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ABSTRACT

We study job retention rates – the shares of workers who continue to work in the same job over the next five years – in Czechia, Hungary, Poland and Slovakia. Job retention among older workers is key to prolonging careers and increasing employment of older people which in turn is a crucial challenge for these countries. We find that the retention rates among workers aged 55–59 are low and amount to about a half of the retention rates among prime aged workers. Only in Poland the retention rates of older workers have increased for both men and women between 1998 and 2013. The individuals least likely to retain jobs after the age of 60 were women, those with lower education, working in industry, in medium or low-skilled occupations, and those living with a non-working partner. The policies aimed at encouraging job retention in Central and Eastern Europe should focus on these groups of workers.

1. Introduction

Population ageing is a challenge for many countries around the world, including countries in Europe. The share of people aged 60 or older in the global population is expected to rise from 12% in 2015 to 22% in 2050, and from 24% to 34% in Europe (United Nations, 2015). According to Eurostat projections (EPC, 2001) the gross public pension expenditure (as a share of GDP) in the EU is on track to rise by approximately 2 pp. between 2015 and 2050. Population ageing will accelerate particularly in Central and Eastern European countries (Lutz, Sanderson, & Scherbov, 2008), where the employment rates among older workers are lower than in Western European countries.

Broad literature has explored the issue of prolonging working lives. While promoting employment of people aged 55 and older has been identified as a key policy response (see reviews in Foster & Walker, 2013, 2015), achieving this goal in practice is a challenge, as finding a new job can be especially difficult for older people. In 2013 in the EU-28, 61%

of unemployed individuals aged 55–64, compared to 50% of unemployed individuals aged 25–54, were long-term unemployed (Eurostat indicators). Older people are less able than younger people to change occupations (Tempest & Coupland, 2016) or to find re-employment, regardless of their last labour market status (Magda & Ruzik-Sierdzińska, 2012; Tatsiramos, 2010). Few older workers return to work after exiting the labour market (OECD, 2006), especially if they expect the potential further employment to be of short duration (Hairault, Sopraseuth, & Langot, 2010). In the US, the increase in the employment rates of older people in the 2000s was largely driven by the growth in the total tenure of workers in career jobs (Burtless, 2012). Job retention matters also from a social security incentives perspective: the level and duration of unemployment benefits shape the duration of working lives (Grogger & Wunsch, 2012; Kyyrä & Ollikainen, 2008; Lalive, 2008; Lammers, Bloemen, & Hochguertel, 2013), so do old age and disability pension entitlements (Asch, Haider, & Zissimopoulos, 2005; Chen & van der Klaauw, 2008; Giesecke, 2018; Mastrobuoni, 2009). Given these findings, more attention should be paid to increasing job retention among workers nearing retirement, especially those with the lowest retention probabilities (i.e. highest potential for improvement), as job retention appears to be a major factor that could extend working lives.

The aim of our paper is to shed light on the factors related to job retention among older workers in four Central European countries: Czechia, Hungary, Poland, and Slovakia (CEE4). The retention rates and the changes in these rates over time differ substantially across these countries (OECD, 2015a), even though the CEE4 have relatively similar institutional arrangements (Borbély & Neumann, 2015; Brusis, 1999). While most previous studies focused on the psychological or the managerial aspects of job retention, in our study we examine the cross-country differences in retention probabilities, and describe their microeconomic correlates. We also look at the occupations and sectors with the lowest and the highest probabilities of job retention at older ages, and discuss the policy implications of our findings.

2. Determinants of employment among older workers

Employment and job retention among older workers are shaped by both demand-side and supply-side factors, and are influenced by retirement and employment protection policies.

