# Possibilities for Increasing the Retirement Age in Russia in Response to Population Ageing

## ELENA V. CHISTOVA[1]

[1] PhD in Economics, Senior Research Fellow Institute of Economics, Ural Branch of Russian Academy of Sciences Ekaterinburg, Russia, e-mail: elvitvas@ya.ru

## A R T I C L E   I N F O

## A B S T R A C T

*The article evaluates the possibility of increasing the retirement age to mitigate the influence of ageing on the pension system of Russia. The study consists in building demographic forecasts on the basis of hypotheses on the separation of the global demographic trends and the manifestations of Russian development features in the processes of population reproduction. The demographic forecast is based on the method of shifting basic data forward by age. The forecast confirmed a well-known paradox that – if the situation with the reduction of mortality rate continues to improve as it used to in the recent years – the ageing pace negatively affecting the pension system balance will turn out to be even faster at least in the mid-term prospect.*

## INTRODUCTION

Population ageing is a major challenge for today's pension system. This has become a worldwide trend (Wang et al., 2015). At present, many developed countries have already entered an aging society, and many developing countries are or will be on the way to it (UN, 2013). The population ageing is also typical of Russia. However, in contrast to developed countries, in Russia, the main demographic cause of population ageing is not the higher life expectancy but the decline in the birthrate (i.e., the ageing comes from "below"). As a result, the population age structure in Russia appears relatively younger than in developed countries. However, over 25 years, a share of retirement age population increased from 18.5% to 24.0%, and in 2015 for every 100 people of working age there were 41 of those who were above the working age. Not only do these age proportions persist, but they keep increasing, which leads to a higher demographic burden on the economy and aggravates the imbalance of the pension system budget.

Population ageing makes a strong impact on the sustainability of the pension system, which generates a broad discussion of this issue worldwide (Tian & Zhao, 2016). Population ageing has been one of the main driving forces behind pension policies and reforms in the past two

decades (OECD, 2013). Increasing the retirement age appears as the easiest way to cut the number of pensioners, expenses of the pension system, and raise the pension insurance contributions by increasing the number of those who pay them. The legally established retirement age in Russia is the lowest among all countries, with a national compulsory pension provision (Solovyov, 2015). For men, the retirement age starts at 60, for women, at 55. It was established as early as 1932 based on studying the condition of workers retired for a disability pension—since then, nothing has changed, even though the nature of labor and working conditions have noticeably altered (Sinyavskaya, 2005). Meanwhile, in developed countries, the retirement age is 65 for men, and the same, or almost the same, for women. Raising the retirement age is a widespread response to population ageing in many countries. In the last decade, most of the 34 OECD countries have passed legislation that raises the retirement age or the contribution requirements that earn entitlement to full pension benefits. Many countries have raised the bar above 65 years of age to 67 and higher (OECD, 2013). There are two key aspects in international experience of raising the retirement age. First, any gender differences in the retirement age are either eliminated or reduced. Second, raising the retirement age is a long-term process that is implemented gradually with a transition period.

There is a fairly large number of long-term demographic forecasts published for Russia. This is an optimal period to assess the implications of reforms in the pension system. However, these forecasts are presented in such a way that they do not allow assessing the extent to which the population ageing problem can be addressed by raising the retirement age since they are not providing the complete projections of sex and age structure of the population. For example, in the United Nations publication (UN, 2015) and in demographic yearbook of the Russian Federal State Statistics Service (Rosstat, 2015), the forecasts of the population size are presented by sex and age groups (but not by specific age). In addition, the forecasts fully depend on their demographic development scenarios. The generally accepted approach is to prepare forecasts for three scenarios—low, medium, and high. The first scenario describes unfavorable demographic development, the third one is for favorable development, while the second scenario describes something in between. This is not correct since the demographic development is determined by a combination of three variables (birthrate, mortality, and migration). Hypothetically, it allows for 36 such combinations. But it makes no sense to prepare forecasts for all these scenarios because a projection should consider the initial (current) demographic trends. The potential variants of future demographic development in Russia depend on causes that underlie the ongoing changes. In a global context, the demographic trends in Russia, on the one hand, are closely intertwined with changes in the developed countries, and, on the other hand, they demonstrate their specificity.

To determine the possibility of raising the retirement age in order to mitigate the impact of ageing on the pension system in Russia, we have conducted a study that includes the forecasts based on hypotheses that the reproduction of population reflects global demographic trends and particular aspects of development in Russia. The article is structured as follows. The first section reviews the methodology of demographic forecast for Russia and three potential scenarios. The second section presents the approach to forecasting the size of population and initial parameters of the forecast. The third section describes the results of demographic forecast for Russia until 2036 by taking into account the increase of the retirement age. The last section includes findings and conclusion.

