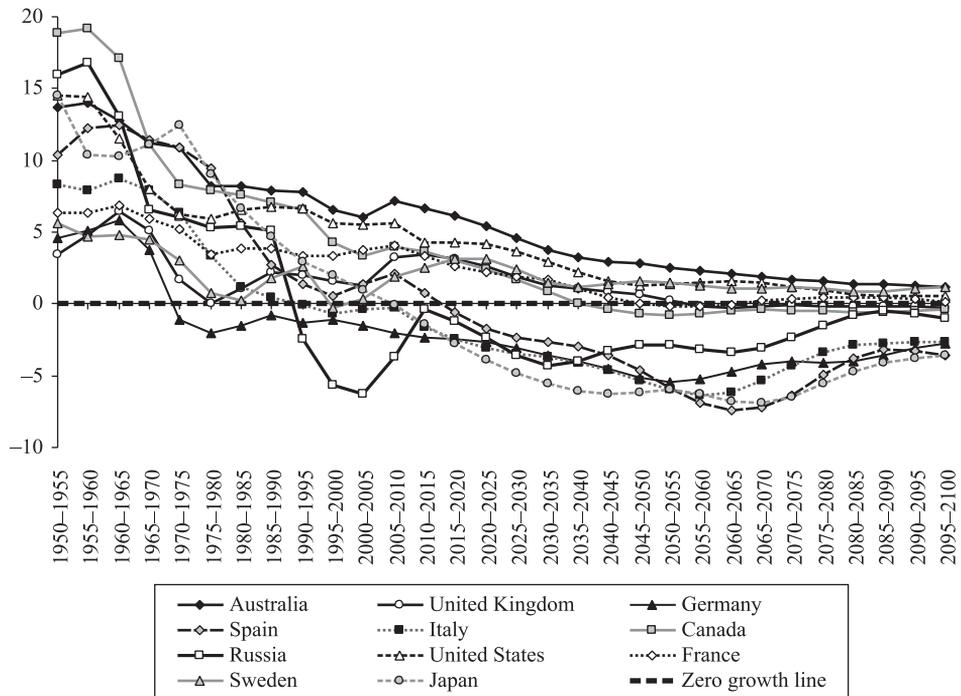
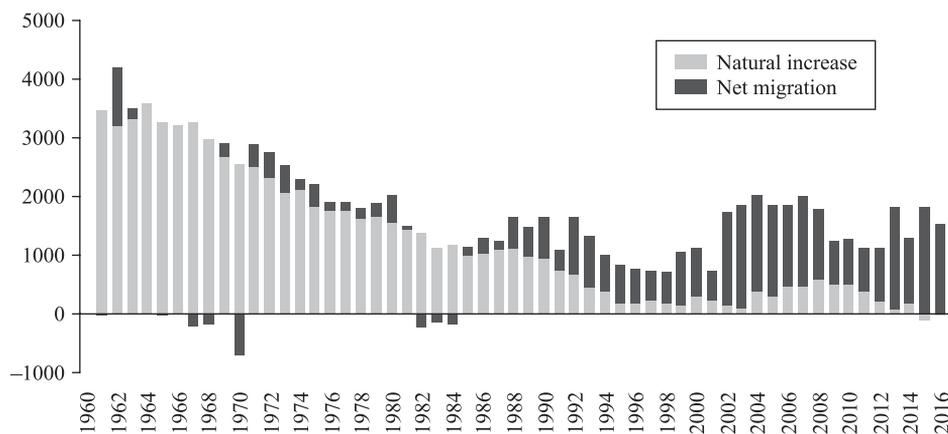


Fig. 1. Natural population increase in certain developed countries, 1950–2015, estimates and medium-variant projection 2015–2100—UN 2017 (%).

Source: UN Population Division. World population prospects: The 2017 revision, DVD edition, File POP/3.



**Fig. 2.** Demographic components of population growth in the EU (EU-28), 1960–2016 (thousands of people).

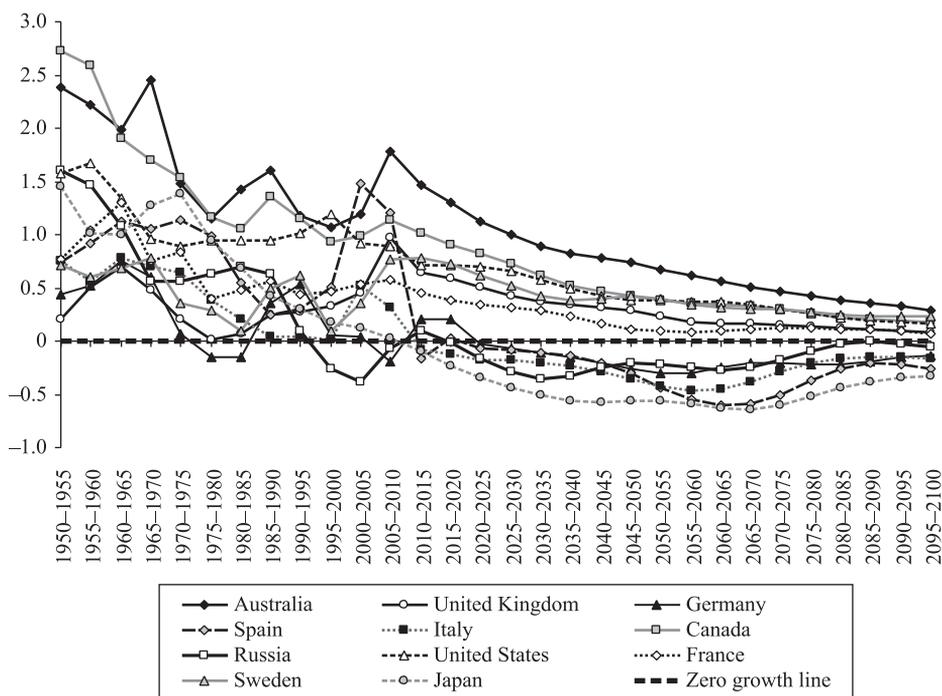
Source: Eurostat. Population change—Demographic balance and crude rates at national level [demo\_gind] (Last update 06.09.17).

taled around 30 million, whereas the natural increase was only 14 million, i.e. half as much.

Immigration plays a decisive role in growing the EU population size, becoming its most significant demographic resource. However, its contribution is not large enough to maintain a significant population increase. According to the projections, even despite immigration, population growth will decelerate considerably in some countries, while stopping in others, giving way to reduction (Fig. 3).

Discussing the correlation between demographic and economic growth has a long-standing tradition dating back at least to Malthus. S. Kuznets attempted “to dwell upon the positive contributions of population growth—admitting that they must eventually be weighed against the negative effects” (Kuznets, 1960, p. 325), but ultimately concluded that “the major qualification of our discussion, and indeed of most of the analysis in the field of relations between demographic and economic processes, becomes patent” (Kuznets, 1960, p. 339). Scholars turned to the issue of positive influence of population growth on the economy at later stages, assuming that in developed economies “the increased density that comes with higher population and greater urbanization promotes specialization and greater investment in human capital, and also more rapid accumulation of new knowledge. These ‘increasing returns’ from specialization and accumulation of knowledge would raise per capita incomes as population grew” (Becker et al., 1999, p. 146).

