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WHO WANTS TO WORK LONGER?

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Abstract: The observed collapse of demographic pyramid increases the tension on the social security systems, especially pensions. It implies a requirement to extend the retirement age. On the basis of Eurobarometer 65.1 we calculate difference between expected and preferred retirement age in Poland. Then we show the determinants of individual differences. Particular attention is paid to the problem of non-random missing observations.

Keywords: retirement decisions, ageing

INTRODUCTION

Within the last 25 years almost all of the countries in Central and Eastern Europe have experienced economic system transition. The centrally planned economies nearly collapsed and therefore hedging future pensioners was almost impossible. Additionally pension systems were based on assumption of stable demographical structure of societies. The so called Pay As You Go systems (defined benefit systems) use the property of similar inflows and outflows of the systems which allows for funding the pension system from general revenues [Góra, 2003]. Currently CEE countries face worsening demographic dependency ratio. The populations are aging — life expectancy grows faster than in the rest of Europe and additionally fertility ratios are significantly lower. Without sufficient reforms it would lead either to tax increase or lower replacement rate. Part of the solution is reduction of sector privileges, increase of labour market participation and discouragement of older people to exit the labour market. This leads to the questions which we try to answer in this article, that is what type of people are more willing to work longer? What are the features of people staying on the labour

market in old age? Additionally we try to investigate who has expectations about retirement age.

In the literature retirement decisions have been widely analyzed. Among determinants most often pointed out are financial factors- higher wage seems to be strong incentive to stay at labour market [Pellechio 1979, Hernoes 2000, Compton 2001, Antolín et al. 1998], good education, accumulated human capital and stable, unrisky employment (both in the sense of working conditions and contract type) are encouraging for later leave [Miniaci et al. 1998] or marital status [Bütler, 2004]- single women tend to be less willing to retire early. Quinn [1977] shows that eligibility for early retirement is also an important determinant.

METHODS AND DATA

We use microdata to estimate determinants expected and desired retirement age of individuals. Further we estimate the determinants of difference between those quantities. We stress the fact that not all individuals form expectations about their retirement. Not all of them have precise retirement age preferences. It implies existence of significant number of missing observations. We claim that process of preferences (and expectations) formation is crucial for final outcome. We claim that this might not be random and be dependent on income, type of employment or household composition of surveyed individuals. Also long horizon causing difficulties in precise predictions might be a possible issue. Therefore we also estimate determinants of expectations formation. We use Heckman's sample selection model [Cameron et al. 2007].

The model consists of two equations. First one is an assignment equation, which estimates probability for an individual of being assigned to the subsample of interest ($\Pr(y_1 = 1)$), that is the probability that variable of interest is observed. In our model we want to estimate expectations only on individuals who have formed ones. We assume that expectations are observable (that is y_1 =1) only if unobservable, latent willingness (y_1^{lat}) to form them has exceeded given threshold:

$$y_1 = \begin{cases} 1, \text{ if } y_1^{\text{lat}} > 0; \\ 0, \text{ if } y_1^{\text{lat}} \le 0. \end{cases}$$

Second equation describes only individuals with observable values of interest, so conditional on $y_1 = 1$.

$$y_2 = \begin{cases} y_2^{\text{lat}}, \text{ if } y_1^{\text{lat}} > 0; \\ 0, \quad \text{if } y_1^{\text{lat}} \le 0. \end{cases}$$

Data used in this study comes from survey Eurobarometr 65.1[1]. We decided to choose following countries: Bulgaria (with statutory retirement age for women and man 60 and 63 years respectively[2]), Czech Republic (59-63 and 63, DB[3]), Estonia (61.5 and 63, Point scheme), Lithuania (60 and 62.5), Latvia (62), Poland (60 and 65, NDC[4]), Romania (59 and 64), Hungary (62), Slovakia (62, Point scheme) and Slovenia (61 and 63). We have trimmed the sample to working individuals aged 18 and more. The sample consists of n = 4153 observations.