# 1. FORECAST METHODOLOGY

There are several theories of demographic development that can be divided into two groups. The first group includes the theories that all countries are going through successive stages in their development, and their decisive determinants are universal for the global process. One of such theories is the concept of human capital (Shultz, 1971). It became a signifi-

cant milestone in a general trend of changing attitude toward education, health care, culture, and other branches of social sphere, particularly, in terms of their resource provision. This concept for the first time helped demonstrate the area for practical application of the theory of investments in "human factor." The key idea of the concept is in proving the economic expediency of large capital investments (both private and public) in human factor (Becker, 1993). The human capital is built primarily with investments aimed at creating comfortable conditions for social institutions that contribute to improvement in the population's standard and quality of living.

The mobilization of enormous resources, including expenditure on health care, environmental protection, research, and substantial revision of legislative acts related to health protection, allowed developing social infrastructure, thus limiting unfavorable impact of physical and social environment factors on demographic development. This changed the mortality model in terms of the causes of death, where the center of gravity shifted from causes weakly related to age to causes strongly related to it. Such transformations formed the basis for the theory of epidemiological transition (Omran, 1977), the essence of which is in the radical change of mortality structure, when the prevalence of exogenous (external) causes of death is replaced by the prevalence of endogenous (internal) and quasiendogenous (accumulated exogenous) causes. But the opportunities for demographic changes achieved exclusively through state paternalism are limited. First, in addition to financial expenditure on protection and restoration of health, it is necessary to increase the activities of population aimed at healthier lifestyle and human environment. Along with a theory of an epidemiological transition, the contemporary science uses the theory of the second demographic transition (Lesthaege, 1992), which explains the emergence of new patterns in social and demographic behavior produced by specific socioeconomic environment. D. Van de Kaa considers the second demographic transition as a result of the shift from conservative to progressive attitudes in the social awareness, where the progressive attitudes are understood as tolerance and openness to new values and behavior models (Van de Kaa, 1988). There is a significant increase in a degree of freedom in choosing both the individual goals and the means of their achievement.

In addition, the demographic changes are related not only to natural reproduction of population but also to increased population mobility. Immigration makes a significant contribution to dynamics in the size of local population and changes in its structure. This allowed D. Coleman to formulate the concept of third demographic transition—that is, a special phase in the development of the country's population, in which the most significant contribution to dynamics in the size of population is made by the migration (Coleman, 2007).

Russia is seen to be lagging in terms of transition stages—this reflects the overlap of development problems unresolved in previous stages with the subsequent stages of transitions as well as the trends and particular aspects of socioeconomic development of the regions. The second group combines the theories that explain the specificity of development in Russia. The functioning of institutions has a particular importance in terms of specific aspects of demographic development. The institutional approach consists in understanding the institutions as a process of continuous reproduction of social, legal, economic, and other relations that structure the public life and set the rules for behavior of people and organizations. Sharp changes in an external economic, political, natural, and other environments lead to emergence of destructive states in the functioning of institutions, or "institutional traps". The institutional traps are ineffective, yet stable forms of behavior (Polterovich, 1999). The destructive and stable forms of behavior are a component part of demographic development. The market reforms of 1990s made an impact on the emergence of such traps. The redesign of institutional structure led to the crisis of social institutions responsible for maintaining the law, preserving the life and health of the population, which affected the demographic development. The reforms damaged the social and demographic development by substantially deteriorating the quality and standards of living, increasing the social tensions and instability, insurmountable difficulties in the adapta-