On the demand side, employers often prefer younger workers because of age-related stereotypes or perceived gaps in skills. While employers generally see older workers as being experienced, committed, knowledgeable, and resourceful, and as having high levels of interpersonal or specialized skills (Loretto & White, 2006; Posthuma & Campion, 2009); employers also tend to view older workers as being less productive, less adapted to physical work, more prone to health problems, more reluctant to participate in training (Loretto & White, 2006), and more costly than younger workers (Posthuma & Campion, 2009). Older workers are often discriminated against (Taylor & Walker, 2003) and may face harassment (Roscigno, Mong, Byron, & Tester, 2007), as the negative stereotypes about older workers are persistent and difficult to change (Henkens, 2005), even if they are mostly untrue (Ng & Feldman, 2012). While the evidence on the relationship between productivity and age is mixed (see the literature review in Van Dalen, Henkens, & Schippers, 2010), employers expect that as workers age, their productivity

will decline or at best remain stable (Van Dalen, Henkens, & Schippers, 2009), while the costs of their employment (wages) will increase (Van Dalen et al., 2010). Thus, employers may see younger workers as superior to older workers due to age-based stereotypes or concerns about wage-to-productivity ratios.

On the supply side, workers' decisions to remain in the workplace (instead of retiring) are dependent on their attitudes towards their job and their degree of flexibility, as well as on the actions of their employers. Workers are more likely to continue working if they develop an attachment to the firm's mission and a sense of belonging (Armstrong-Stassen & Schlosser, 2011). They are also more likely to remain in the workplace if they have strong support from their supervisor (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002), a high degree of flexibility in their working conditions (Bal, De Jong, Jansen, & Bakker, 2012), and customized development opportunities (Govaerts, Kyndt, Dochy, & Baert, 2011); but they are less likely to remain in a job if they feel that their skills are obsolete or that their career has peaked (Kooij, de Lange, Jansen, & Dikkers, 2008). The retention intentions of older workers are heavily affected by their individual views regarding their work climate and their employer's managerial efforts.

The decision about whether to continue working or to retire also depends on the financial condition of the older worker's household (Eichhorst et al., 2013), the worker's further life expectancy and health issues (Van den Berg, Elders, & Burdorf, 2010; Van Solinge & Henkens, 2010), and the levels of stress and pressure the worker is experiencing (Van den Berg et al., 2010). Older people are influenced in their decision about whether to retire by their spouse's views and health status (Van Solinge & Henkens, 2007). Older people are also likely to provide care for their grandchildren in place of working, with grandmothers generally more likely to provide childcare than grandfathers (Hank & Buber, 2009).

While governments have introduced policies aimed at protecting workers nearing retirement from forced job separation, these policies sometimes have negative side effects. Although dismissal protection can reduce the employment insecurity of older workers (Anderson & Pontusson, 2007), it may also distort the overall dynamics of job creation and destruction (Hairault, Chéron, & Langot, 2007). Moreover, employment protections may be associated with a decrease in work commitment (Henkens, 2005), and the protected employees could be subject to indirect age discrimination (AARP, 2014). Finally, the old-age pension rules, the retirement age, and access to social transfers strongly influence the timing of retirement. Most workers retire as soon as the option becomes available (Social Protection Committee, 2007), and many leave the workforce via early retirement schemes or social transfer programmes (OECD, 2015b). Workers who are less healthy or low-paid are most likely to leave the workforce early to live on a disability pension or unemployment benefits (Staubli & Zweimüller, 2013).