Definitions used in our study:

- defined expected retirement age – [binary] individual has expectations of own retirement age and has reported it, fraction in the subsample of working individuals with defined expectations is 78.3% (of n=4153), average age among individuals with undefined expectations is 36.54 years and among those with defined expectations- 40.95 years;
- defined expected and desired retirement age - [binary] individual has both expectations and preferences of own retirement age and has reported it, fraction in the subsample of working individuals is 73.46%;
- expected retirement age – expected retirement age reported by working individual, average for working men is 61.67 years (std dev.= 4.70) and for working woman average is 59.78 years (std dev.=3.86);
- desired retirement age – desired retirement age reported by working individual, average for working men is 57.17 years (std dev.= 6.35) and for working woman average is 55.04 years (std dev.=4.75)
- difference in expectations – difference between desired and expected retirement age, average for subsample with defined both expected and desired retirement age is equal to -4.57 years (std dev=5.01)

On the basis of simple descriptive statistics given above, it can be seen, that over 20% of working population in Central Europe is not thinking about their retirement.

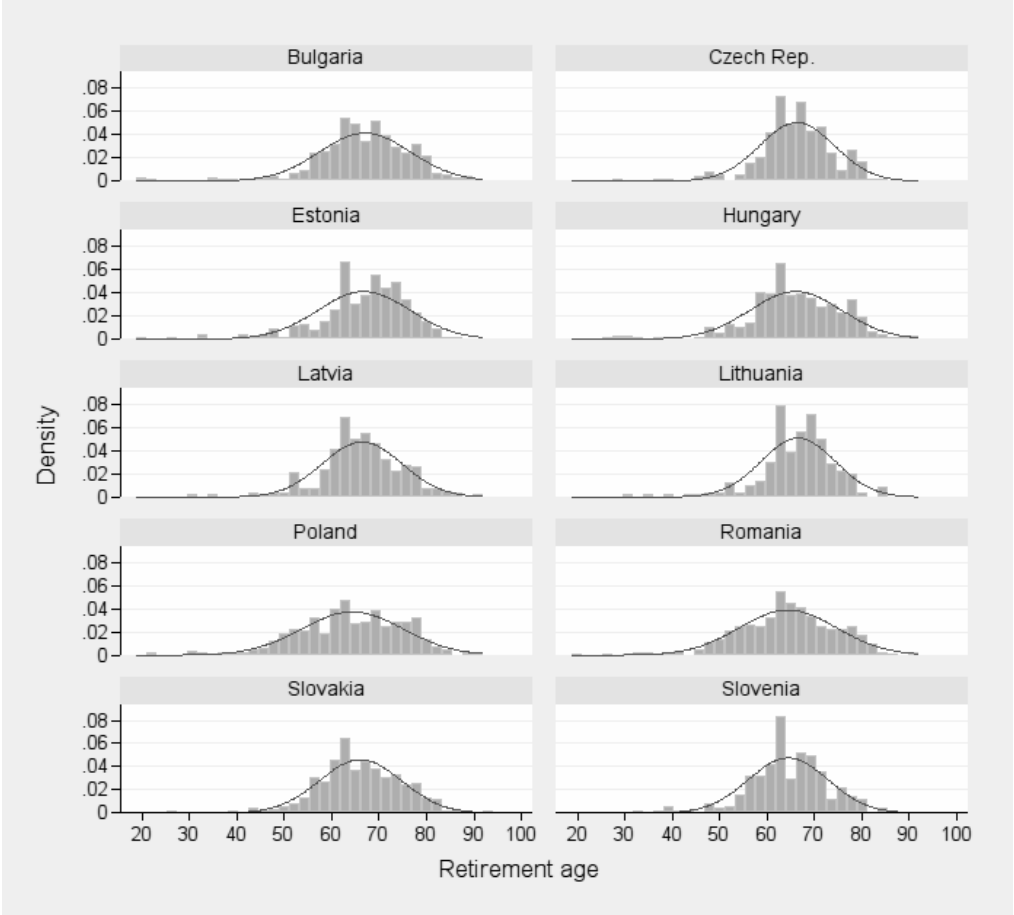
1 European Commission (2012): Eurobarometer 65.1 (2006). TNS OPINION \& SOCIAL, Brussels. GESIS Data Archive, Cologne. ZA4505 Data file Version 1.0.1, doi:10.4232/1.10973