tion to the transition to market economy (Rimashevskaya, 2003). The aggregate of pathological processes, which in the course of reforms caused superhigh and superearly mortality among the people of working age, deterioration of health, and negative natural increase of population, was designated as social stress by B. Velichkovsky (Velichkovsky, 2009).
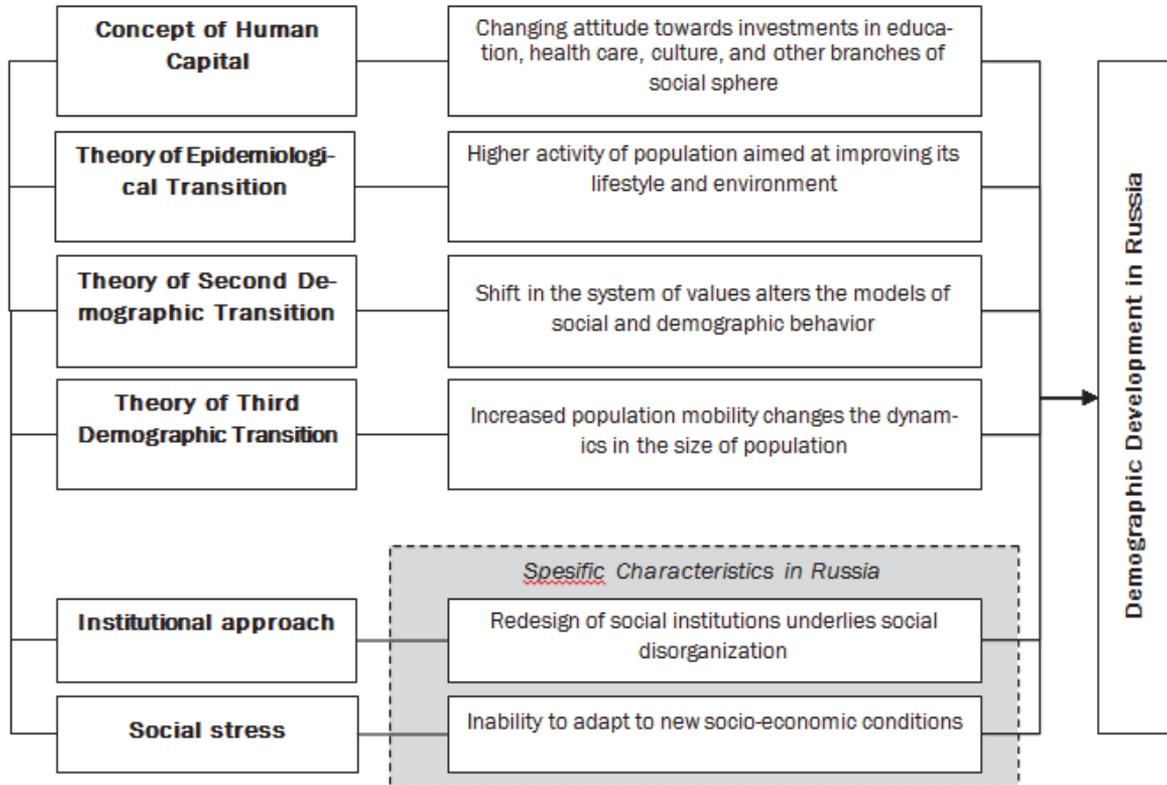
```
┌─────────────────────┐     ┌──────────────────────────────────────┐
│  Concept of Human   │─────│ Changing attitude towards investments │
│      Capital        │     │ in educa-tion, health care, culture,  │
│                     │     │ and other branches of social sphere   │
└─────────────────────┘     └──────────────────────────────────────┘

┌─────────────────────┐     ┌──────────────────────────────────────┐
│Theory of Epidemiologi│────│ Higher activity of population aimed   │
│  cal Transition     │     │ at improving its lifestyle and        │
│                     │     │ environment                           │
└─────────────────────┘     └──────────────────────────────────────┘

┌─────────────────────┐     ┌──────────────────────────────────────┐
│Theory of Second De- │─────│ Shift in the system of values alters  │
│ mographic Transition│     │ the models of social and demographic  │
│                     │     │ behavior                              │
└─────────────────────┘     └──────────────────────────────────────┘

┌─────────────────────┐     ┌──────────────────────────────────────┐
│ Theory of Third     │─────│ Increased population mobility changes  │
│Demographic Transition│    │ the dynam-ics in the size of population│
└─────────────────────┘     └──────────────────────────────────────┘
```

Figure 1. The contemporary approaches to studying the demographic development in Russia

*Spesific Characteristics in Russia*

Redesign of social institutions underlies social disorganization

Inability to adapt to new socio-economic conditions

**Institutional approach**

**Social stress**

**Demographic Development in Russia**



The systematization of contemporary theoretical approaches to studying the demographic development of Russia allowed revealing the dual nature of this development (see *Figure 1*). On the one hand, the demographic processes take course within the global development patterns under the impact of changes of the values system and the lifestyle as well as of the attitudes toward education, health care, and other branches of social sphere. Such changes lead to specific demographic quality transformations:

- − Increase in the average age of entering into marriage and motherhood reduces the contribution of young women to birthrate.
- − Transition to effective methods of family planning reduces the incidence of abortions.
- − Widespread practice of marriage forms, which are different from traditional model of marriage, leads to an increasing number of children born out of wedlock.
- − Expanding opportunities for women and the equality of men and women in the job market lead to a shift in the birth of children to later ages;women obtained the opportunities to use the period of their life before childbirth for educational and economic purposes.
- − Modern health care sharply increases chances for survival, and, as a result, lower mortality is being accompanied by the reduction in the ratio of its exogenous and endogenous components, where the exogenous mortality becomes more controllable, and its contribution is decreasing.

- Change in the structure of diseases puts the noninfectious diseases, especially cardio-vascular diseases and cancer, to the top place among the health hazards.
- Endogenous factors of human organism development related to its natural ageing cannot be eliminated (as the ageing process itself) and shift the mortality to older age groups.

On the other hand, the current social and demographic trends in Russia are caused bysocioeconomic changes that triggered the Russian anomalies (high mortality, especially among men and mortality from preventable causes) and by implemented demographic policy that ensured a certain natural increase in the population since the 2012. Thus, there are three possible scenarios of demographic development in Russia. First, the current difficult economic and political environment in Russia may deteriorate the financial position of the population and create uncertainty with regard to economic stability in the future, which will result in retaining the high mortality and insignificant birthrate and keep natural increase of the population at zero level. Second, the actively implemented demographic policy may potentially lead to a significant increase in the life expectancy (which will be within the demographic patterns) and higher birthrate (manifestation of particular development aspects). Third, in the future, Russia may enter into "final" stages of demographic transitions and an epidemiological transition and will be within the trend of Western European reproduction of population that implies a significant ageing of population and spreading of nuclear families. Regardless of what scenario the demographic development in Russia will take, the dependency burden on working age population will increase. However, the scale of this burden will depend not only on scenario but also on decision to raise the retirement age.