Although many arguments, that increasing population in developed countries has a stimulating effect on economic growth, seem compelling, this correlation can hardly be considered rigorously proven. However, even if all of the available considerations are correct regarding the positive impact of population growth on the economies of developed countries, on the whole, the gains from this growth (and, accordingly, the losses from its absence and, moreover, from population decline) should be evaluated in a far wider context, taking other factors and circumstances into account. For example, population growth or decline may have an effect on supply and demand in the labor market or in the consumer market,



**Fig. 3.** Average annual population growth in certain developed countries, 1950–2015, estimates and medium-variant projection 2015–2100—UN 2017 (%).

Source: UN Population Division. World population prospects: The 2017 revision, DVD edition, File POP/2.

and this effect may be similar between different countries. However, an economy is not only about supply and demand. The population density, the degree of land development, the maturity of the settlement network, the availability of regional centers and major cities etc., are all highly significant. Accordingly, it is one thing when populations stabilize or decrease to a certain extent in European countries that have high population densities. However, it is quite another thing when this happens in Russia, with its huge, sparsely populated and underdeveloped territory.

Even if we consider that about 70% of Russia's land is unsuitable for permanent living, the remaining 30% (around 5 million sq. km, home to over 90% of Russia's population) is not evenly developed. In the more densely populated federal districts (Central and North Caucasian federal districts), the population density roughly corresponds to that of Northern Europe (55 people per sq. km), less than half that of the EU (117 people per sq. km). The European territory of the country is, on the whole, comparable in population density to the United States (33 people per sq. km), while the Asian territory is comparable to Australia and Canada (roughly 3 people per sq. km). Nearly half of Russian citizens live in two federal districts (Central and Volga federal districts), while less than 18% of the country's population lives in the Far Eastern and Siberian federal districts which constitute  $\frac{2}{3}$  of Russia's territory. The demographic potential of Siberia and the Far East is clearly inadequate for developing their natural resources and for creating an advanced and more-or-less dense economic and settlement structure. At the same time, the population of Asian Russia is declining even faster and, from 2013 to 2016, grew slower than the rest of the country, which also

reflects the generally limited nature of Russia's demographic potential. Migration within Russia has developed into a so-called "western drift," resulting in a population shift into the west of the country.

This shift reflects the inter-regional competition for evidently scarce human resources given the significantly uneven socioeconomic development conditions amongst the regions. The lack of human resources also affects the growth of even the largest cities. During the period of explosive urbanization, they grew at the expense of the rural population, which seemed infinite at the time. However, the potential for rural-urban migration is nearly exhausted in Russia today, limiting the opportunities for large urban agglomerations to form, which are indispensable for any modern country.

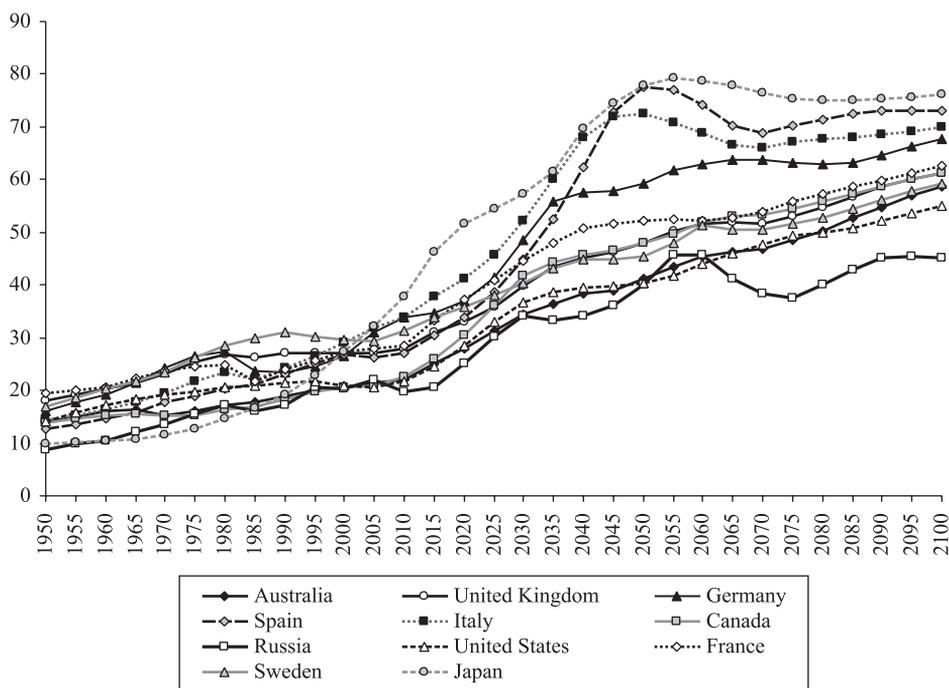
These agglomerations act as centers of economic growth around the world, as industrial, commercial and financial leaders that organize and mobilize the economic potential of large regions. Russia, however, lacks major cities and agglomerations, especially in its eastern regions. Out of the 15 Russian cities with more than 1 million inhabitants, only three are east of the Urals. Only Moscow (population over 12 million) and St. Petersburg (over 5 million) can be considered real major cities in Russia. The population of Novosibirsk exceeds 1.5 million, whereas all other million-plus cities have lower populations. Besides, there are 21 cities with populations between 500,000 and 1 million, but this is insufficient for Russia's vast territory. Large agglomerations act as nodes for the entire urban network, as regional development centers. However, the performance of both functions is weakened by low capacity of this link which forms the entire population distribution system and, to a considerable extent, the economic and social life of the country.

This situation cannot be changed under current conditions. Major cities attract the population of smaller ones, but there are not enough mobile resources for all of them, particularly due to the demographically driven decline in the young population. Internal migration may lead to a slight growth in some 50 most economically successful major cities located within the developed part of the country with a relatively mild climate. The territory needs population which is in short supply in Russia.

### **3. Change in the population's age distribution as an economic challenge**

The second distinctive feature of modern developed societies is the dramatic change in the population's age distribution. It is usually understood as "population ageing": the number and proportion of elderly citizens is rising, resulting in the growing old-age dependency ratio.<sup>1</sup> In the mid-20th century, the number of elderly of retirement age per 100 working-age people typically did not exceed 20 anywhere. Now it generally exceeds 20 and often 30, going as high as 40 in Japan. However, ageing continues and, according to the projections, all countries will hit new records by the middle of this century. The old-age dependency ratio is expected to exceed 40 per 100 working-age people even in Russia and to approach 80 in Japan (Fig. 4).

<sup>1</sup> In order to standardize the indicators and ensure their international comparability, the working-age population in this article includes people between 20 and 64 (unless otherwise stated).



**Fig. 4.** Old-age dependency ratio (population aged 65+ per 100 population 20–64) in certain developed countries, 1950–2015, estimates and medium-variant projection 2015–2100—UN 2017.