2 Retirement age data comes from Eurostat

3 DB- Defined Benefit plan

4 NDC- Notional Defined Contribution plan

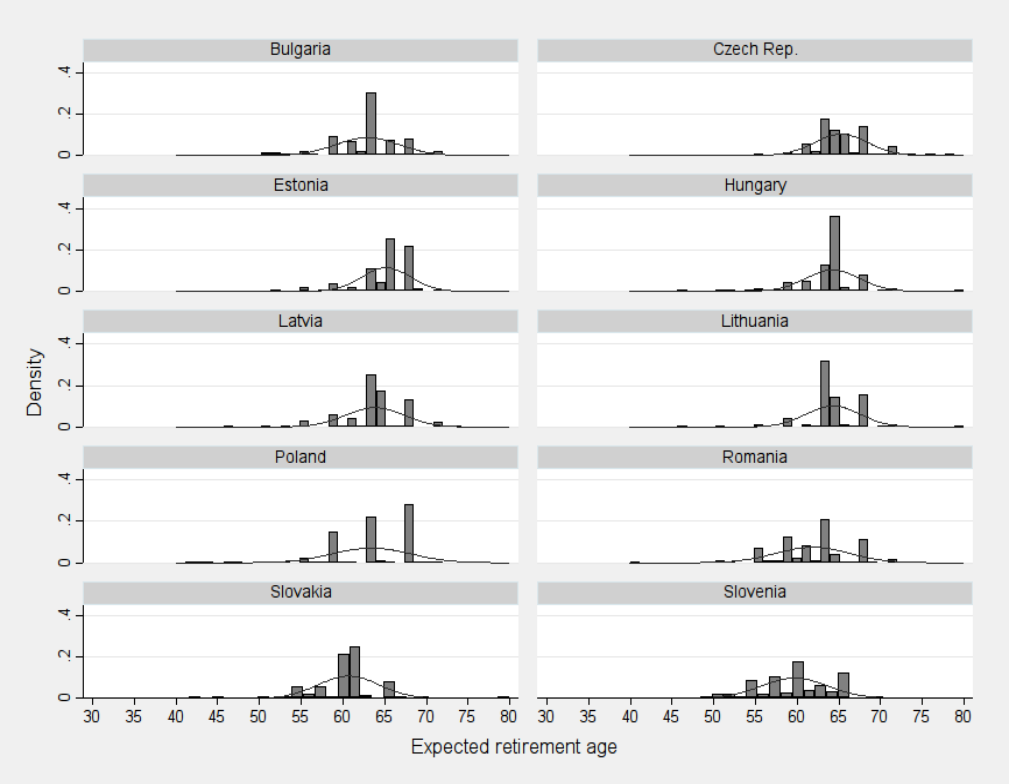
Figure 1. Distribution of retirement age by country (n = 4153)



Source: own calculations

In Figure 1 the fractions of retired individuals for each country are shown, together with the normal curve with parameters adjusted to the subsample observations visualized on the graph. It can clearly be seen that subpopulations of retired individuals by country differ between each other. Poland shows similar patterns to Romania , Bulgaria and partly to Hungary, where fraction of individuals younger than 60 is significant. More dense distributions are observed for Baltic countries, Czech Republic and Slovenia. One should be careful with interpretation of fraction of individuals older than 65, because the distribution does not distinguish effect of late exiting labour market and the life survival rate.