## 2. INITIAL PARAMETERS OF THE FORECAST

Currently, the budget of the Russian Pension Fund is planned on the basis of state reporting under the Form 94 (Pensions), which includes the information on the number of pensioners and amounts of their pensions[1] as well as on statistical data onthe size and mortality of population by using the analytical and extrapolative forecasting methods (Gabdrakhmanov & Rubtsov, 2014; Trofimova, 2010). These methods are not taking the full account of changes in the sex and age structure of the population, which may cause the errors in the forecasts. In addition, the method of extrapolation implies the assumption that the force and nature of the impact made by decisive determinants of development of the retrospective period will remain in the future, which is not always true.

When forecasting the number of pensioners, it is logical to use the cohort-component method, or a method of age shift. It fully corresponds to the logic of population ageing and renewal. Not only does this method help calculate the total number of pensioners, it also allows determining their distribution by sex and age. Its application is based on using the demographic balance equation.

$$P = P_0 + (N - M) + (I - E), \qquad (1)$$

where $P$ is the total size of population,
$P_0$ is the size of population at the beginning of the year,
$N$ is the number of births,
$M$ is the number of deaths,
$I$ is the number of immigrants,
$E$ is the number of emigrants.

---

[1] The form does not include the pensions of "power" ministries and a number of other agencies and categories of state employees—that is, pensioners who are not registered with the authorities in charge of the pension provision.

The difference between the variables $N$ and $M$ is called the natural increase of population when $N>M$, or natural decrease when $N<M$, and the difference between the variables $I$ and $E$ is usually called the net migration or migration balance. In this formula, the variables $N$, $M$, $I$, and $E$ are components of change in the size of population over the year. The essence of this method is that the data on the size of specific age-sex groups (cohorts) is moved every year into the next age group by taking into account the mortality of population and aged-based migration balance. The size of the zero age group is determined on the basis of forecast for the annual number of births and infant mortality. The forecast for the annual number of births is based on the number of women of childbearing age and frequency of the childbearing among women of that age.

To optimize the forecasting process, we used the program for calculating the demographic forecast (Andreyev, 2001) based on the considered method. This program is written in VBA language and implemented in the form of a macro for Microsoft Excel. Building a forecast requires the source data at the beginning of the first year of forecast, such as:

– Size of population by five-year age groups and sex
– Total birthrate
– Average age of mother at the birth of child
– Expected life expectancy at the birth of men and women
– Infant mortality rate
– Number of immigrants
– Emigration rate

The program uses a number of dependencies that substantially facilitate the forecasting of survival probabilities, child-bearing probabilities, and age structure of migrants. The forecast involves 202 survival probabilities (101 for men and 101 for women) and 35 child-bearing probabilities. The probabilities in different age groups are rather rigidly related to each other, and there are quite reliable models of describing these relationships. The survival probabilities closely correlate with life expectancy at birth. Therefore, for each value of life expectancy at birth, we can predict all survival probabilities with fairly great accuracy. The age structure of migrants is to the largest extent exposed to fluctuations, but it also is not completely arbitrary. There is certain objective logic in the age distribution of emigrants and immigrants that provides the basis to determine, with more or less accuracy, what the age structure of those arriving to and departing from the country will be (Andreyev, 2001). Therefore, it is sufficient to set the final characteristics of mortality, birthrate, and migration, and the existing models in the program will use them to determine the age indicators.

The demographic forecast until 2036 is built in accordance with the scenarios based on three hypotheses of future trends in the demographic development of Russia. The generated hypotheses are based on identifying the global demographic trends and specifically Russian aspects of development in the reproduction processes. The first hypothesis is that in the forecast period the reproduction of population in Russia is dominated by the deviation from the global demographic trend under the influence of specifically Russian aspects, with migration remaining at the current level. The second hypothesis implies that in the next two decades the mortality rate in Russia will be in line with global demographic patterns but with a certain lag, while the birth and migration rates will increase as a result of active demographic policy. According to the third hypothesis, by the end of the forecast period, the population of Russia will fully adopt the social and demographic model of behavior existing in developed countries that will lower the mortality (significant ageing of the population) and fertility level (prevalence of nuclear families with few children). Based on assumed hypotheses, we calculated the values of individual indicators for three scenarios (see *Table 1*).

