PROCESS OF POPULATION AGEING AND ITS DYNAMIC

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Abstract

Ageing became a serious issue in almost all developed countries. Ageing of population brings questions regarding economic sustainability and health, social and pension systems maintenance. The article introduces concept of ageing, aged, super aged and (newly) ultra aged society. Additionally, there are presented life expectancy for 65 years old people and median age as other indicators describing ageing. In selected European countries population has achieved the threshold of 14 % of people in the age 65 years and more and is approaching another limit: 21 % of the population. According to projections, ageing continues fast and the proportion of people aged 65 years and more will grow in a short period of time. A new term is proposed in the article – 'ultra aged' society, which denotes population with proportion of seniors in the age 65 years and more at the level 28 % and above. First population reaching this limit would be Japan. In Europe, the oldest populations are Italy, Germany and Sweden.

Key words: population ageing, ageing society, aged society, super aged society, ultra aged society

JEL Code: J11, J14

Introduction

The whole world is ageing, and the developed countries are leading the way. Recently, seniors comprised only a very small fraction of the population. Today we see increasing proportion of seniors in developed countries, often reaching the level of 20 %. This proportion is expected to grow further, exceeding 30 % or 40 %. Process of population ageing is an actual issue for most of developed countries in the world because it affects people's lives, families, society, economy, pension systems, health and social care etc.

This issue belongs to important tasks in Europe and national governments as well. (Czech Republic: National Programme of Preparation for Ageing for 2008 to 2012; The impact of ageing on public expenditure: projections for the EU25 Member States on pensions, health care, long-term care, education and unemployment transfers (2004-2050) 2006; Government Council for Older Persons and Population Ageing)

1   Measures of Ageing

Seniors for purpose of this article are defined as people aged 65 years and more.

Ageing of population is usually noticeable as increasing *proportion of seniors* in the population. It could be consequence of declining fertility (ageing in the lower part of population pyramid) or declining mortality (ageing in the upper part of population pyramid). In many countries including European Union both effects happen simultaneously. The rate of growing proportion of seniors 65+ in European and other populations could be measured using terms '*ageing society*', '*aged society*' and '*super aged society*'. Ageing society is defined as a population with proportion of seniors 65+ over 7 %, aged society over 14 % and super aged society over 21 % (some authors give threshold of 20 %).

Other indicators are *indices of dependency*, which are based on population distribution into large age-groups: pre-productive (0-14/19), productive (15/20-64) and post-productive (65+) people. Limits 0–19, 20–64 and 65+ will be used further as this corresponds with increasing length of education and preparation for work and prolonged age of retirement.

Trend of the life expectancy at the age x could be also considered as measure of ageing. Life expectancy at the age of 65 years represents average number of years that could expect a person in the age of 65 years to live further.

Median age is the age that divides a population into two numerically equal groups. It means that half the people are younger than this age and half are older. It is a single index that summarizes the age distribution of a population.

2   Process of Ageing

2.1   From Ageing Society to Ultra Aged Society

The oldest population worldwide corresponding with the concept of ageing – aged – super aged society is Japan reaching 23 % threshold of seniors in 2009. From other standpoint, the fastest ageing process could be found in South Korea. Here, the *velocity of the ageing process* is measured by the number of years between moments when the population reached the threshold of 7 % of seniors and 14 % of senior in the population, respectively 14 % and 21 % of seniors in the population (denoted as Number of Years of Transition). In Europe, Italy could be denoted as the oldest population, following by Germany and Sweden.

Tab. 1: Ageing of the Population: International Comparison

	Ageing society	Aged society	Super aged society	Number of Years of Transition	
proportion of seniors 65+	**>7%**	**>14%**	**>21%**	**7% to 14%**	**14% to 21%**
Czech Republic	1931	2004	2025	73	21
France	1865	1980	2022	115	42
Germany	1932	1972	2014	40	42
Italy	1927	1988	2011	61	23
Poland	1967	2012	2027	45	15
Slovakia	1961	2015	2031	54	16
Sweden	1890	1975	2014	85	39
United Kingdom	1931	1976	2029	45	53
Japan	1970	1996	2007	26	11
South Korea	2000	2013	2027	13	14
USA	1942	2013	2032	71	19

Source: Eurostat – Demography (pop), Eurostat – Population projections (proj), UK National Statistics, U.S. Census, Statistics Bureau and the Director-General for Policy Planning of Japan, Statistics Korea; own calculation

The Czech Republic reached threshold for aged society in 2004 and limit for super aged society is predicted to achieve in 2025 (projection of Eurostat: Europop 2010) or in 2023 (projection of Czech Statistical Office, 2009). For example, in 1990 limit of 14 % as proportion of seniors in the age 65 years and more reached Sweden, Norway, United Kingdom, Denmark, Austria, Germany, Belgium, Italy and Switzerland. In 2010 this limit overcame already 26 European countries including the Czech Republic; Germany and Italy were close to super aged category. The biggest jump between 1990 and 2010 made Finland (+ 5.8 p.p.), Slovenia, Denmark, Romania, Germany, Bulgaria and Luxembourg. Proportion of seniors 65+ has in European Union (EU27) increased by 3.7 p.p. from 13.7 % in 1990 to 17.4 % in 2010.