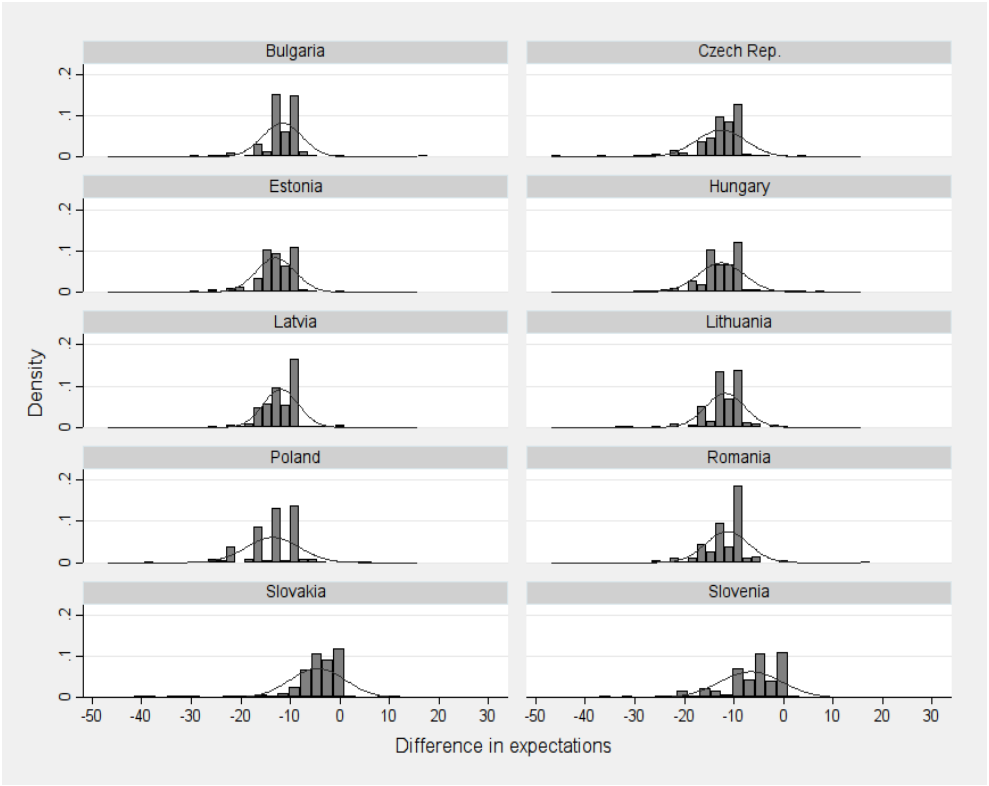
Figure 2. Expected retirement age by country (n = 3099)



Source: own calculations

In Figure 2 expectations concerning the retirement age are presented. It may be inferred that working individuals tend to form expectations on the basis of statutory retirement age. Most of them expects to leave the labour market as soon as they will become entitled to do so (each country has the largest peak at number equal to statutory retirement age or 2 peaks if statutory age differs conditional to gender). In Poland and Romania more peaks can be observed, which implies large fraction of working individuals entitled to earlier labour market exit and significant difference between statutory retirement age for men and women.

Figure 3. Difference between desired and expected retirement age by country



Source: own calculations

In all countries in the sample we can observe that desired retirement age is on average in the population lower than expected. It means individuals want to exit labour market earlier and are forced to stay by the pension system. What is worth mentioning are dissimilarities observed among Poland and Hungary. This is surprising, because this countries had very similar pension systems at the moment when data for this study was collected. It indicates that not only pension system incentives are important in lifecycle working patterns preferences, but some other factors might exert influence. Identification of these extra factors is the main aim of the present work.

Variables used in the study:

- gender – [binary] 1 if individual is a woman, fraction of females in the sample: 50,57%;
- age – individuals' age, ranges from 18 to 76 years, with mean equal to 40 years;
- age5 – age mod 5;

- years of edu – completed years of education, ranges from 8 to 50, with mean equal to 13.82 years;
- children – number of children under 14, ranges from 0 to 4, 27.96% of individuals have at least one child under 14 in the household;
- partner – [binary] 1 if individual declares having husband or partner in the household, fraction in the sample: 72.96%;
- income cat – income category [scale 1-10, low-high], mode=8;
- early retirement option – [binary] 1 if individual is entitled to earlier retirement, fraction in the sample: 16.37% (in female subsample: 15.95%);
- hours worked – average number of hours worked per week,
- public sector - [binary] 1 if individual is employed in public sector, fraction: 35.9% (in female subsample: 44.95%)
- fixed term contract - [binary] 1 if individual is employed on a fixed term contract, fraction in the sample: 16.2%.