**Table 1**. The values of indicators in 2036 for three forecast scenarios

| Indicator | Scenario 1 | Scenario 2 | Scenario 3 |
|---|---|---|---|
| Total birthrate, units | 1.79 | 2.15 | 1.98 |
| Average childbearing age, years | 30.2 | 32.3 | 33.2 |
| Life expectancy at birth for men, years | 69.7 | 70.9 | 73.3 |
| Life expectancy at birth for women, years | 78.5 | 79.9 | 83.2 |
| Infant mortality rate, infant deaths/1,000 births | 5.9 | 4.0 | 4.0 |
| Net migration, thousand people | 270 | 300 | 350 |

*Based on* (Vasilyeva, 2013; Decree of the President of the Russian Federation No. 1351 of October 9, 2007; Decree of the President of the Russian Federation No. 606 of May 7, 2012).

This method can be used to assess the impact of raising the retirement age in Russia. The assessment is based on the forecasts of the number of old age pensioners under the current labor laws and its potential change toward the increase of retirement age. So far, the terms of its increase have not been officially presented in the form of a draft law. Therefore, the forecast takes into account the provisions of the draft law that was already approved and provides for a gradual increase (each year by six months) of the age limit for holding the positions in the civil service to 65 years both for men and women. Currently, these categories of citizens are subject to a common procedure. The following assumption has been made to study the effects of raising the retirement age to 65 years for all categories of Russian citizens. The increase of retirement age will start in 2016, proceed at a pace of 6 months per year, and will be completed in 2026 for men and in 2036 for women. Therefore, by 2036, the established retirement age for both sexes will be 65 years.

## 3. FORECAST RESULTS

*Table 2* shows the results of calculations. According to the forecasts, the total population of Russia will decline in all scenarios. The most substantial decline will be under the first scenario of the demographic development in Russia. In 2015–2036, it will reach 11.2 million, or 7.7%. Under this scenario, the trend toward ageing of population "at the bottom" will continue. The second scenario uses parameters that describe a successful implementation of the ongoing demographic policy in Russia, which allows building a relatively favorable forecast. Under this scenario, the population will decline by 1.1 million, or 0.8%. Such a forecast is quite probable if we take into account the positive demographic trends in Russia over the recent years. The calculation of the forecast under the third scenario shows that in 2036 the population will decline by 3.6% to reach 141.1 million. The logic underpinning the indicators of this scenario is as follows. The trends toward lower mortality and higher life expectancy are more stable and universal in contrast to the birthrate that varies considerably in developed countries. Therefore, under the third scenario, the value of the total birthrate is assumed to be virtually at the simple reproduction of the population.

**Table 2**. The forecast of demographic indicators in Russia for 2036

| Indicator | Fact 2015 | Forecast | | |
|---|---|---|---|---|
| | | Scenario 1 | Scenario 2 | Scenario 3 |
| Population, million | 146.3 | 135.1 | 145.2 | 141.1 |
| Working age population, million | 85.4 (100.8) | 80.2 (88.7) | 82.1 (91.1) | 81.6 (90.6) |
| Share of working age population, % | 58.4 (68.9) | 59.3 (65.7) | 56.6 (62.7) | 57.9 (64.2) |

| | | | | |
|---|---|---|---|---|
| Population above working age, million | 35.2 (19.8) | 39.5 (25.8) | 42.3 (27.9) | 42.0 (27.6) |
| Share of population above working age, % | 24.0 (13.5) | 29.2 (19.1) | 29.1 (19.2) | 29.8 (19.6) |
| Number of people above working age per 1000 people of working age, people | 411.7 (196.5) | 492.9 (290.4) | 514.7 (305.9) | 514.4 (304.8) |

*Note:* Figures in the brackets show the value of indicator after raising the retirement age to 65 years.

Based on calculations, we expect that the age structure of population in Russia will change. Under all scenarios, the share of children will decline. Under the first and third scenarios, in 2036, the share of population below the working age will be 12%; and under the second scenario, it will be 14.3% (compared to 18% in 2015). In addition, Russia will experience an unprecedented increase in the number and share of elderly population. In 2015–2036, its share will rise from 24% to 29% (under the first and second scenarios) or up to 30% (under the third scenario). The highest number of people above the working age will be under the second and third scenarios—it will reach 42 million, which is 20% more than in 2015. The forecast for the share of working age population is similar under the three scenarios. In 2036, this share fluctuates in the range of 57%–59% depending on scenario, which is in line with the current level of 58.4%.

