Draft

Topic
Ageing and Intergenerational Relationships

Ageing, life expectancy at older ages and life potential
(the case of Russia and Ukraine)

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According to the United Nations, "…the twenty first century will witness even more rapid ageing than did the century just past" [8]. It is acknowledged that life expectancy increase is one of driving forces of population ageing. In its turn, progressing population ageing attracted researchers' attention to the concept of age. Thus, the concept of prospective age appeared [4, 6, 7]. It was pointed out that conventional ageing measures based on chronological age should be supplemented by measures that take account of remaining years of life. One of such measures is population average remaining years of life (PARYL); it is calculated by weighting the remaining life expectancy of all ages with the proportion of people at those ages in the considered population [1].

In fact PARYL is a kind of life potential of a population – it may be interpreted as an average individual life potential. This notion dates back to the notion of life potential developed in works of L. Hersch (see for example [2, 5]), the concept of life potential was widely used in Russia and Ukraine in studying labor potential. Such interpretation of PARYL makes it very useful in studying a wide range of population issues, e.g. ones connected with labor market. It presents interest to consider this potential for major age groups (children, working age population, elderly).

The paper aims to make a comparative analysis of PARYL dynamics for Russia and Ukraine within European context.

It is supposed to compute and compare PARYL for Russia, Ukraine and selected European countries representing different regions f Europe. Gender differences in PARYL for Russia and Ukraine will be considered. As PARYL depends on life expectancies in all ages and population age structure, contribution of these factors to PARYL changes for Russia and Ukraine and to difference of PARYLs for considered countries will be examined.

Focusing on ageing, we pay special attention to life expectancy at older ages. Thus, Fig. 1 represents dynamics of life expectancy at the age of 60 (LE 60) for male and female populations of Russia and Ukraine since the first post-WWII census (1959). Trends of this indicator for Russia and Ukraine have been similar. For male populations LE 60 for Ukraine have been higher than that for Russia, while for female populations for some years LE 60 was higher for Russia. In the last years some increase in life expectancies at older ages both in Russia and Ukraine was observed. Nevertheless life expectancies in older ages for Russia and Ukraine are still much lower than in developed European countries. Thus, in 2006 LE65 for males in the EU was 15.5 years while in Russia – 11.4 years, in Ukraine – 11.7 years; LE 65 for females in the EU was 19.4 years while for Russia – 15.6 years, for Ukraine –15.5 years (see Fig.2) [1].

Changes in proportions of major age groups (0 – 14, 15 – 59, 60+) for Russia and Ukraine will be represented.

Fig.3 shoes dynamics of PARYL for Russia and Ukraine since the 1959 census. During post-Soviet period this indicator decreased from 40.1 years for Russia (39.2 years for

Ukraine) in 1989 till 34.5 years for Russia (34.1 years for Ukraine) in 2006. According to [1] in 2007 values of this indicator for Russia and Ukraine were the lowest ones among given European countries, reflecting mortality crisis in both countries.

To measure the input of age structure and life expectancy in difference of PARYLs for Russia and Ukraine (and other countries) the following formula is used:

$$\Delta^t \text{PARYL} = \text{PARYL}^t_{\text{Rus}} - \text{PARYL}^t_{\text{Ukr}} = \Delta^t_{\text{LE}} + \Delta^t_{\text{Str}} =$$

$$= \sum_x \frac{\text{Prop.}x^t_{\text{Rus}} + \text{Prop.}x^t_{\text{Ukr}}}{2} \times \Delta^t \text{LE}_x + \sum_x \frac{\text{LE}^t_{x,\text{Rus}} + \text{LE}^t_{x,\text{Ukr}}}{2} \times \Delta^t \text{Prop.}x;$$

$$\Delta^t \text{LE}_x = \text{LE}^t_{x,\text{Rus}} - \text{LE}^t_{x,\text{Ukr}},$$

$$\Delta^t \text{Prop.}x = \text{Prop.}^t x_{\text{Rus}} - \text{Prop.}^t x_{\text{Ukr}}$$

where PARYL^t_{Rus} (PARYL^t_{Ukr}) denotes PARYL for Russia (Ukraine) in the year t;
$\text{LE}^t_{x,\,Rus}$ ($\text{LE}^t_{x,\,Ukr}$) – life expectancy at the age x in the year t for Russia (Ukraine);
$\text{Prop.}^t x_{Rus}$ ($\text{Prop.}^t x_{Rus}$) – proportion of population at age x in the year t in Russia (Ukraine).