3. Employment among older people in the CEE4

3.1. Employment rates of older people

Between 1998 and 2013, people aged 55–64 in the CEE4 had much lower employment rates than individuals aged 25–54, with the employment rates of the older age group constituting at most 45% of the rates of the younger age group. However, the employment
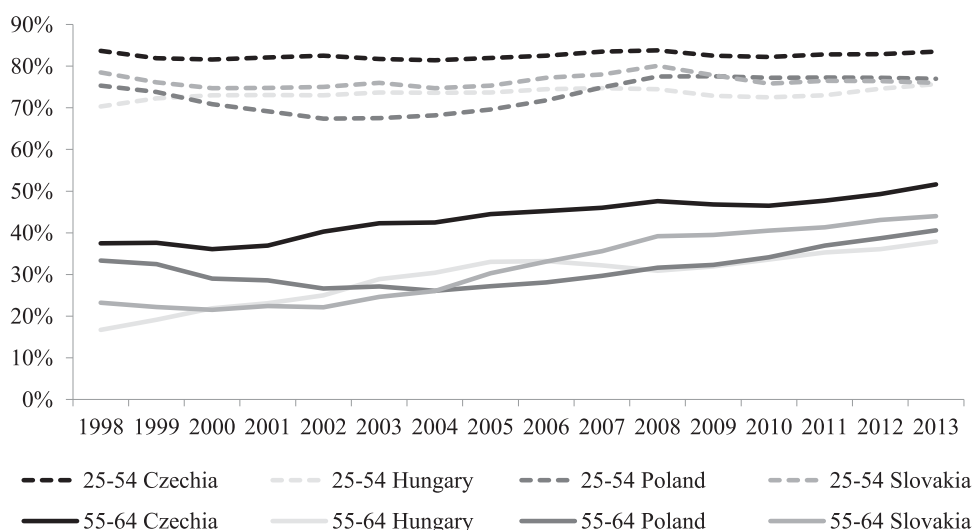
Figure 1. Employment rates of prime-aged (25–54) and older (55–64) workers in CEE4, 1998–2013 (in %). Source: Own elaboration based on Eurostat data.

rates of older workers have increased over time. Of these countries, Czechia has reported the highest (and steadily rising) employment rates among older people, with the three remaining countries slowly catching up (see Figure 1). In Hungary, these rates were improving up to 2005. The employment rates of older workers were declining until 2002 in Slovakia and until 2004 in Poland, but later rebounded and grew noticeably in both countries.

In the 55–64 age group, the employment rates have generally been much higher among men than among women. Between 1998 and 2013 on average across the CEE4, except in Poland, these rates grew slightly more among women (18 pp.) than among men (13 pp.). In 2013, the difference between the employment rates of men (53% on average across the CEE4) and of women (35% on average) aged 55–64 was largest in Czechia (21 pp.) and smallest in Hungary (13 pp.).

3.2. Job Retention among older workers in CEE4

We study employment of older workers in the CEE4 using a measure of job retention rates, as proposed by the OECD (2015a) and described in the methodology section below. It is defined as the number of employees in a five-year age group who have worked for at least five years in the same workplace, divided by the total number of employees five years younger and five years earlier. Thus, it captures the propensity to remain in the same jobs.

Over the entire period studied, the OECD retention rates in the CEE4 were much lower for the oldest than for younger groups of workers (Table 1). Among the youngest workers (aged 25–34), who were generally more likely to switch jobs, the OECD retention rates averaged 57% in 2003[1] and 52% in 2013. On average across the CEE4, workers aged 35–54 had relatively stable retention rates of around 70% in both 2003 and 2013, whereas workers aged 55–59 had retention rates of 48% in 2003 and 62% in 2013, and workers aged 60–64 had retention rates of 25% in 2003 and 30% in 2013. Thus, both

Table 1. OECD retention rates in 2003 and 2013, by country and age group.

Age group	Czechia		Hungary		Poland		Slovakia	
	2003	2013	2003	2013	2003	2013	2006	2013
25–29	50%	55%	48%	55%	50%	45%	64%	47%
30–34	60%	57%	57%	51%	58%	54%	69%	56%
35–39	68%	68%	75%	63%	62%	62%	75%	69%
40–44	71%	77%	73%	59%	66%	66%	71%	73%
45–49	75%	74%	70%	72%	60%	68%	72%	72%
50–54	73%	82%	70%	73%	51%	70%	70%	72%
55–59	54%	64%	58%	56%	32%	63%	47%	65%
60–64	24%	31%	32%	20%	23%	41%	22%	27%

Note: Due to small sample sizes, the figures for Slovakia are reported for 2006 instead of 2003.
Source: Own calculations based on EU-LFS data, based on the OECD definition of retention rate.

the employment rates and the retention rates in the CEE4 were noticeably lower among the 60–64-year-olds than among the 55–59-year-olds over the study period. These descriptive statistics suggest that in the CEE4 job retention starts decreasing at age 55, and falls especially rapidly after age 60.