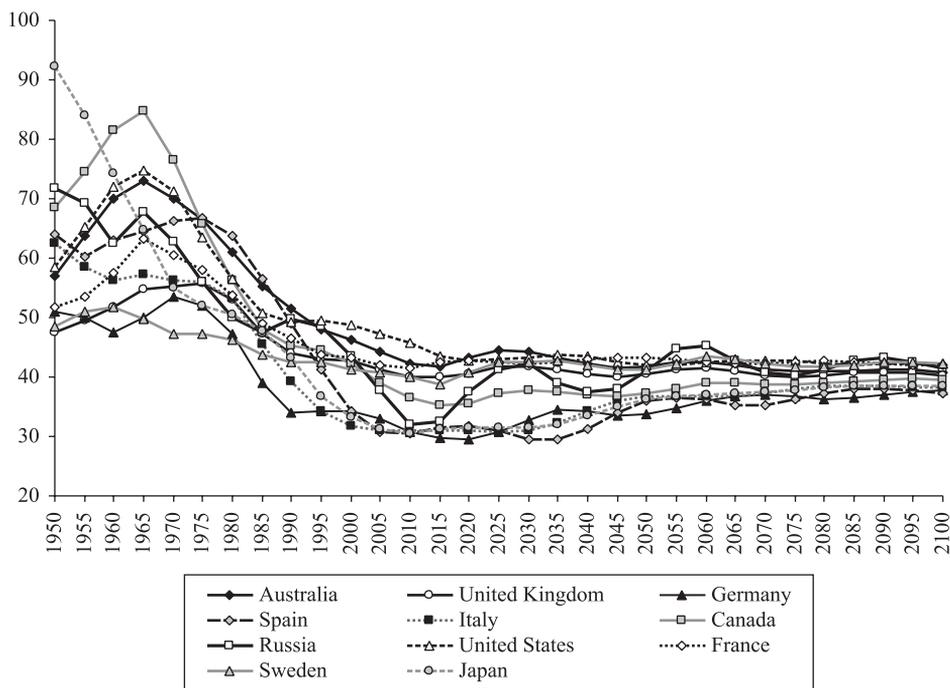
Source: UN Population Division. World population prospects: The 2017 revision, DVD edition, File POP/13-B.

The increasing number and proportion of the elderly is a well-known phenomenon and its economic and social implications and related problems have been discussed for a long time. Nevertheless, other significant processes and problems, also caused by inevitable changes in the age distribution during the demographic transition, often remain undiscussed.

However important the growing old-age dependency ratio may be, it is only one part of the total dependency ratio. The other part is the child dependency ratio, i.e. the ratio of the population under the working age to working-age population. During the demographic transition, the child dependency ratio declines rapidly at first and then stabilizes over time (Fig. 5).

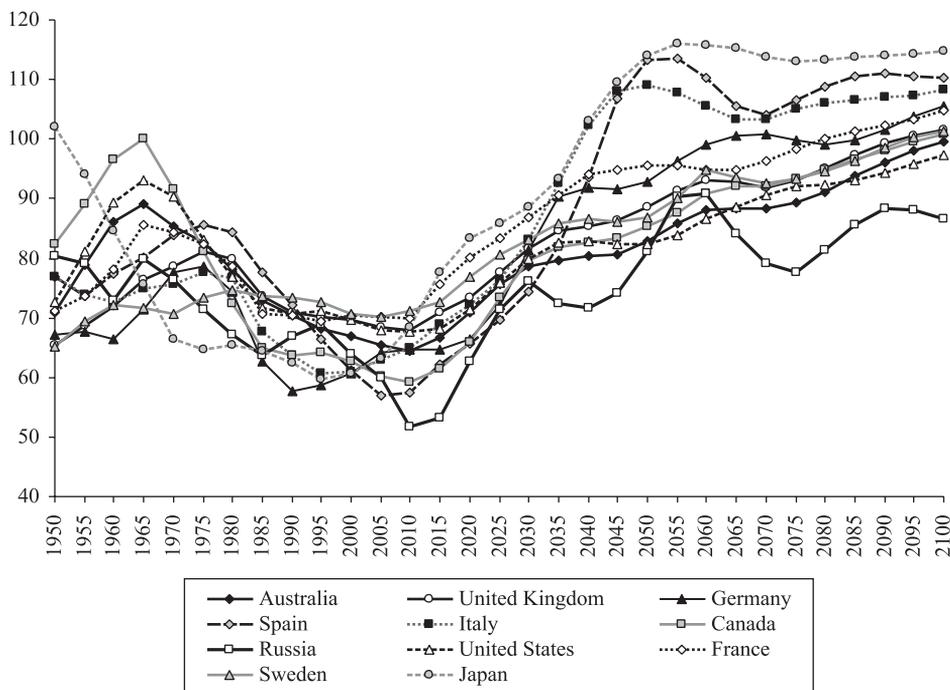
Ultimately, at least from an economic standpoint, it is precisely the total dependency ratio which is important. Throughout the second half of the 20<sup>th</sup> century, the decline in the child dependency ratio amply offset the increase in the old-age dependency ratio, resulting in a lower total dependency ratio. However, at the turn of the 21<sup>st</sup> century, when the proportion of children in the population stabilized while the proportion of elderly continued to increase, the total dependency ratio began to grow as well. This change happened around 1990 in Germany, around 1995 in Italy, France and Japan, around 2005 in Spain and Sweden and around 2010 in Russia, Australia, the United Kingdom and the United States. Forecasts predict considerable further growth in the total dependency ratio (Fig. 6).

Economic development under a rapidly increasing dependency ratio is a new situation that no ageing country has ever faced. In addition to the growing total dependency ratio itself, it is significant that it began following a period of its decline.



**Fig. 5.** Child dependency ratio (population aged 0–19 per 100 population 20–64) in certain developed countries, 1950–2015, estimates and medium-variant projection 2015–2100—UN 2017.

Source: UN Population Division. World population prospects: The 2017 revision, DVD edition, File POP/12-B.



**Fig. 6.** Total dependency ratio (population aged 0–19 and 65+ per 100 population 20–64) in certain developed countries, 1950–2015, estimates and medium-variant projection 2015–2100—UN 2017.

Source: UN Population Division. World population prospects: The 2017 revision, DVD edition, File POP/11-B.

The economy was, in a broad sense, “spoiled” by favorable demographic changes and is now hardly able to easily adapt to demographics becoming far less favorable.

The changes in the age composition of the dependency ratio (children/elderly ratio) are so significant that they may necessitate a deep re-thinking of the customary patterns of intergenerational redistribution of economic resources that took shape in the past when the demographic conditions were completely different.

#### 4. Russia’s demographic features

The above relates to all countries, but for Russia the problem is especially acute. As shown in Fig. 6, the shift has been very sharp for the country. It gained more than other countries from a decrease in total dependency ratio from the mid-1990s to the late 2000s. In 2011, this ratio reached an all-time low (51 per 100 persons of age 20–64). This decline most likely made a substantial and seemingly undervalued contribution to the economic welfare of the “fat” years (the issue is usually reduced to the favorable trends in global oil prices). As estimated by World Bank experts, nearly one third of Russia’s per capita GDP growth between 1997 and 2011 was achieved due to favorable demographic changes (World Bank, 2016, p. 11).

However, the dependency ratio then began to increase and it will continue to increase with some fluctuations throughout the entire foreseeable time. The future dependency ratio will far exceed its current level:<sup>2</sup> by the early 2030s, it will increase by 40% to 50%; then, after a certain deceleration, its growth will resume (Fig. 7). A similar increase in the proportion of social expenditure during this period is unlikely and may only be possible at the expense of other spending. This, in any case, will bring about strong economic tensions and, all else being equal, may lead to a decline in the standard of living and, consequently, in consumer demand and reduce investment opportunities. Both will result in a deceleration of economic growth.

