

LIFE EXPECTANCY TRENDS IN CR AND EU

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Abstract

Life expectancy is theoretical indicator calculated in life tables. It reflects characteristics of hypothetical stationary population with the same level of mortality as selected population in given year. Life expectancy e^0_x means expected number of years of life remaining at a given age x . Most often life expectancy at birth for men and women is presented, which means how many subsequent years of life on average can expect newly born person according to mortality experience.

In the paper, there are analyzed trends in life expectancy in selected European Union countries since 1950 with special attention to the Czech Republic. Common feature is growing life expectancy for both men and women, which is one of attribute of population ageing typical for all developed countries in Europe. On the other hand trends in shorter periods changed several times and were not linear. Periods of slowly or fast growing trend and constant trend alternate. Males and females time series prove process of convergence between genders. Countries divided into two groups: Western countries (GE, FR, IT, ES, SW) and Central and Eastern countries (AT, CR, SK, HU, PL) with different patterns in development.

Key words: life expectancy, trend analysis, difference between men and women, comparison of EU countries

JEL Code: J10, J11

Introduction

Life expectancy is important hypothetical indicator calculated based on mortality characteristics of population and assumption of stationarity. It says how many years of life remains to an individual at a given age x . Most often life expectancy at birth for men and women is presented, which means how many subsequent years of life on average can expect newly born person according to mortality experience. Life expectancy reflects improvement

of mortality conditions and shows prolongation of human life, which is called ageing of population, ageing on the top of population pyramid.

Development of life expectancy in ten selected European Union countries is introduced in the article, always presented separately for males and females. Process of population ageing is here reflected in the indicator life expectancy at birth and life expectancy at the age 80.

1 Definition of Terms

Life expectancy e^0_x is an important indicator resulting from life tables that reflects mortality experience of studied population and assumption of constant mortality in individual age and gender groups. For a person now aged x years it characterizes how many years of life he/she may expect to live. This indicator changes over a time. In developed countries it is published usually on a yearly basis and still grows. The most often used is life expectancy at birth showing average number of years to be lived by a group of 0 years old people.

In the article trend of life expectancy is compared and commented for following selected countries: Czech Republic (CR), Slovak Republic (SK), Hungary (HU), Poland (PL), Austria (AT), Germany (GE), France (FR), Italy (IT), Spain (ES) and Sweden (SW).

1.1 Data

Data were downloaded from Human Mortality Database (<http://www.mortality.org/>). For methodology see Wilmoth et. al (2007).

2 Level of Life Expectancy

2.1 Life Expectancy at Birth

Currently, Central European countries that joined European Union in 2004 (CR, SK, HU, PL) occupy positions after 50th place whereas Austria takes approximately 20th place in the world's life expectancy at birth list and Spain and Sweden are among top ten countries.

Tab. 1: Life expectancy at birth, 2009, males and females

	CR	SK	HU	PL	AT*	GE	FR	IT*	ES	SW
males, 2009	74.2	71.4	70.2	71.5	77.6	77.5	77.8	79.0	78.5	79.6
females, 2009	80.3	79.0	78.2	79.9	83.0	82.5	84.5	84.2	84.6	83.6
difference	6.1	7.6	8.0	8.4	5.3	5.1	6.7	5.2	6.1	4.0

* as of 2008

Source: Human Mortality Database

All selected countries reach interval 70 – 80 years for males and 78 – 85 years for females. Women live on average longer than men in almost all countries. Differences between males and females range from 4.0 years (Sweden) to 8.4 (Poland), Western countries report smaller difference, whereas countries from Central and Eastern Europe have higher difference between males and females life expectancy at birth.

World's average for males is 64.5 years and 68.8 years for females (according to CIA World Factbook 2009). In these selected countries the life expectancy at birth is higher than this threshold by 6 to 20 years. The highest life expectancy at births is in Japan, in Europe in Monaco. European Union average is 76.4 years for males and 82.4 years for females (2008), which is exceeded by Western countries, the Czech Republic and SK, HU and PL remain under this threshold.

