

## **INNOVATIVE APPROACHES FOCUSED ON POPULATION AGEING IN THE CZECH REPUBLIC**

**Jakub Stejskal – Jitka Bartošová**

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### **Abstract**

The overall aim of this study is to propose some new methods which – if properly implemented – might greatly contribute to the pension system in the Czech Republic and lower the disparity between juniors and seniors. In the beginning, the whole issue is briefly outlined by rather basic facts dealing with population ageing in the Czech Republic. This is further underlined by the analysis of specific age distribution and its current development among a group of Czech seniors (above 65 years of age). Some future predictions are also included. Main part of this study deals with potentially beneficial methods which are predominantly connected with pension reforms. For example, described methods include RLE (remaining life expectancy) or methods based on mortality rate. This topic is also connected with estimation of so called „effective level of leaving into old age pension“. Therefore, the main goal of this study is to introduce certain modifications largely not used in the EU member states which could bring more efficiency to the Czech pension system.

**Key words:** ageing, pension reform, demography, age prediction

**JEL Code:** J11, J14

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### **Introduction**

Modern society – depending on a number of more or less objectively recognised factors – is going through a period of rapid changes that affect almost every sphere of human activity. Regarding the economy, one of those key aspects, which currently has a profound impact on our society, is the problem of ageing. This circumstance is far more evident in those groups who are inadequately protected against its negative influences, especially people entering retirement and those who receive a pension for longer time (usually above 65 years of age). The ageing of population, which directly translates into the so-called ageing economies, is the problem gaining importance approximately since the seventies of the 20th century. The increasing median age of the population is observable even in Africa, but the most serious and

noticeable increase is evident among developed countries in Europe, including the Czech Republic. Examining the demographic and economic relationship and boundaries between these variables is nothing new in Western society. Political economist Thomas Malthus (1766-1834) predicted that human society will inevitably return to default level, thanks to the exponential population growth which – if unchecked – exceeds the growth of agricultural production (Shoven, 2011). We already know that rather the opposite was proven and interventions such as birth control, as suggested by Neo-Malthusians, are not counted among optimal means to solve the problem of population growth and ageing (Sharma, 2004). About five-sixths of the world's population lives at least a step above the estimated minimum, widely thanks to the technological advances. Thus, although at first glance it seems that current generation of seniors live in relative wealth, truth itself is far more complex – at least in terms of the level of social expenditures of some countries. The risk of poverty (Antuofermo, Di Meglio, 2012) and income inequality is gradually increasing. For more information see e.g. (Bartošová & Želinský, 2013), (Bílková, 2012), (Fiala & Langhamrová, 2013), (Marek & Vrabec, 2013) or (Želinský, 2014). Whole question cannot be simply solved just by determination of the amount of expenditures to be drawn from the social system to cover old age pensions. It is obvious that increasing longevity will gradually affect the length of working age. This is related to the increasing pressure on expenditure curves of individual countries. One of the solutions might be to introduce proper countermeasures, which could offer suitable alternative to the current situation and allows financial sustainability of pension system.

## **1 Composition of the population and the implications for pension system**

From the analysis of the current situation and forecasts of further population development, it is clear that population ageing is inevitable due to the demographic and socioeconomic trends. There are many consequences of such a development in various spheres and the ongoing processes in human society (Rabušic, 1995). If we consider the Czech Republic as a relatively closed socio-economic whole, we can easily consider the impacts for the region. Regarding the consequences, proportion of people in a working age will be inevitably reduced.

In recent years there have been changes from the bottom of the age pyramid, while decreasing number of births did not have significant impact on the older generation. Now, however, the shape of the graph is more regressive with predominant population of elderly

people. Strong population “waves” are currently represented by the group of 30-34 years of age and (to a lesser extent) by the group of 55-59 years of age. This change is characterized by a strong rise of post-production component of the population (aged 50 years or more) against children component (younger than 15 years of age) in a ratio of about 3:2. When we compare age group of seniors (65 years and older) with the group of children in the Czech Republic, the ratio is 1,075:1 and 1,1122:1 across the European Union. The 1:1 ratio was exceeded in 2005. It can be concluded that the average European population is demographically ageing even more rapidly than the population of the Czech Republic. Although these numbers do not seem to be alarming, this particular comparison is only static and does not reflect the dynamic aspect, which will gradually increase the disproportion (OECD, 2012).