We may seem to over-dramatize the situation, since the growth of the dependency ratio in upcoming decades will only return to the 1960s level. However, at that time, a very high dependency ratio was also a serious burden for the economy which experienced serious difficulties. The latter were attributed to various reasons, which usually excluded demographics. This does not mean, of course, that they were not there. In addition to the absolute level of dependency ratio, the direction of its changes, their duration and the differences between the initial and final levels are also important. As shown in Fig. 7, the trends towards a lower dependency ratio over the past 50 years, even despite their comparatively short-term deterioration from the latter half of the 1980s until the early 1990s, differ drastically from the explosive growth the country would have to go through within a mere 15 to 20 years.

<sup>2</sup> Below, we use the results of the analytical projection of Russia’s population through 2050, prepared by the Institute of Demography of HSE (IDEM) in 2016. For this projection, three scenarios for changes in fertility and mortality, and four scenarios for changes in migration (including a zero-migration scenario) were elaborated. A review of all possible combinations of these scenarios produced 36 alternative projections. Figure 7 shows 3 out of 36 alternative variants: the most optimistic (high), medium and the most pessimistic (low). The high variant was obtained by combining the high fertility, life expectancy and migration scenarios, the medium one, by combining the medium scenarios, the low variant—by combining the lowest scenarios.

The specific features of Russia’s age distribution are impacted not only by the evolutionary ageing process experienced by all countries, but, to a far greater extent than other countries, by the “echo” of historical events from the first half of the 20<sup>th</sup> century which have exacerbated the trend. These events strongly deformed Russia’s population pyramid (Fig. 8), causing the wavelike dynamics in the number for all age groups and sharp differences in the ratios between them, both in the past and in the future.

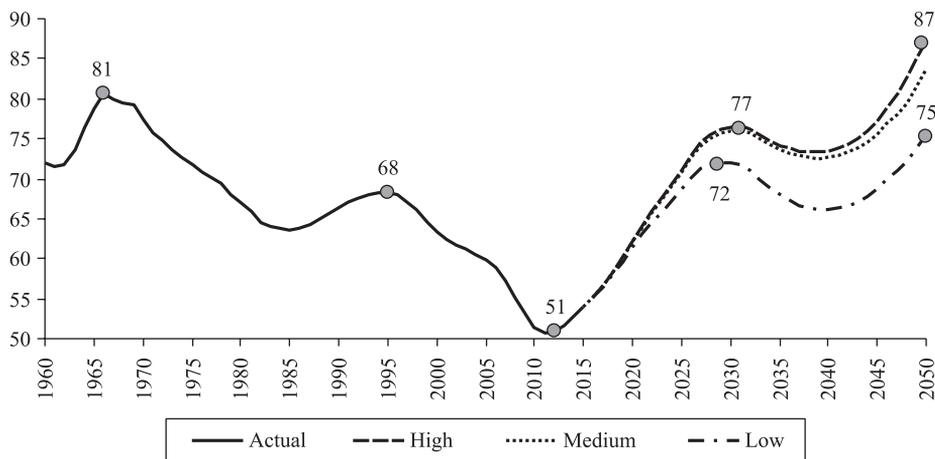


Fig. 7. Total dependency ratio (population aged 0–19 and 65+ per 100 population 20–64), Russia, 1960–2050.

Source: Through 2015 — Rosstat (Russian Federal State Statistics Service) data; 2016–2050 — three projection scenarios by the IDEM.

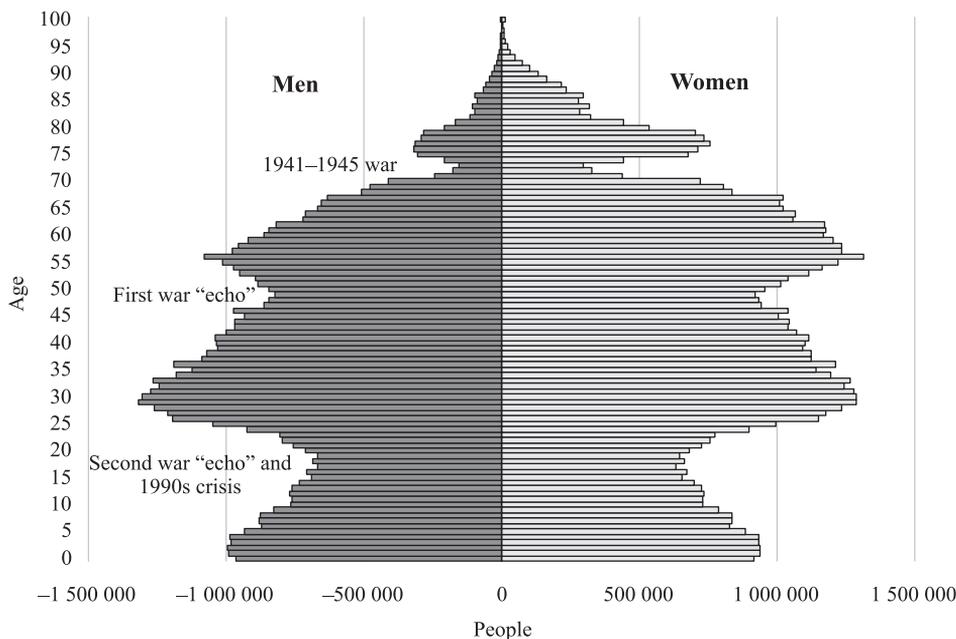
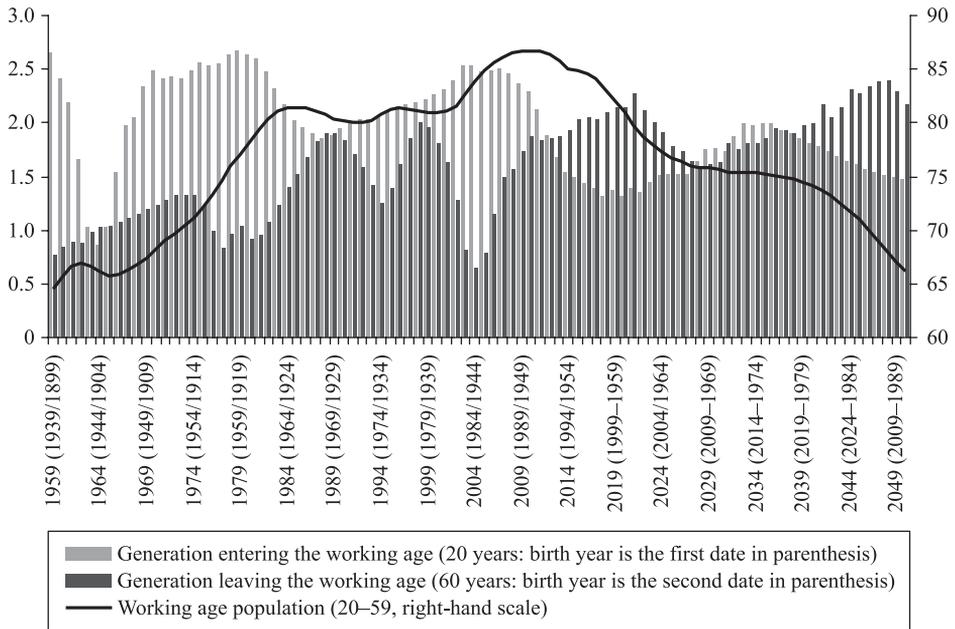


Fig. 8. Russian population pyramid at the beginning of 2017.