2.2 Trend of Life Expectancy at Birth

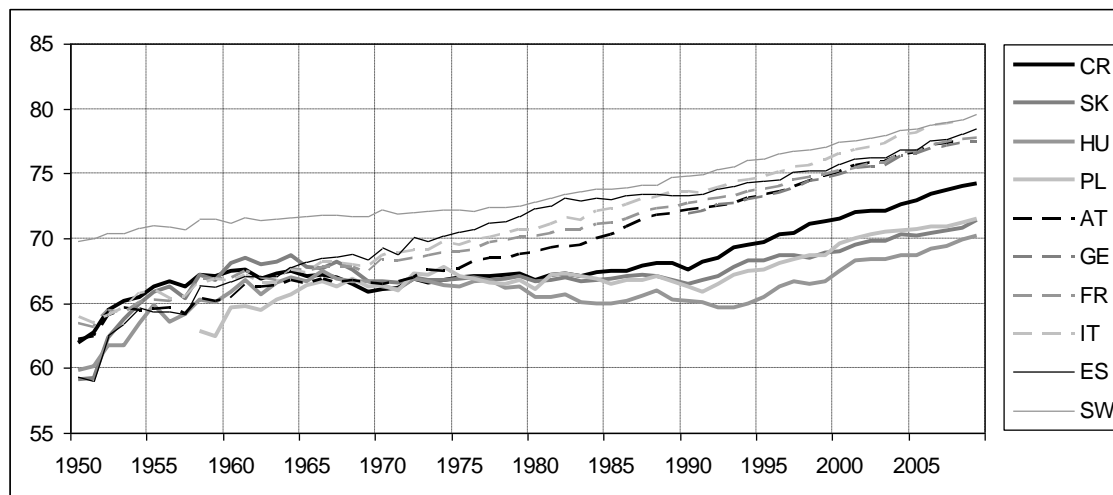
After World War II life expectancy at birth increased dynamically. Currently, life expectancy for males increased from age 60–65 to 70–79, for females from interval 65–70 to 78–85.

From two following figures it is recognizable that

- Sweden has extraordinary position both among males and females. In the period 1950–1980 are Sweden values above all other European countries.

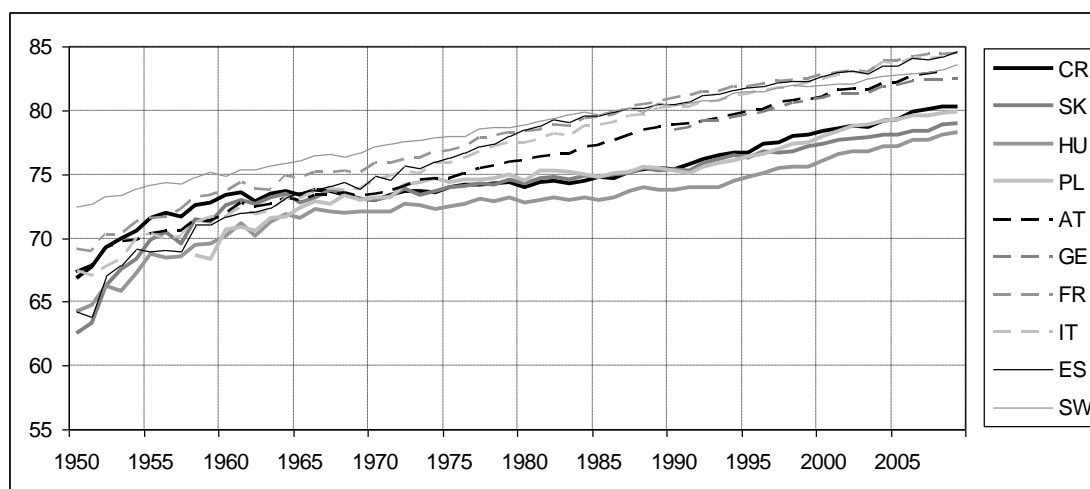
- Other selected countries have similar trend in 1950–1965, typical with significant increase after WWII. Since 1970 it is clear that trend in communist countries is rather constant and these countries stay behind Western countries.

Fig. 1: Trend of life expectancy at birth – males (selected countries, 1950–2009)



Source: Human Mortality Database

Fig. 2: Trend of life expectancy at birth – females (selected countries, 1950–2009)



Source: Human Mortality Database

- In CR, SK, HU, PL: trend for males oscillated; in Slovakia and Hungary e_x^0 even decreased by 2.36 % and 1.17 % between 1960 and 1990, respectively. After 1990 in connection with immense political and economical changes changed trend for e_0^0 for

males, it increased by 5 years of life within almost 20 calendar years. In case of females continues growth with lower intensity. The lowest level of life expectancy reports Hungary for both genders.