Computations are based on vital statistics given by national statistical bodies of Russia and Ukraine and data from Human Mortality Database (University of California, Berkeley, USA, and Max Plank Institute for Demographic Research, Germany) [3].

Results of the study may contribute to better understanding of regularities of ageing development in Russia, Ukraine and Europe as a whole.

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Fig. 1. **Dynamics of life expectancy at age 60 (LE 60) for male and female populations of Russia and Ukraine, 1959 - 2006**

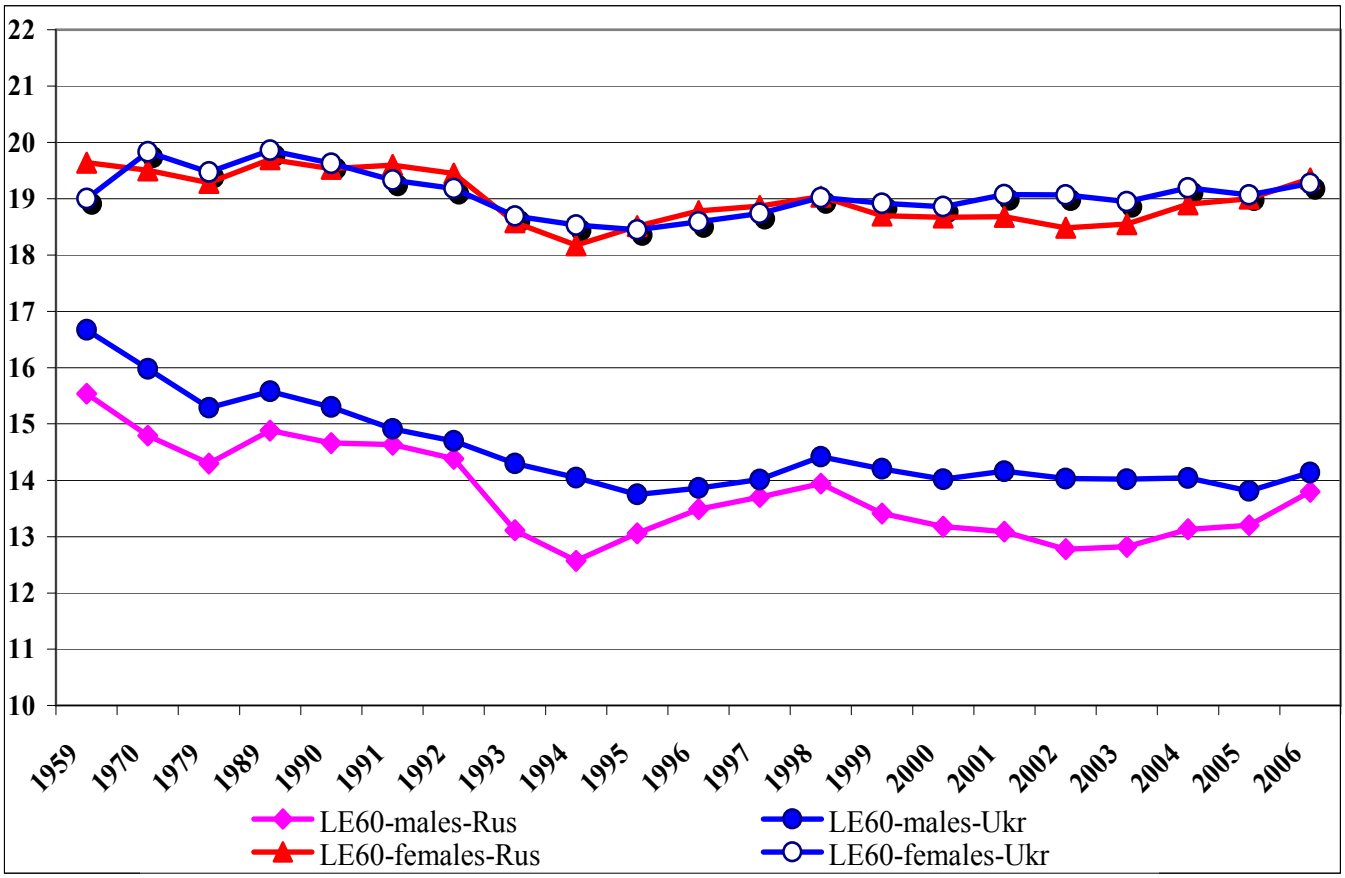

Fig. 2. **Life expectancy at age 65, Russia, Ukraine and selected European countries, 2006**