Source: Rosstat data.



**Fig. 9.** Working-age population between 1959 and 2050, entering the age (at 20) and leaving it (at 60) by generation (million people).

Sources: through 2015 — Rosstat data; starting from 2016 — medium projection scenario by the IDEM.

This results in an uneven trend in the quantity of labor resources formed by generations entering and leaving the working age. Fig. 9 shows the annual ratio between the number of young people entering the working age and of the elderly exiting it, beginning from 1959 (working age is considered to be from 20 to 60 years old).

The left part of the graph represents the actual labor resource renewal over the past 55 years. During this period, Russia experienced at least three bouts of deterioration in the “entering-leaving” ratio for working ages, when small-sized generations of workers born during low-fertility periods (the war and its two “echoes”—around 1968 and 1993) replaced large-sized generations born 40 years earlier. We can see yet another period of deterioration in this ratio, however, less significant, which coincides not with a reduction in the number of entering generations, but with an increase in the number of those leaving, born during the end of the 1930s when there was a short-term rise in fertility.

To the best of our knowledge, the impact of the said changes in the number of age groups entering and leaving the labor market on economic phenomena has not been studied. It should be noted, however, that, despite all of the changes, the total size of the working-age population generally grew, sometimes halting, but almost never declining. This favorable trend in the past is in sharp contrast with all of the projections. The country has entered a period of continuous reduction in labor resources which is not going to end by the middle of the current century. According to the medium alternative forecast, shown in Fig. 9, Russia’s population will exceed 142 million in 2050, while the size of the population in the main working ages will be roughly the same as in 1960, when Russia’s population was only 119 million.

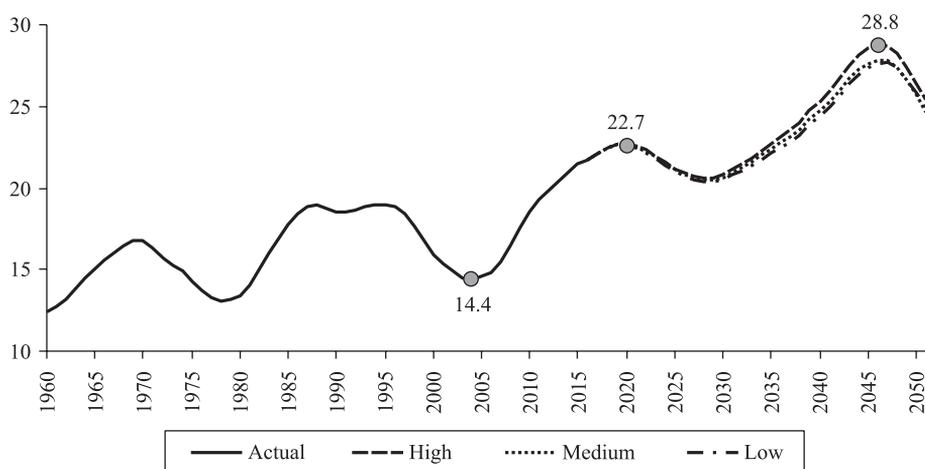
## 5. Ageing of workforce

In addition to the fact that Russia is entering a period of a declining working-age population (in both absolute and relative terms), the working-age population is also ageing. In the early 1960s, the oldest segment of the working-age population (ages 55 to 64) was slightly more than 12% of the total working population (ages 20 to 64) in Russia. This indicator then alternated between increasing and decreasing, falling below 15% during the mid-2000s. However, this was followed by a rapid increase of 7 p.p. over the next 10 years. After another fluctuation cycle, the indicator is expected to again decrease somewhat during the second half of the 2020s, followed by growth (Fig. 10).

The workforce in all developed countries is ageing. A special study was devoted to this issue: Aiyar et al., 2016, from which we borrowed Table 1 below, adding Russia (the low end of the working age is defined differently in the Table 1 than in Fig. 10).

As can be seen, today in Russia—unlike other European countries—the oldest segment makes up a large proportion of the overall working population. However, many countries will surpass Russia in the future, with this indicator exceeding 20% or even 25% in some countries. Given how rare it is to find actual 15-year-olds entering the labor market in European countries, the proportion of elderly amongst the workforce will be even higher.

The impact of ageing workforce on productivity has long been discussed in literature, including the domestic one (see in particular Vishnevsky, 1970, 2005). Today, as in past decades, arguments include the positive contribution of accumulated knowledge and experience by older workers, as well as the negative effect on productivity and the ability to adapt to technical innovations due to obsolete knowledge obtained by older workers from training prior to entering the labor market. This is aggravated by the reduced intersectoral and geographic mobility of older workers and their lower economic activity. The deteriorating health of ageing workers has a negative impact on productivity, with a portion of them leaving the labor market before reaching the official retirement age (Dixon, 2003, pp. 70–72).



**Fig. 10.** Share of the oldest segment (55–64) in the working-age population (20–64) in 1960–2050 (%).

Sources: through 2015—Rosstat data; starting from 2016—three projection scenarios by the IDEM.

**Table 1**

Actual and projected share of the 55–64 age group in the population aged 15–64 (%).

Country	2014	2020	2025	2030	2035
Austria	11.3	15.6	16.9	16.3	15.5
Belgium	12.9	16.6	16.4	15.9	15.7
United Kingdom	14.7	16.8	17.6	17.0	15.9
Hungary	14.1	17.1	19.8	23.4	26.5
Germany	18.2	22.0	23.7	21.7	20.1
Greece	11.5	18.5	21.3	23.7	25.4
Denmark	16.3	19.2	20.3	20.3	19.2
Ireland	13.4	15.5	16.9	19.2	21.5
Spain	13.1	19.0	22.2	25.4	27.5
Italy	14.8	19.9	23.6	25.8	25.8
Latvia	16.8	18.1	18.5	19.3	19.0
Lithuania	16.3	18.0	19.1	19.8	19.2
Luxembourg	10.3	12.7	13.4	12.9	12.2
Netherlands	16.2	18.5	20.2	19.6	17.8
Norway	16.6	17.2	17.9	17.9	16.8
Poland	14.5	14.2	14.4	16.7	20.4
Portugal	14.9	18.4	20.4	22.5	24.1
Russia	19.5	21.0	19.3	18.5	20.1
Slovakia	13.6	14.9	15.2	17.2	20.6
Slovenia	11.4	17.2	18.9	19.3	20.4
Finland	18.2	18.9	18.3	16.7	16.8
France	14.3	15.8	17.4	17.6	16.6
Czech Republic	15.5	15.0	16.3	20.0	23.7
Sweden	18.0	17.9	18.6	18.8	18.2
Estonia	17.8	18.9	19.1	20.8	21.7

Sources: Aiyar et al. (2016, p. 5); Russian data—medium projection scenario by the IDEM.