Ministry of Labour and Social Affairs of the Czech Republic (Ministerstvo práce a sociálních věcí České republiky – MPSV) registered 4,933,997 total contributions for pension insurance in 2012, which is a slight increase in comparison with 2011. Nevertheless, considering the 2,340,218 old age pensioners, 2.11 taxpayers contributed on one of them in average. The problem is connected with growing pension deficit, which now account for almost four-fifths of all state-paid benefits. In 2012, it was already 40 billion CZK (MPSV, 2012).

## **2 Age projection**

According to population projections of the Czech Republic in 2050, developed by the Czech Statistical Office (ČSÚ, 2009), the number of people over 65 years will dramatically increase. In the years 1989-2010, the median age increased by 4.7 years to 40.8 years. Population aged over 65 years will double in 2050 according to the medium variant projections. This process will be intensified in 2011-2017 as a result of the transition of strong post-war baby-boomers over the age limit. The relative proportion of persons over 65 years old in population will also grow thanks to reduction in the number of births.

In 2011, the Czech Republic had about 1.7 million seniors, while this number is expected to increase to 2.95 million (almost by 75%) in 2050. While the number of seniors in the category of 65-74 years of age will increase by 50%, the category of 75-84 years of age will increase from 542,000 to 1,050,000 (an increase of nearly 94%). But the sharpest increase is expected in the category of 85+ years of age: from 161,000 to 497,000 (more than

threefold increase). By the middle of the present century, seniors aged 65 years and older will represent almost one third of the population (Hoff, 2011).

### **2.1 The effective retirement age**

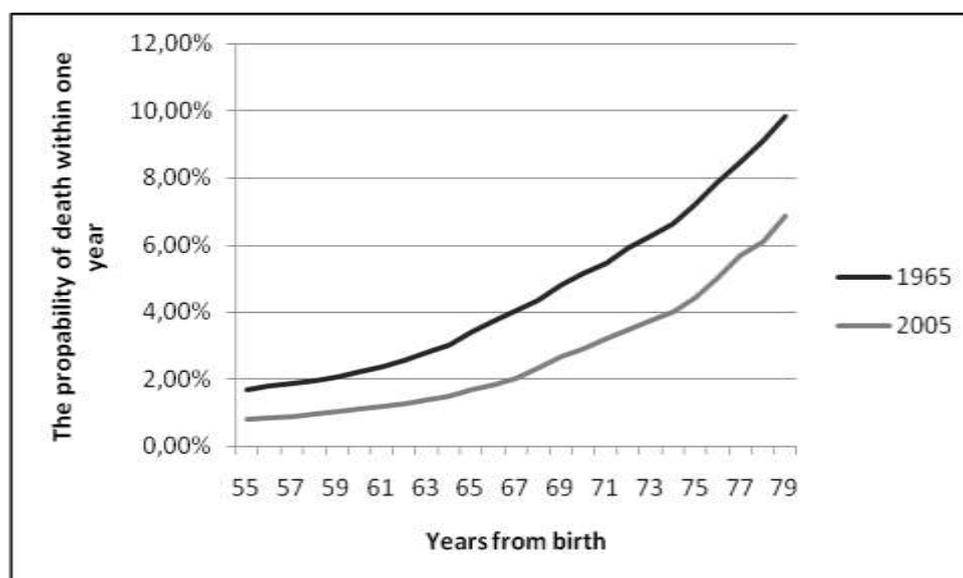
The so-called nominal age, which is currently the basis for a common methodology for the calculation, is different from the effective retirement age. The effective retirement age represents the "real" age when people retire. In most countries, the effective retirement age is below the officially set age level of retirement, since the effective age includes early retirement, etc. It is defined by the average age of leaving the working process during the five-year interval. This departure is estimated by integrating the difference in the participation rate for each five-year group (over 40 years) at the beginning of the period and the rate for the corresponding age group five years older at the end of the period. According to the OECD data (2012), the average effective age is 62.6 years for men and 59.1 years for women in the Czech Republic. However, this age fluctuated for the last 15 years and it almost did not increase (only about half a year). However, the new pension reform introduced the raising of the official retirement age by two months each born year (MPSV, 2011). In theory, men born in 1950 and a woman with two children born in 1952 would be among the last groups to have higher effective retirement age than their "statutory" age of retirement. If the statutory age increased at the same rate, people born in the year 2014 would retire in 73 years and 2 months (the limit for future generations has not been set), while the effective age would have been somewhere around 65 years for men and 61.5 years for women. Between 1996 and 2011, the age level of effective retirement increased by 0.6 years (approximately 7 months), while it was increased by 30 months according to the legislation, a figure more than four times bigger compared to the "real" situation. In the longer term, it is not sustainable.