Velocity of reaching higher and higher thresholds in this ageing race is rising. It took more than 70 years to reach limit of aged society, while super aged society will be reached within 21 years in the Czech Republic. Usually it takes less than half of period when a country reaches stage of aged society.

According to the projection Europop 2010, threshold of 28 % will be reached in the Czech Republic in 2048. This category could be denoted as '*ultra aged society*'. Japan expects to achieve such a ratio in few years when baby-boomers reach 65 years of age. European populations touch this threshold approximately between 2045 and 2055.

What this means for developed countries? Assuming that 20 to 64 years will be considered as the age of economic activity and fertility rate would be low but stable, increasing proportion of seniors in populations leads to increasing total dependency ratio, growing responsibility of economically active people and, consequently, to serious financial and social imbalance. European countries belong to the group with high or medium level of *Ageing Vulnerability Index* which reflects public burden and public spending, so called fiscal-room indicators (track ability to accommodate the growth in old-age benefits via higher taxes, cuts in other spending, or public borrowing), benefit dependence indicators – how dependent seniors are on public benefits and what is the level of public generosity and elder-affluence indicators reflecting the relative affluence of the old versus the young.

2.2 Life Expectancy Trends

Population ageing is presented by increasing life expectancy both for males and females. The increment of life expectancy at the age 65 accounts for 1.7 to 3.8 years during twenty years of history (1990 – 2010).

Tab. 2: Life Expectancy at the Age 65

	Life expectancy at the age 65 males			Life expectancy at the age 65 females		
	1990	2000	2010	1990	2000	2010
Czech Republic	11.7	13.8	15.5	15.3	17.3	19.0
France	n.a.	16.8	18.9	n.a.	21.4	23.4
Germany	15.1	15.8	17.8	19.0	19.6	20.9
Italy	15.2	16.7	n.a.	19.0	20.7	n.a.
Poland	12.4	13.5	15.1	16.2	17.5	19.5
Slovakia	12.3	12.9	14.0	16.0	16.7	18.0
Sweden	15.4	16.7	18.3	19.2	20.2	21.2
United Kingdom	n.a.	15.8	18.3	n.a.	19.0	20.9

Source: Eurostat – Demography (pop)

For example, in the Czech Republic males at the age of 65 years could expect in 2010 to live another 15.5 years on average, whereas in France it was 18.9 years. Czech females could expect to live another 19.0 years back in 2010, whereas French females could expect another 23.4 years.

Life expectancy at the age 65 is higher for females than for males by 3.7 years on average. The difference among females and males is decreasing (with exception of Poland and Slovakia) and documents convergence between genders.

2.3   Median Age

Trend of median age is very simple statistic showing that people live longer.

Tab. 3: Median Age

	Median age			
	1990	**2000**	**2010**	**Difference 1990 – 2010**
Czech Republic	35.3	37.5	39.5	4.2
France	34.7	37.5	39.9	5.2
Germany	37.9	40.0	44.4	6.5
Italy	37.1	40.3	43.3	6.2
Poland	32.4	35.3	37.9	5.5
Slovakia	31.4	34.1	37.1	5.7
Sweden	38.4	39.4	40.8	2.4
United Kingdom	35.8	37.6	39.7	3.9

Source: Eurostat – Demography (pop)

For example, in Germany, half of the population was older than 44.4 years in 2010, which means the increase of 6.5 years during the period of 1990 – 2010. In Italy, the increase of median age was also very high: 6.2 years.

Conclusion

Ageing of population is challenging for all developed countries and later also for developing countries. It is defined as growing proportion of people in the age 65 years and more. For the case of the Czech Republic, demographic projection predicts rising proportion of seniors 65+

to 33.0 % in 2060 with further possible increase. In Europe, among oldest countries there are Italy, Germany and Sweden. Japan and South Korea are the fastest ageing countries in the world.

The article further investigates velocity how fast European populations (and other populations in developed countries) reach the threshold of ultra aged society. This indicator confirms overall trend of acceleration of ageing process.

Acknowledgment

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