On the whole, researchers have concluded that the negative consequences of workforce ageing outweigh the positive ones, if the latter even take place. According to the conclusions made by the authors of the mentioned study, “the aging of the workforce in the euro area has lowered TFP (total factor productivity) growth by about 0.1 percentage points each year over the past two decades”. They affirm that “an increase in the share of workers aged 55–64 by 1 percentage point leads to a decline in the growth of output per worker of between 0.25 and 0.7 percentage points”. It means that “on average workforce aging will shave off about 0.2 percentage points of TFP growth every year until 2035”. If one takes into account that the projected average annual total factor productivity growth in the euro area is only about 1 percentage point per annum, in the absence of workforce ageing, the growth of TFP through 2035 could be about one quarter higher than the current forecast (Aiyar et al., 2016, pp. 7–8, 15).

It is true that the authors of the cited study have not considered this deceleration of productivity growth fatal and believe that it could be reduced considerably through reasonable social and economic policy measures. Those measures include expanding access to medical services, improving professional training and development, increasing labor market flexibility by reducing the tax wedge and intensifying innovative scientific developments to make workers, including elderly, more adaptable to the changing global environment. However, these and other similar measures are never free, while the reduction and ageing of the working-age population limit the opportunities to pursue an effective economic and social policy.

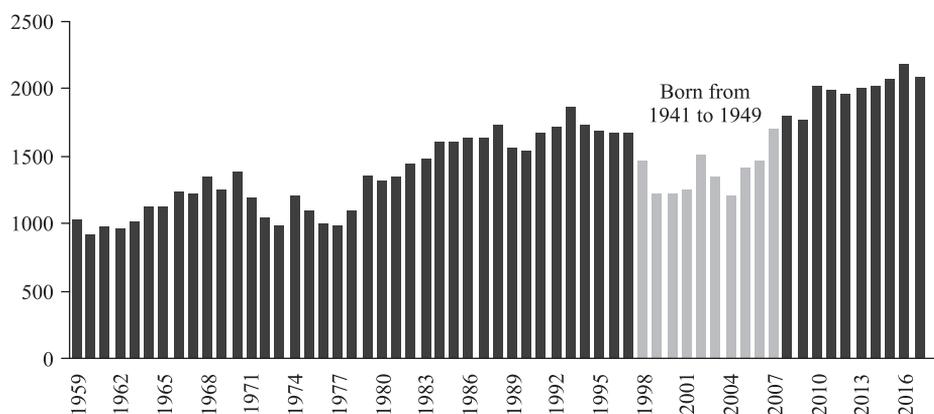
## 6. Pension riddle

The changing demographic situation raises particular concerns with regards to ensuring a wealthy old age for people who have ended their labor activity and live off their pensions. The natural consequence of the population ageing is a continually growing old-age dependency ratio and this obviously calls into question the pension security schemes which were formed during a time when this ratio was much lower and did not change.

There are various approaches to reforming pension systems. This is a special issue which cannot be fully discussed in this article. We will only explore issues directly deriving from demographic changes.

Economic logic suggests that, given a population ageing, a growing number of elderly and an increasing old-age dependency ratio, it is practical to increase the retirement age which will, at the same time, increase the size of the working-age population and reduce the number of pensioners. In Russia, the current unfavorable demographic situation particularly compels this solution. Only a short time ago, the ageing process slowed down and, from the late 1990s, the number of people reaching the standard retirement age (55 for women and 60 for men) ceased to grow. This was another gift received by the economy of the “fat” 2000s and relief for the pension fund as the small-sized generations who were born during the war years entered retirement ages (Fig. 11). Afterwards, however, came the large-sized generations born after the war and the situation changed. Over the nine years from 1998 to 2006, 12.1 million people reached retirement age, but over the next nine years, from 2007 to 2015, the number of newcomer pensioners was much higher—17.4 million. The number of elderly will only continue to grow. So it is no accident that increasing the retirement age is being discussed in Russia.

Arguing abstractly, this idea may have demographic as well as economic grounds. Objective historical changes often not only generate new problems, but also create opportunities to solve them. This pertains to the ageing of population as well. Demographers draw a distinction between two types of ageing: “ageing



**Fig. 11.** Population of both sexes reaching the retirement age (55 for women and 60 for men) in Russia from 1959 till 2017 (thousand people).

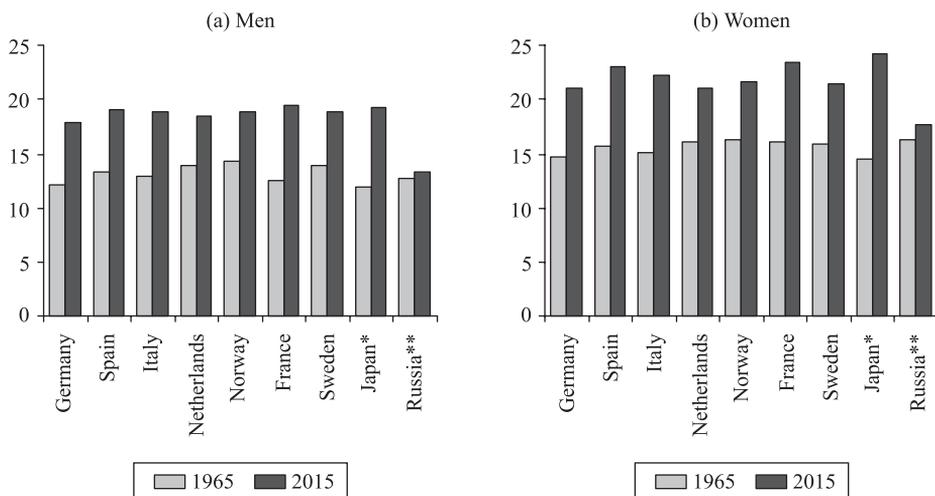
Source: Rosstat. Russian demographic yearbook for various years.

from the bottom” and “ageing from the top.” Ageing from the bottom is caused by declining fertility, which narrows the base of the population pyramid and, accordingly, increases the “weight” at the top. This in itself does not increase the old-age dependency ratio, though it causes problems later when the relatively small-sized generation of children reaches the working age, while the large-sized generations of recent workers go into retirement.

However, the processes which launched all the demographic changes in the 20<sup>th</sup> century, primarily the so-called “epidemiological revolution” (“epidemiological transition”) which caused a rapid decline in mortality, reached the top of the age pyramid. The earlier stages of this revolution were related to establishing control over infectious diseases, leading to a sharp drop in infant mortality. However, since roughly the 1960s, when the objectives of fighting infectious diseases had mostly been achieved, an energetic attack began on non-infectious chronic diseases and external causes of death (the “second epidemiological revolution”). This began a noticeable reduction in mortality at older ages, leading to “ageing from the top.” The share of elderly began to increase not because fewer children were born, but because more people survived till older ages, and elderly people lived longer than they did before..

The past fifty years were marked by great success in increasing the longevity of the elderly. Life expectancy for both men and women reaching age 65 increased by 5 to 7 years in many countries since 1965, while in Japan, the life expectancy of 65-year-old females grew by almost 10 years (Fig. 12).