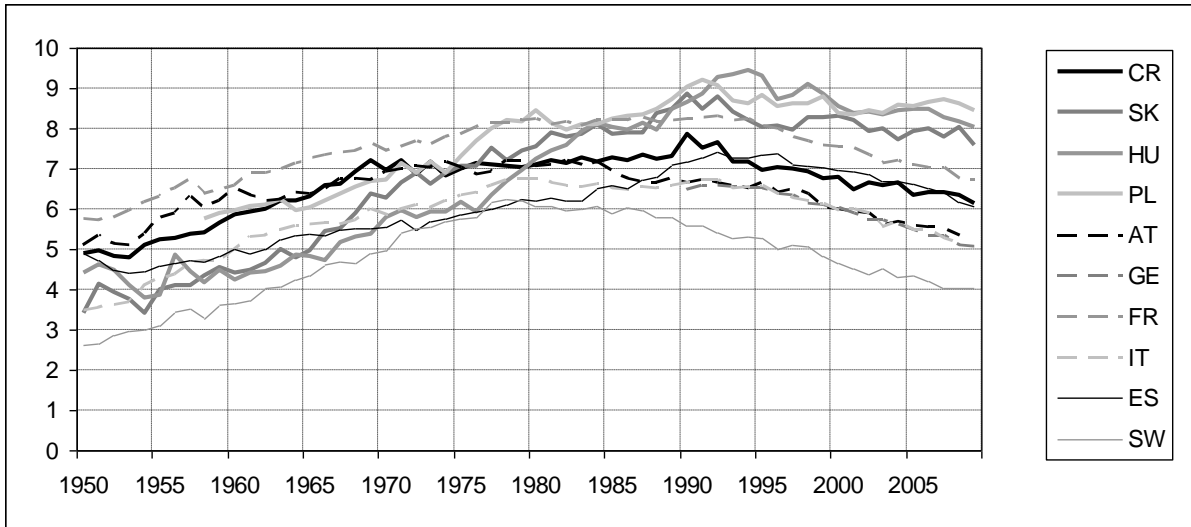
- In Austria, life expectancy increased by 10 % between 1960 and 1990.
- Western countries (GE, FR, IT, ES, SW) follow linear trend with positive increment approximately 0.25 years of life per calendar year. This group of countries includes Sweden that lost its leading position.
- Trend continues separately for two main groups of countries.

2.3 Difference between Males and Females

Life expectancy difference between females and males was always the lowest for Sweden and high for the Czech Republic, Slovakia, Hungary and Poland. Trend of difference has parabolic shape with decreasing tendency, which means that males and females life expectancies converge. Currently, Central and Eastern European countries have difference above 6 years, Western countries between 4.0 (Sweden) and 6.7 (France).

Together with decrease in difference, increasing variance among selected countries since 1990 could be monitored. Life expectancy at birth for males converges to females' values but with different, shaking trend.

Fig. 3: Trend of difference between life expectancy at birth females and males (selected countries, 1950–2009)

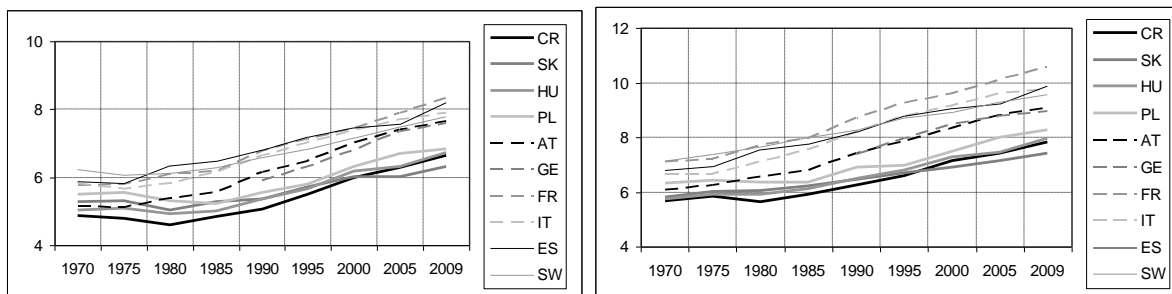


Source: Human Mortality Database

2 Effect of Ageing upon Life Expectancy

Life expectancy prolongs in all developed countries both for males and females. Rate of ageing process could be seen not only from e^0_0 but from other life expectancies in higher ages as well. Here, e^0_{80} is presented. It has growing trend for all selected countries with higher values for Western countries.

Fig. 4: Trend of life expectancy at age 80 – males, females (selected countries, 1970–2008/2009)



Source: Human Mortality Database

In the Czech Republic a senior in age 80 years could expect to live another 6.65 years (man) or 7.83 years (woman). Ageing process is fast in the Czech Republic, however this

indicator belongs to the lowest from selected countries. The highest life expectancy at the age of 80 years report

- for males: Sweden (1970, 1975), Spain (1980–2000) and France (2005, 2009), where 80 years old male could expect to live another 8.33 years,
- for females: Sweden (1970, 1975, 1985) and France (1980, 1990–2009), where 80 years old female could expect to live another 10.57 years.

Conclusion

Life expectancy reflects improving mortality conditions and prolongation of length of human life. In the comparison of the Czech Republic, Slovakia, Hungary, Poland, Austria, Germany, France, Italy, Spain and Sweden was presented that trend differs among Western and Eastern countries. Split into two groups is visible primarily in case of males: CR, SK, HU and PL form one group with lower life expectancy at birth, life expectancy in higher age ($x = 80$) and higher difference between males and females. Group of Western countries (AT, GE, FR, IT, ES, SW) has favourable trend since 1950s growing all the time and smaller difference between males and females, which suggests advanced process of convergence.

Demographic processes are long-term; even 20 years from political changes in 1990 there are still visible distinctions between Western and Central and Eastern countries.

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