On average over the 2003–2013 period, the OECD retention rates for the 60–64 age group ranged from 18% in Czechia to 29% in Poland among women, and from 21% in Hungary to 36% in Poland among men. Between 2003 and 2013, the OECD retention rates for the 60–64 age group increased substantially among both men and women in Poland and among men in Czechia, fluctuated among both men and women in Slovakia, and decreased among both men and women in Hungary and among women in Czechia. The OECD retention rates were higher among men than among women over the whole period (average difference of 6 pp.),[2] except in Hungary between 2003 and 2008. Both the between-country and the between-gender differences in worker retention rates were substantial in the CEE4.

Among the individuals aged 60–64 in the CEE4, who were employed during the study period, most had been working in the same job for at least five years (approx. 65% for women and 75% for men, on average across countries and years).[3] Crucially, the increase in job retention was the main driver of employment growth. In Slovakia and Hungary, retained workers contributed more than 80% of the total net employment rate increase in this age group between 2001 and 2013. In Czechia and Poland, the contributions of retained workers even surpassed the total net employment rate increase, as the rate of newly hired workers aged 60–64 declined. As a result, the fractions of retained workers among all employees aged 60–64 rose between 1998 and 2013 (by 6 pp. among women and by 12 pp. among men on average across the CEE4), and increased most substantially in Czechia and Poland.

3.3. Retirement access and retention rates among older workers in CEE4

The pension policies in the CEE4 underwent multiple changes during the period studied, with most of these reforms aimed at prolonging working life. As these policies affected the retirement decisions of workers, they are likely to be related to the differences in the OECD retention rates across countries and between genders.

The statutory retirement age and the existence of early retirement options are the main factors that affect retirement eligibility. The statutory retirement age in the CEE4 countries

Table 2. Statutory retirement age and other characteristics of pension schemes in CEE4.

	Czechia		Hungary		Poland		Slovakia	
	F	M	F	M	F	M	F	M
Statutory retirement age:								
before reforms	53–57*	60	55	60	60	65	53–57*	60
after reforms	67	67	65	65	67	67	62	62
Period of changes	1996–2044	1996–2044	1999–2022	1999–2022	2013–2040	2013–2020	2005–2024	2005–2008
*Mean statutory retirement age**:*								
in 2003	57	61.2	59	62	60	65	55	60
in 2013	59.5	62.5	62	62	60.2	65.2	59.1	62
*Other characteristics, mean for 2006–2013***:*								
Anticipated old age pension – share of pensions beneficiaries (%)	4	5	7	10	9	14	0	4
Anticipated old age pension – percentage of GDP	0.3		1.1		1.8		0.2	
Early retirement benefit due to reduced capacity to work, PPS per inhabitant	2.9		6.2		6.8		0.0	
Early retirement benefit for labour market reasons, PPS per inhabitant	0.0		10.7		11.9		50.4	

Source: Own elaboration based on Cseres-Gergely (2014), European Commission (2015), Czech Social Security Administration (n.d.), Social Insurance Agency in Slovakia (n.d.), Ministry of Family, Labour and Social Policy in Poland (n.d.) and Eurostat data ([spr_pns_ben]; [spr_exp_pens]).
*Before the reforms in Czechia and Slovakia, the retirement age for women was dependent on the number of children they had raised. The table presents the minimum (for women with five or more children) and the maximum (for women without children) values.
**This is the average across individuals. In the same year some individuals have different retirement ages, e.g. due to different numbers of children or to birth in a quarter subject to a different statutory age.
***The mean of anticipated old pension is for 2006–2009. The periods were chosen based on data availability. Anticipated old-age pensions (Eurostat definition) refer to payments of beneficiaries who retire before the legal or standard age, as established in the relevant scheme.