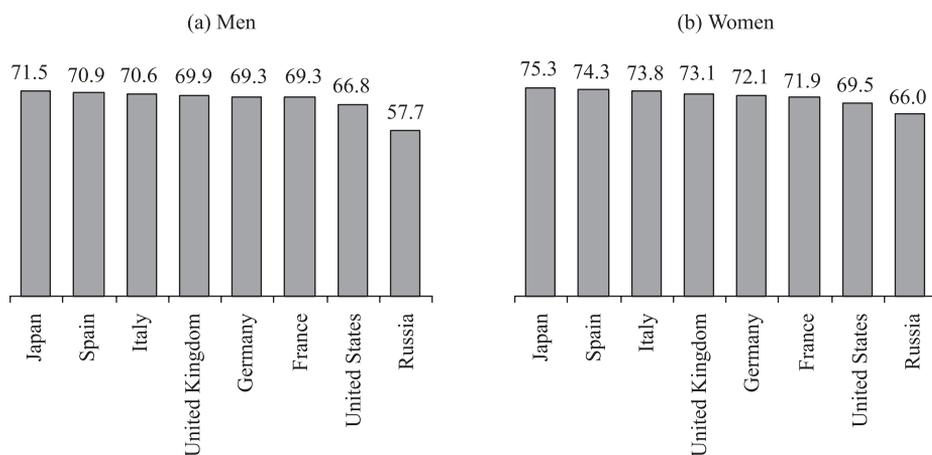
This growth creates objective grounds for extending working life while keeping the length of the retirement period the same. However, as shown in Fig. 12, there was no such growth in Russia. The “second epidemiological revolution” has not yet happened in our country (Vishnevsky, 2015). The stagnation of life expectancy for old-aged people means that *from a demographic point of view, there are no grounds for increasing the retirement age*. In many European countries



**Fig. 12.** Life expectancy at age 65 (years) in 1965 and 2015 in certain countries (years).

\* 2014; \*\* 2016.

Sources: Eurostat; Rosstat.



**Fig. 13.** Healthy life expectancy at birth (years).

Source: GBD 2015 DALYs and HALE Collaborators, 2016.

where the standard retirement age is 65, a man can live an average of 18 or 19 years after retiring, while a woman can live from 21 to 23 years. In Russia, this life space of “deserved rest” will be 5 or 6 years shorter if the retirement age is the same as in Europe.

We should add that according to available estimates, the average length of healthy life in Russia is considerably shorter than in other countries (Fig. 13). On the one hand, this drawback complicates a later completion of labor activity for a significant portion of workers whose health seriously deteriorates before reaching the retirement age. On the other hand, it calls into doubt the economic efficiency of utilizing the labor of senior workers aggravated by chronic diseases or disabilities.

The issue of economic damage resulting from poor health, especially of older workers, exists everywhere. In EU countries, the expenses for disability allowances and paid sick leave exceed unemployment allowances. A 2013 analysis of data from 14 European countries showed that, whereas the employment rate for healthy people aged between 50 and 59 is 74% on average, one chronic disease reduces it to 70%, while two or more chronic diseases reduce it to 54% (OECD/EU, 2016, pp. 20–21).

Given the lower overall and healthy life expectancy in Russia, the features of composition of causes of death for Russians and a number of other characteristics, we can assume that the state of health of Russia’s population before retirement and during early retirement ages is considerably poorer than in EU countries. Accordingly, extending the time older workers remain in the labor market if the retirement age is increased, will create more serious problems and lower economic efficiency of this measure.

Since the opportunities yielded by the “second epidemiological revolution” were not duly appreciated or leveraged in Russia, we established the need to increase the retirement age without realizing the potential objectively found in the very essence of historical demographic changes. Population ageing in Russia was not accompanied by a shift of a real physiological old age boundary, as in other countries. The reasons for this are numerous. However, the economic

drivers are some of the most significant. The breakthrough achieved by many countries by successfully shifting the real old age boundary for their populations would not have been possible without increasing expenditure to protect people's health and life. These expenses are growing in Russia as well, but not in a stable manner (Table 2). In Russia, health protection accounts for a significantly lower share of the GDP than, in particular, in the countries shown in Fig. 14, whereas in the latter, the per capita GDP in PPP is more than twice as high as in Russia.

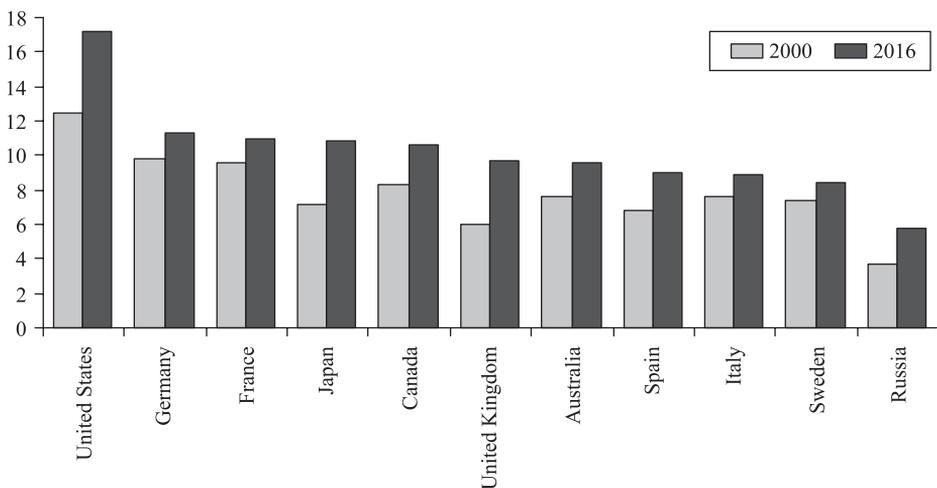
The long-standing saving in health expenditure, as far back as the Soviet era and also in the 2000s when the economic and demographic situation was more favorable, is now turning into an incapacity to meet the economic challenges of the population ageing, whatever pension system alternative is chosen.

**Table 2**

Health expenditure in Russia as a share of the consolidated budget and total health expenditure including payments for medical and resort services by the population (% of GDP).

Year	Consolidated budget expenditure	Total health expenditure including payments for medical and resort services by the population	Year	Consolidated budget expenditure	Total health expenditure including payments for medical and resort services by the population
2000	2.1	3.7	2009	4.0	6.0
2001	2.0	3.8	2010	3.4	5.4
2002	2.3	4.1	2011	3.2	4.9
2003	2.1	4.0	2012	3.4	5.1
2004	2.0	3.8	2013	3.3	5.1
2005	3.5	5.2	2014	3.2	5.1
2006	3.4	4.9	2015	3.4	5.5
2007	3.9	5.5	2016	3.6	5.8
2008	3.5	5.1			

Source: Rosstat. Russian healthcare yearbook for various years.



**Fig. 14.** Health expenditures in certain countries (% of GDP).

Sources: OECD.Stat. Health expenditure and financing. <http://stats.oecd.org/Index.aspx?DataSetCode=SHA>; Rosstat.

## 7. Migration resources

From a theoretical standpoint, migration resources may help meet the demographic challenges which the Russian economy faces today and which it will face even closer in the future. If the Russian population is growing today, this is almost exclusively due to immigration. Even as the population declined (from 1993 to 2008), immigration compensated for 60% of the natural decrease. Over those years, Russia's population decreased by 5.2 million. However, had it not been for immigration, the reduction would have been 13.2 million. Overall, from 1992 till 2016, net migration added over 9 million people to the Russian population. The role of immigration as the main source of growth in Russia's population will continue in the future, whereas the extent of the migration inflow will have to be quite great. Just to offset the inevitable natural decrease in the Russian population, at least 500,000 migrants will have to be accepted per year.