## **3 New methods designated to measure the effective retirement age**

With regard to population changes in the future, there are several ways to measure the effective age. The traditional way is the measuring from birth to death. However, other types of measurements, which would be closely associated with health and longevity, might be more appropriate. For example, a simple alternative offers a measurement based on the risk of mortality (Wise, 2010). The resulting percentage number indicates how high the risk is for

members of that age group to die within one year. Groups, in which the risk is high, would be considered old, while low-risk groups would be considered young. People with the same risk would have been taken as members of the same age.

**Fig. 1: Graphic demonstration of the risk of mortality method (group: men)**



Source: Demographics of Aging (adjusted)

Another completely different approach is based on the estimation of the remaining life expectancy (RLE) (Wise 2010). In the case of RLE, the values result from the average life expectancy of seniors. It is given in a corresponding numbers of years. Groups of people with low chances of “survival”, which simultaneously show a high level of RLE coefficient, would be considered old, while those of high chances of survival and low RLE values would be considered young. The advantage of RLE is that is measured in years, which are easily understandable units.

**Tab. 1: The remaining life expectancy method**

Men					Women				
2010	2030	2050	2060	Change	2010	2030	2050	2060	Change
15,3	17,7	20,1	21,2	+ 5,9	18,7	21,1	23,4	24,5	+ 5,8

Source: Own estimations according to EUROPOP2010

Alternative measurements in the context of different age groups can be applied at a specific point in time or during a certain time period. For example, a man aged 65 years is just as "old" as a seventy years old woman according to RLE method. According to the risk of mortality method (while incorporating time period of 1970-2000), a man aged 51 years in 1970 had the same risk of death as a man aged 58 years in 2000.

There are also some objections against new ways of measuring the effective retirement age. These measurements do not happen at the individual level – instead of it, they are extracted from contingent variables with chronological age and other demographic data. But it is not entirely clear which variables should influence the final outcome. For example, it shows that education has some effect on the length and quality of life. There is less number of smokers, alcoholics among university-educated people. Therefore, new measurements are "theoretically" fair, but they have not been applied yet in practice. So far, they do not provide much information about how exactly the effective retirement age should be estimated. A flexible legislation would be needed in order to be able to quickly adapt to value fluctuations of new indicators. On the other hand, they promise at least a partial solution to the problem of population ageing.

## **Conclusion**

Extension of both types of these measurements might be useful in the case of population forecasts. According to them, a large increase in population over the age of 65 in the first half of 21st century would not seem to be so significant. Group of seniors (above 65 years of age) will grow by 66 percent in the coming decades according to the conventional measurement. On the other hand, the proportion of the population that is below the risk of mortality and which corresponds with today's group over 65 years of age will increase by only 20 percent. Thus, generation of seniors is "effectively" getting younger by about 1.5 years every decade (this trend is evident in the last 40 years). The idea is to combine age groups, which are different at the first glance, but share the same properties. People in these "clusters" would, for example, have been determined to equally contribute to social and health insurance. With the proper approach, it could slow down the increasing amount of expenditures within the entire social system.

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**Contact**

Jakub Stejskal

Faculty of Management in Jindrichuv Hradec

University of Economics, Prague

Jarsovska 1177/II

377 01 Jindrichuv Hradec, Czech Republic

[jakubstejskal@seznam.cz](mailto:jakubstejskal@seznam.cz)

Jitka Bartošová

Faculty of Management in Jindrichuv Hradec

University of Economics, Prague

Jarsovska 1177/II

377 01 Jindrichuv Hradec, Czech Republic

[bartosov@fm.vse.cz](mailto:bartosov@fm.vse.cz)