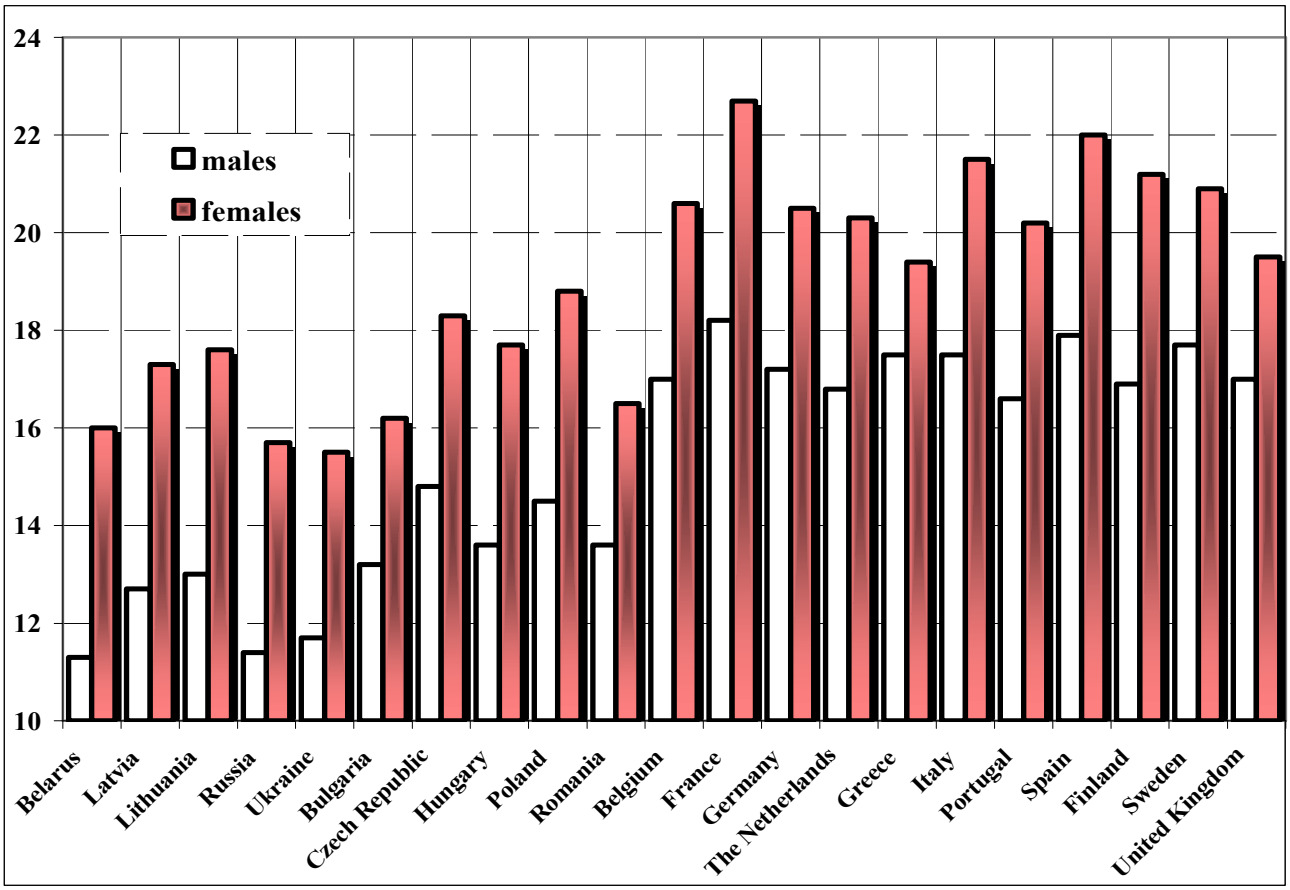

Fig. 3. **Dynamics of population average remaining years of life (PARYL) for Russia and Ukraine, 1959 - 2006**