Practical policy-makers often underestimate the demographic significance of immigration. Experts and politicians primarily link immigration issues with the state of the labor market, and this is certainly a very important aspect of the immigration problem. In essence, modern massive immigration to European countries began just like the temporal immigration of guest workers and only afterwards became a more constant flow which is now a great source of irritation for Europeans. The now-popular quote by the Swiss novelist Max Frisch, “we wanted workers, but we got people instead” (“Man hat Arbeitskräfte gerufen, und es kommen Menschen”), reflects the realization of this fact.

As for the Russian reality, both aspects of the immigration issue need re-thinking. A response to the challenges posed by the labor market must not be studied without regard to a response to the challenge of insufficient population density discussed above; the need for a workforce must not overshadow the country's more important need for people.

Obviously, the labor market dictates its terms and, in Russia, it clearly faces problems that cannot be resolved without attracting immigrants. It is no accident that the optimization of labor migration flows based on the needs of the national economy is considered one of the important strategic economic planning objectives.<sup>3</sup>

The size of the population aged between 20 and 64 (the main portion of the labour force) declines after 2012, as we have seen and the reduction will reach 10 to 12 million people by the early 2030s. At the same time, the proportion of the younger age group (20–39), relative to the entire group, will drop from 48% to 37% by 2032. The labor market will hardly be able to adapt to such a fast and considerable contraction of supply without attracting additional immigrants, especially considering that not so long ago the situation was reversed and the labor market is used to a continuous growth of the size and share of working-age population.

The demand for migrant workers has both quantitative and qualitative aspects. Today, there is no clear understanding of exactly what kind of workers the Russian economy will need in the next 10 to 20 years. The common view is

<sup>3</sup> The strategy of economic security of the Russian Federation for the period until 2030: Decree of the President of the Russian Federation of May 13, 2017, No. 208.

that qualified migrants are needed, although the concept of “qualified” is usually undefined and it is not clear whether we are dealing with qualified workers and farm workers or only with top managers and top researchers. At the same time, it is unclear who is going to cover the massive need for professional workers in services, trade, construction, utilities etc., the qualification requirements for which are not so high, though the demand for them is quite significant. The inclination towards attracting a qualified external workforce connects poorly with the increased demand for young workers, which results from the rapid ageing of the country’s own working-age population.

The sufficiently massive flows of migrant labor from Central Asia or other developing Asian countries which Russia can count on, will inevitably include many young adults. However, there will be a high proportion of underqualified workers, yesterday’s peasants, who are not prepared or are poorly prepared for urban activities and who are only able to fill the lower levels of the professional pyramid. However, their cheap and unpretentious labor is always in demand and, in Russia and other countries, this is the very type of migration which has formed the urban populations that have become educated and qualified while living in cities.

The labor market’s need for an inflow of external workers can be covered to a great extent by temporary labor migration, i.e. guest workers. However, this migration provides only a limited answer to economic challenges and provides no answer at all to demographic ones. It does not sustain or increase the size of the population of Russia or at least its sparsely populated areas. This is why a sensible strategy should be oriented towards finding a simultaneous answer to both challenges.

As early as the Soviet era, both in public opinion and official discourse, there was a clear understanding of the interest of Russian regions in the inflow of migrants, who were regarded both as economic and demographic resources. In the 1970s and 1980s, much was said about the need to attract people to the “labor-deficient” regions of Russia (Central Russia, Siberia, Far East) from other parts of the USSR, especially from overpopulated Central Asia. A number of documents formalized it as an official position (see, in particular, materials from the 26<sup>th</sup> Congress of the Communist Party of the Soviet Union in 1981). On the whole, this reflected the views of experts at that time, although the actual inflow of people from the southern republics (at that time, internal migrants within the USSR) was low.

Now the situation has changed dramatically and in two directions at the same time. On the one hand, the long-expected migrants from Central Asia come to Russia; on the other hand, they are not “long-expected” anymore. Both in public opinion and political discourse, we increasingly see the desire to limit the inflow of migrants from Central Asia as much as possible, i.e. its native population which, after the “repatriation” of native Russians, became the main source of migration flows into Russia. Meanwhile, the objective situation with the impossibility of “carrying out the programs to develop Western Siberia, the Baikal-Amur Mainline zone and other places in the Asian part of the country,” which was discussed at the Communist Party Congress 35 years ago, if it has changed at all, has changed for the worse: the population of those sparsely populated regions is declining.

Plans to increase the population of the Far East have been discussed for a long time. The Demographic Policy Concept for the region was accepted, which re-

quires increasing its population to 6.5 million by 2025 and the “creation of conditions for further increasing the Far East population to 7 million” (6.2 million now), while there are plans to “attract permanent residents from other regions, compatriots living abroad, qualified foreign specialists and young adults to the Far East”.<sup>4</sup> These plans are not consistent with the trends we observe. It is the population of the Far East that is most rapidly declining. Following the peak of population departures during the 1990s, the intensity of the outflow resulting from intra-Russian migration from the Far Eastern Federal District beginning from 2000, remains at 4 to 6 persons per 1,000, 30,000 to 40,000 people annually and, despite the expectation that the population outflow will cease, the trends are not yet changing.

Russia lacks internal demographic resources which could be redirected to the Far East. Without external migrants and their naturalization, the task of increasing its population cannot be solved. However, those compatriots living abroad and qualified foreign specialists are also not enough alone to solve it. Moreover, the very task of increasing the population of the region to 7 million in the long run (15 years ago, it was 8 million) looks more than modest. Additional population is required, not only in the Far East, but also in vast Siberia. This need for people is not necessarily connected directly with the labor market. There are situations possible in the economy when combining people with idle resources creates a labor market where it did not exist before. The United States developed in a similar manner.

In the social and political discourse in Russia, as well as in other countries accepting migrants, the risks associated with massive immigration, such as social tensions and conflicts, destruction of the native population’s cultural identity etc. are constantly underlined. These risks undoubtedly exist. However, they result, not from the inherent qualities of migrants, but from their insufficient integration into a host society. This is why the main immigration challenge for Russia is the integration of migrants into Russian society. Russia needs people. That is why immigration should be used as a demographic resource to the maximum extent. However, the country cannot accept more people than it is able to integrate. This ability has its limitations, but can be enhanced. This poses another challenge and, if it is ever recognized and attempted to be solved, the acuteness of Russia’s demographic problems will be alleviated.

## 8. Conclusion

Summing up the results, we would like to once more underline the aspects of the demographic turning point currently observed by all countries which have completed the demographic transition, including Russia. The main conclusion is that, until recently, demographic factors were generally favorable for economic development. Today, due to a number of objective reasons, they will have a negative impact on it. The peculiarities of the Russian population pyramid, which were heavily influenced by the disruptive historical events of the 20<sup>th</sup> century, can make this turn especially painful.

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<sup>4</sup> The concept of demographic policy for Far East for the period until 2025: Order of the Government of the Russian Federation of June 20, 2017, No. 1298-p.

Our understanding is that economists did not pay much attention to the positive impacts of demographic factors or failed to notice them. This was, however, not a problem as the situation was favorable. However, underestimating these factors during a period when they exert a negative influence may lead to ominous consequences. We are currently entering such a period, and we need to understand the scale of the beginning demographic turn and think of ways to minimize its negative impacts. Maybe we will succeed: forewarned is forearmed.

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