These projected changes in the age structure determine a substantial increase in the demographic burden on the working age population. Moreover, this increase will take place only through the growing number of people above the working age. If in 2015 the burden of the elderly was 412 per 1,000 people of working age, by 2036 this figure could rise, under different scenarios, to 493–515 per 1,000. Therefore, regardless of the scenario for demographic development in Russia, the demographic burden on working age citizens will be growing as a result of further ageing of the population.
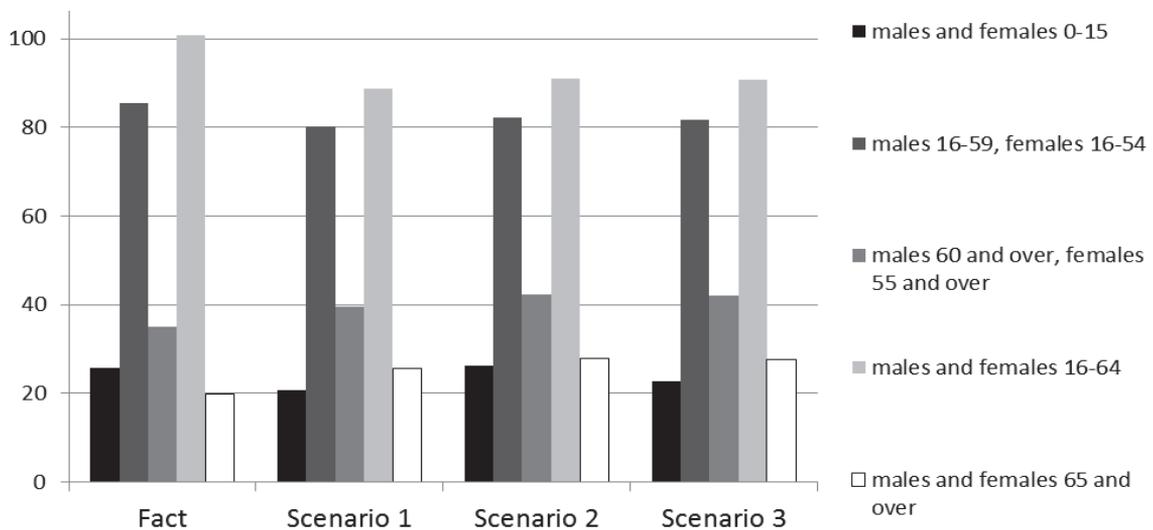


**Figure 2.** The forecast of Russia's population by main age groups in 2036, million

Raising the retirement age is the most discussed response to the population ageing thatensures long-term sustainability of the pension system. Some authors (Kudrin & Gurvich,

2012; Lelchuk, 2014) argue that such a response has no alternative in terms of systematically maintaining the ratio between the number of pensioners and working people. According to the forecasts, with a gradual increase in the retirement age by 2036, this ratio will be reduced. Depending on the scenario, there will be 290–305 people above the working age per 1,000 people of the working age. Moreover, this reduction will occur due to lowering the number of people of the retirement age by 34%–35% compared to calculations of what would exist without raising the retirement age. At the same time, the working age population will increase by only 11% (see *Figure 2*). In case of raising the retirement age, the share of people above the working age in the total population in 2036 will be 19%–20%; without raising the retirement age, this figure will be 29%–30%.

Unlike the structure of the elderly population, the gender proportion of the working age population will not change after raising the retirement age. According to the forecast, without raising the retirement age, the share of men in 2036 will be 33%; in the case of raising the retirement age, this figure will be 35%. This shift is observed for all scenarios of demographic development in Russia. Based on the forecasts, we calculated the average age of the elderly population. In 2015, the average age of men above working age was 69. If the retirement age remains at the same level, in 2036 this figure will increase by 1 year; and if the retirement age is raised, this figure will increase by 4 years. In 2015, the average age of women above working age was 68. In 2036, it is projected to increase by 1 year (with no change to retirement age) and 7 years (in case of raising the retirement age). It should be noted that the value of this indicator varies insignificantly under different scenarios.

Therefore, the forecasts have shown that, first, the demographic burden on the working age population will continue to increase under all scenarios of demographic development in Russia, especially under the second scenario that describes a successfully implemented demographic policy. At the same time, we should take into account that the forecast refers to the age structure of the population. The number of real payers of pension contributions is much less than the working age population (as a result of economically inactive population, the unemployed, the informally employed), while the number of pensioners exceeds the number of people of retirement age (as a result of early-retirement pensions, disability pensions). Second, the number of women of retirement age represents a considerable potential reserve for reducing the demographic burden on the working age population. Given the differences in life expectancy between men and women, from a demographic point of view, it is more justified to raise the retirement age for women.

## FINDINGS AND CONCLUSION

The forecasts have shown that Russia's population ageing is an inevitable process. Depending on whether the demographic processes will reflect the global demographic trends or particular aspects of development in Russia, the population ageing will take place "at the top" in the former case, or "at the bottom" in the latter case. The forecast has proved a well-known paradox that if the situation with the reduction of mortality rate continues to improve as it's been improving in the recent years, the ageing rate, with its negative impact on the balance of the pension system, will become even higher, at least in the mid-term.

