

Forecast of education attainment of population in the Czech Republic to the year 2050

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Introduction

The aim of the article is to build on previous work on human capital forecasting (method of forecasting of the access to tertiary education in the Czech Republic was presented at the EAPS Population Conference 2010 in Vienna¹) and present the methodology and main results of the demographic forecasts of the age-sex and educational (education attainment) structure of population. Knowledge of the structure of population according to the level of education enables more detailed analyses and forecasting of other demographic (mortality according to age-sex and educational levels, fertility according to age-sex and educational levels, etc.), economic, social, and other characteristics (migration, labour market situation, planning of the supply and availability of social services, etc.). The presented forecast was prepared for the Czech Republic but the methodology is applicable to data from any country or population where data are available.

Methodology and details of the construction

The initial structure for the presented forecast was the population structure according to age, sex and education attainment of the Czech Republic coming from the population census held in 2001. This initial structure was then modelled for the years 2002-2010 in accordance to numbers of graduates according to sex and age in regional structure. Also the results of the Labour Force Survey from the same years were implemented. The results of the Labour Force Survey have to be taken very carefully because the representativeness of the data is limited when the most detailed structure (sex/age/region) is considered.

The presented population forecast was constructed according to sex, age and 4 different levels of education attainment. Levels of the education attainment were

¹ HULÍK V., TESÁRKOVÁ K. (2010): *Changes of the entrance to the tertiary education in the Czech Republic depending on the demographic development*. European Population Conference 2010, hosted by the Office of Population Research at Princeton University. European Association for Population Studies (EAPS). Oral presentation in the section „Human capital, migration and educational performance“, 1 – 4. 9. 2010, Vienna, Austria.

distinguished for ages 25 and more because it could be supposed that at lower ages the education process is not yet finished and the education attainment vary significantly. The 4 levels of education attainment were defined as 1) at most ISCED 2 (primary or lower secondary education), 2, 3) secondary education at level ISCED 3C and ISCED 3A + 3B (upper secondary and post-secondary non-tertiary education; education without and with possible access to tertiary level were distinguished), and 4) tertiary education (ISCED 5 and 6).

The important base for the estimation of the share of people with tertiary education attainment was the forecast of the graduates of this educational level in the cohort perspective (individual data coming from the education statistics in the Czech Republic were used for that forecast). The estimate of the share of people with primary or at most lower secondary level of education was based on the past development, also some social, economic and other relevant regional characteristics were taken into account. The rest to those two already mentioned education levels is the proportion of people with upper secondary and post-secondary non-tertiary education, the distinction between secondary education without and with possible access to tertiary level was done on the basis of expert anticipations based on the extrapolation of the past trends, again the sex and regional specifics were taken into account.

Main results

In accordance to the results of the forecast it could be expected that the proportion of people with only the lowest education attainment will decrease in the Czech Republic in the future. More important result is the fact that the proportion of people with tertiary education is likely to increase rapidly – from 13 % in 2001 to almost 40 % estimated for the year 2050. With this increase the prolongation of the average length of education is connected – from 12.3 years in 2001 to ca 15 years in 2050. The reason for such an important change is before all the demographic development and its rapid changes in the last decades. Numbers of births was decreasing in the Czech Republic already from the mid of 1970s, more rapidly in 1980s, and before all in 1990s. The significant decrease in the number of births is reflected (with adequate time delay) in the number of people in the age corresponding with the entrance to the tertiary education. As a response to the prevailing system of financing of the institutions providing the tertiary education in the Czech Republic (where most of the total sum going to the institutions is based on the numbers of students) those institutions in most of the cases didn't decrease the number of enrolled students also in the period of decreasing numbers of people in corresponding age – numbers of enrolled students were increased more usually (theoretically based on Trow's

classification of the higher education systems - Trow, 1973²; application on the Czech higher education system - Hulík, Tesárková, 2010³). The probability of the entrance to the tertiary education grew significantly during last years and that's why also the proportion of people entering the tertiary education increased rapidly.

Results of the presented forecast show that there exist and will exist also in the future (on the assumption of *ceteris paribus*) huge regional differences according to education attainment in the Czech Republic. These results are even more visible considering the distinguishing according to sex and age – this fact is also good known from the results of the population census. These regional differences are the consequence of the past and also present social, economical, cultural and other specifics of regions in the Czech Republic. These differences are more likely to be deepened in the future than eliminated.

Usage of the results

The presented age-sex-education specific demographic forecast becomes these days in the Czech demography still more and more often the base for the analyses of demographic processes analyzed according to education attainment and also for other studies dealing with the socio-demographic processes and events (the issue of availability and adequate capacities of educational institutions under the conditions of growing level of education of parents of the pupils and students, the theme of human capital, etc.).

² TROW, M. 1973. *Problems in the Transition from Elite to Mass Higher Education*. Available from: <http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/35/2c/66.pdf> [cit. 07-01-2009].

³ HULÍK V., TESÁRKOVÁ K. (2010): *Changes of the entrance to the tertiary education in the Czech Republic depending on the demographic development*. European Population Conference 2010, hosted by the Office of Population Research at Princeton University. European Association for Population Studies (EAPS). Oral presentation in the section „Human capital, migration and educational performance“, 1 – 4. 9. 2010, Vienna, Austria.