RESULTS

We have estimated model explaining individuals' differences between desired and expected retirement age with respect to selection caused by possessing such preferences and expectations[5]. The results are shown in Table 1.

Table 1. Difference between desired and expected retirement age.

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
difference in expectations						
partner	0,385	0,225	1,71	0,09	-0,056	0,825
income category	0,074	0,034	2,16	0,03	0,007	0,142
years of education	0,110	0,030	3,61	0,00	0,050	0,169
fixed-term contract	-0,630	0,271	-2,33	0,02	-1,161	-0,099
children	-0,304	0,132	-2,30	0,02	-0,564	-0,045
age	0,119	0,010	11,36	0,00	0,099	0,140
early retirement option	-1,180	0,227	-5,19	0,00	-1,626	-0,734
const	-10,731	0,764	-14,05	0,00	-12,228	-9,234

5 Number of observations n = 4153, number of censored observations n' = 1102

Table 1. -continuation	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
defined expected and desired retirement age						
age	0,018	0,002	8,67	0,00	0,014	0,021
partner	0,103	0,049	2,12	0,03	0,008	0,199
income cat	0,023	0,007	3,18	0,00	0,009	0,038
public sector	0,220	0,046	4,81	0,00	0,130	0,309
early retirement option	0,198	0,047	4,21	0,00	0,106	0,291
hours worked	0,007	0,001	5,62	0,00	0,005	0,010
const	-0,843	0,116	-7,27	0,00	-1,070	-0,616
ath rho	0,085	0,080	1,07	0,29	-0,071	0,241
lnsigma	1,674	0,013	126,77	0,00	1,648	1,700
rho	0,085	0,079			-0,071	0,237
sigma	5,332	0,070			5,195	5,471
lambda	0,453	0,423			-0,376	1,282
LR test of indep. eqns. (rho = 0): chi2(1) = 0.99					Prob > chi2 = 0.3188	

Source: own calculations

As can be inferred from the first part of the model (seen in the lower part of Table 1), probability of having defined both expected and desired retirement by individual grow with age, which is rather intuitive, older individuals are simply closer to statutory retirement age and more willing to make retirement plans. Having partner also increases chances of making predictions which might be signal of responsibility for the spouse. Also work in a public sector increases the probability since career paths are more predictable than in private sector. Additionally there is strong positive effect on probability caused by early retirement option. That may imply that retirement privileges are important feature while choosing the profession. Further hours worked on average per week and individual's household income category increase the probability.

Second part of the model (seen in the upper part of Table 1) describes the difference between desired and expected retirement age. It means that negative value of dependent variable in the model occurs when individual wants to retire earlier than he/she expects to basing on statutory retirement age and possible privilege of earlier retirement option. The positive value of the dependent variable implies that individual is willing to work longer than she/he expects to. Further positive values of estimates are associated with variables being stimulants of longer labour market activity while negative estimates imply variables contributing to earlier retirement. So children (and in consequence grandchildren) decrease the engagement into labour market activity, probably by providing opportunity costs of work. Fixed term contracts and retirement privileges also have negative effect on working preferences —- leaving labour market with stable income reduces individual insecurity. Greater willingness to work rises with age, better education, higher income category of the household and a husband (or wife).

What we found interesting is that there are no statistically significant gender differences in the model. Part of the explanation is that in most of the countries in Central Europe, the statutory retirement age does not differ significantly between men and women. Case of Poland and Romania are an exception. Also having children seems not to make significant difference, which might be an important result but needs further investigation. Additionally we were not able to show a significant influence of job features (like higher accident risk) on the formed preferences.

CONCLUSIONS

We have investigated determinants of expected and desired retirement age of individuals in Central and Eastern Europe. We have shown that on average people are not willing to work longer than they are due according to the retirement age, they also tend to exercise privileges to earlier exit of labour market. Therefore increase of statutory retirement age might be politically costly reform. But on the other hand retirement preferences change with age. That might be caused by the ability of replacement rate and welfare reduction estimation. Also better educated individuals are more willing to work longer. Further research should stress on long term motivation and human capital formation.

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