The world has developed two primary responses to the challenge of population ageing. The first approach is to move from pay-as-you-go (PAYG) pension system to defined contribution pension system. Instead of contributions made by employed workers, the pension is paid from individual compulsory savings made by the pensioner during their active employment period (Gurvich, 2011). However, this approach implies the existence of effectively run pension funds. Profitability is a key indicator describing the effectiveness of their operations. In 2014, the average profitability of nonstate pension funds (NPF) was 4.81% per annum (Pension..., 2015)

(with inflation of 11.35%). In addition, the development of Russian NPFs is limited by distrust of citizens to private institutions involved in pension insurance. Poor awareness and low level of financial literacy of the population are not contributing to higher public trust in the pension reforms. According to sociological surveys, almost a third of respondents do not know where their pension savings are kept, 41% of respondents are not aware of the amount involved, and most of those polled (51%) do nothing with their pension savings (Ageyev, 2015). Such survey results are quite expected. To decide whether to completely withdraw from defined contribution scheme or to participate and invest the relevant amounts through NPF, the Russian citizens need to evaluate many factors related to the operation of financial market (experience of NPF and the management company, asset structure, profitability environment, inflation, etc.).

The second approach is to raise the retirement age, which increases the number of those who pay the pension contributions by reducing the number ofrecipients of pensions. The forecast calculations have proved that there is a possibility to substantially reduce the impact of population ageing on the Russian pension system by raising the retirement age to 65 years, which is especially relevant for women. Given that a significant potential reserve for reducing the demographic burden on the pension system is represented by the number of women of retirement age, who besides live longer than the retirement age limit and longer than the men, it would be appropriate to start with aligning the retirement age of men and women at 60. In many ways, this approach consolidates the existing situation. First, the sphere of labor activity is experiencing a gradual destruction of traditional system of gender-based division of labor, weakening dichotomization and polarization of male and female social and productive roles, occupations and areas of activity (Kon, 2010). According to selective population surveys conducted by Rosstat on the issues of employment, the share proportion of women employed in the economy is 48%. Moreover, the identified pattern reveals that this share increases with the increase of years of work experience. The share of women employed in the economy, whose work experience is 10 years and more, represents 52%. Second, there is a growing labor activity of women of retirement age. If in 2005 for 100 women aged 60–72 there were 13 working women, in 2015 this figure was already 18. There is an increase in the average age of women employed in the economy; over the same period, it rose by 1.1 year and was 41.2 in 2015. Similar trends can be observed in the employment of men.

However, according to sociological surveys, the vast majority of respondents does not support the gradual increase of retirement age by 5 years. More than half of respondents (56%) plan to continue their work after reaching the retirement age, but the share of those ready to continue working declines with the age (The results of opinion…, 2013). This readiness is largely dependent on the state of health, which is quite poor among the elderly population in Russia. Currently, there are on average 2 diseases registered per person above working age. Among the arguments against raising the retirement age, the experts also mention high rates of disabilities, which will lead to a sharp increase in the number of disability pension recipients after raising the general retirement age (The results of the pension…, 2010). Therefore, the issue of raising the retirement age remains controversial and unpopular among the public. The increase of the retirement age seems to be practicable but requires careful preparation and gradual implementation and shall be accompanied by a number of additional measures. These measures should be primarily aimed at improving the public health, profitability of pension savings, awareness and financial literacy of people, and eliminating the incentives for informal employment both on the part of the employers and employees. Only in combination, these measures can provide citizens with the opportunities of decent pension provision.

## ACKNOWLEDGEMENT

## REFERENCES

Ageyeva, Ye.V. (2015), "Changing the role of pension savings in the compulsory pension insurance system", *Izvestiya of Irkutsk State Economics Academy*, Vol. 25, No. 3. pp. 495-502 (in Russian).

Andreyev, Ye.M. (2001), "Predicting is Difficult, Especially about the Future", *Demoscope Weekly*, No. 33–34, available at: http://www.demoscope.ru/weekly/033/progn01.php (accessed 18 July 2016) (in Russian).

Becker, G.S. (1993), *Human Capital: A Theoretical and Empirical Analysis*, University of Chicago Press, Chicago.

Coleman, D. (2007), "Third Demographic Transition?", *Demoscope Weekly*, No. 299-300, available at: http://www.demoscope.ru/weekly/2007/0299/tema05.php (accessed 18 July 2016) (in Russian).

Gabdrakhmanov, N.K., Rubtsov, V.A. (2014), "Method of Cohort-Component in Forecasting the Number of Pensioners in the Republic of Tatarstan", *Environmental Consulting*, No. 2, pp. 29–35 (in Russian).

Gurvich, Ye. T. (2011), "Long-Term Demographic Challenges and Pension Polic", *Journal of New Economic Association*, No. 9, pp. 193–196 (in Russian).

Kon, I.S. (2010), "Three in One: Sexual, Gender, and Family Revolution", *Demoscope Weekly*, No. 447-448, available at: http://www.demoscope.ru/weekly/2010/0447/analit05.php (accessed 18 July 2016) (in Russian).

Kudrin, A., Gurvich, Ye. (2012), "Population aging and the threat of a budget crisis", *Voprosy ekonomiki*, No. 3, pp. 52–79 (in Russian).

Lelchuk, A. (2014), *Retirement age, Laboratory of Pension Reform: Informational and Analytical Portal*, April, 30, available at: http://pensionreform.ru/71358 (accessed 18 July 2016) (in Russian).

Lesthaege, R. (1992), "The Second Demographic Transition in Western Countries: An Interpretation", *Brussels IPD Working Pape*.

OECD (2013), *Pensions at a Glance 2013: OECD and G20 Indicators*, OECD Publishing, available at: http://dx.doi.org/10.1787/pension_glance-2013-en (accessed 18 July 2016).

Omran, A. (1977), "Epidemiological Aspect of the Theory of Natural Movement of Population", in *Problems of Population. On Demographic Problems of Western Countries*, Moscow, pp. 147–161 (in Russian).

*On Approval of the Concept of the Demographic Policy of the Russian Federation for the Period up to 2025: approved by Decree of the President of the Russian Federation*, No. 1351 as of October 9, 2007. (in Russian).

*On Measures for Implementing the Demographic Policy of the Russian Federation: approved by Decree of the President of the Russian Federation,* No. 606 as of May 7, 2012. (in Russian).

*Pension Savings in 2014* (2015), Moscow, pp 7-8, available at: http://pensionreform.ru/files/97896/PensionSavingsinRussia.2014.pdf (accessed 18 July 2016) (in Russian).

Petersen, J.H. (1998), "Recent research on public pension systems. A review", *Labour Economics*, No. 5, pp. 91–108.

Polterovich, V.M. (1999), "Institutional traps and economic reforms", *Economics and Mathematical Methods*. Vol.35, No. 2, pp. 3-19 (in Russian).

Rimashevskaya, N.M. (2003), *Man and Reforms: Survival Secrets*, Institute of Socioeconomic Studies of Population of the Russian Academy of Sciences, Moscow (in Russian).

Rosstat (2015), *Demographic Yearbook of Russia*. Moscow, available at: http://www.gks.ru/bgd/regl/B15_16/Main.htm (accessed 18 July 2016).

Shultz, T. (1971), *Investment in Human Capital*, NY, London.

Sinyavskaya, O. (2005), *How to Raise the Retirement Age in Russia*, Otechestvennye Zapiski, No. 3, available at: http://www.strana-oz.ru/2005/3/kak-povyshat-pensionnyy-vozrast-v-rossii (accessed 18 July 2016) (in Russian).

Solovyov, A.K. (2015), "Demographic Conditions for Raising the Retirement Age in Russia", *Population*, No. 2(68), 39–51. (in Russian).

*The results of opinion polls on pension-related issues* (2013), Official website of the Ministry of Labor and Social Protection of the Russian Federation, available at: http://www. ros-mintrud.ru/pensions/razvitie/199 (accessed 18 July 2016) (in Russian).

*The results of the pension reform and long-term prospects of the pension system development in the Russian Federation given the impact of the global financial crisis*: Report of the Ministry of Health Care and Social Development (2010), Laboratory of Pension Reform: Informational and Analytical Portal, available at: http://pensionreform.ru/607959 (accessed 18 July 2016) (in Russian).

Tian, Y., Zhao, X. (2016), "Stochastic Forecast of the Financial Sustainability of Basic Pension in China", *Sustainability*, Vol. 8, No. 1, pp. 1-17, available at: http://www.mdpi.com/2071-1050/8/1/46/htm, DOI: 10.3390/su8010046.

Trofimova, N.A. (2010), "Use of select mortality tables for forecasting the number of recipients of different types of Pensions", *Studies on Russian Economic Development*, Vol. 21, No. 2, pp. 197-203, DOI: 10.1134/S1075700710020103.

UN (2013), *World Population Ageing 2013*, NY, available at: http://www.un.org/esa/socdev/documents/ageing/Data/WorldPopulationAgeingReport2013.pdf (accessed 18 July 2016).

UN (2015), *World Population Prospects*: the 2015 Revision, available at: http://esa.un.org/unpd/wpp/ (accessed 18 July 2016).

UNDP (2009), *Overcoming Barriers: Human Mobility and Development*, Human Development Report 2009, NY, available at: http://hdr.undp.org/sites/default/files/reports/269/hdr_2009_en_complete.pdf (accessed 18 July 2016).

Van de Kaa, D. J. (1998), "Europe's Second Demographic Transition", *Population Bulletin*, Vol. 42. No. 1, pp. 1-59.

Vasilyeva, E.V. (2013), "Problems of Regional Social and Demographic Management", *E-journal. Public Administration*, No. 38. 5–21 (in Russian).

Velichkovsky B.T. (2009), *The Vitality of the Nation. The Role of Social Stress and Genetic Characteristics of the Population in the Development of Demographic Crisis and Changes to the Public Health in Russia*, The Russian Academy of Medical Sciences, Moscow (in Russian).

Wang, H., Koo, B., O'Hare, C. (2015), "Retirement planning in the light of changing demographics", *Economic Modelling*, November, available at: https://www.researchgate.net/publication/283470755 (accessed 18 July 2016).