has been gradually increasing, with the lower thresholds for female workers slowly catching up to those for male workers (Table 2). Between 2003 and 2013, the statutory retirement age for women continued to be lower than 60 in Czechia and Slovakia, stayed at 60 in Poland, and was raised above 60 in Hungary; while the statutory retirement age for men was 65 in Poland, but remained between 60 and 64 in Czechia, Hungary, and Slovakia. Early retirement options were greatly reduced in Poland in 2009 (Ministry of Family, Labour and Social Policy in Poland, n.d.) and in Hungary in 2012 (Cseres-Gergely, 2014; European Commission, 2015). In Czechia, early retirement became less beneficial in 2012 (Czech Social Security Administration, n.d.).

Disability and survivor benefits should be considered in tandem with old-age and early retirement pensions, as all of these transfers provide beneficiaries with a stable income, and thus influence labour market participation (European Commission, 2015). Table 3 shows that between 2004 and 2013, the shares of people claiming any of these benefits declined in all of the CEE4 countries, most notably among women aged 55–59. Moreover, the differences in claimant shares across the CEE4 countries shrank between 2004 and 2013, with the countries with relatively large claimant shares (Hungary and Poland) seeing the greatest reductions in these shares. Across the CEE4, the shares of both men and women claiming benefits were increasing with age. In 2004, the shares of benefit recipients were higher among women than among men in all age groups in

Table 3. Shares of pension (old-age, survivor, or disability) benefit claimants in total population, by age groups (in %).

Age group	Year	Czechia		Hungary		Poland		Slovakia	
		Female	Male	Female	Male	Female	Male	Female	Male
60–64	2004	96	71	96	88	94	74	97	80
	2013	88	51	81	63	81	54	84	55
55–59	2004	55	23	59	45	67	43	70	19
	2013	26	22	32	23	26	28	24	21
50–54	2004	22	14	27	29	21	27	21	16
	2013	14	10	14	14	13	18	12	10

Note: People receiving pensions are defined as receiving non-zero income from old-age, survivor, or disability benefits. 2004 and 2013 are reported because of EU-SILC data availability.
Source: Own calculations based on EU-SILC data.

all countries. In 2013, this was still the case among people aged 55 and older, with the exception of people aged 55–59 in Poland.

4. Methodology & data

The OECD (2015a) has proposed a measure of job retention rates (henceforth, 'OECD retention rates'), which is calculated as the number of employees in a five-year age group who work for at least five years in the same workplace, divided by the total number of employees five years younger and five years earlier.[4] We use the same definition, but apply it separately to males and females. The OECD retention rate, presented in Figure 2 and in Table 1, is defined as:

$$RR_t = \frac{L_t^{\geq 5; y, y+4}}{L_{t-5}^{y-5, y-1}},$$

where:

- t denotes the year from 2003 to 2013,
- RR_t is the OECD retention rate in year t,
- $L_t^{\geq 5; y, y+4}$ is the number of employees aged from y to $y+4$ and working for at least five years in the same job in year t,
- $L_{t-5}^{y-5, y-1}$ is the number of all employees aged $y-5$ to $y-1$ in year $t-5$.

We use the EU Labour Force Survey data covering the period 2003–2013, with data for the 1998–2002 period used to derive some of the included variables, for Czechia, Hungary, Poland, and Slovakia. The initial sample consists of 3.8 million observations of people aged 25–54 and 1.3 million observations of people aged 55–64. In line with the OECD (2015a), we drop the self-employed and helping family members and focus on employees (2.3 million observations of people aged 25–54 and around 345,000 observations of people aged 55–64).

Our main aim is to study the correlates of job retention at a micro level, their cross-country variation, and their heterogeneity across groups of workers. To this end, we model the individual characteristics and circumstances related to job retention. Our focus is on individuals aged 60–64, but we also analyse individuals aged 55–59 to infer
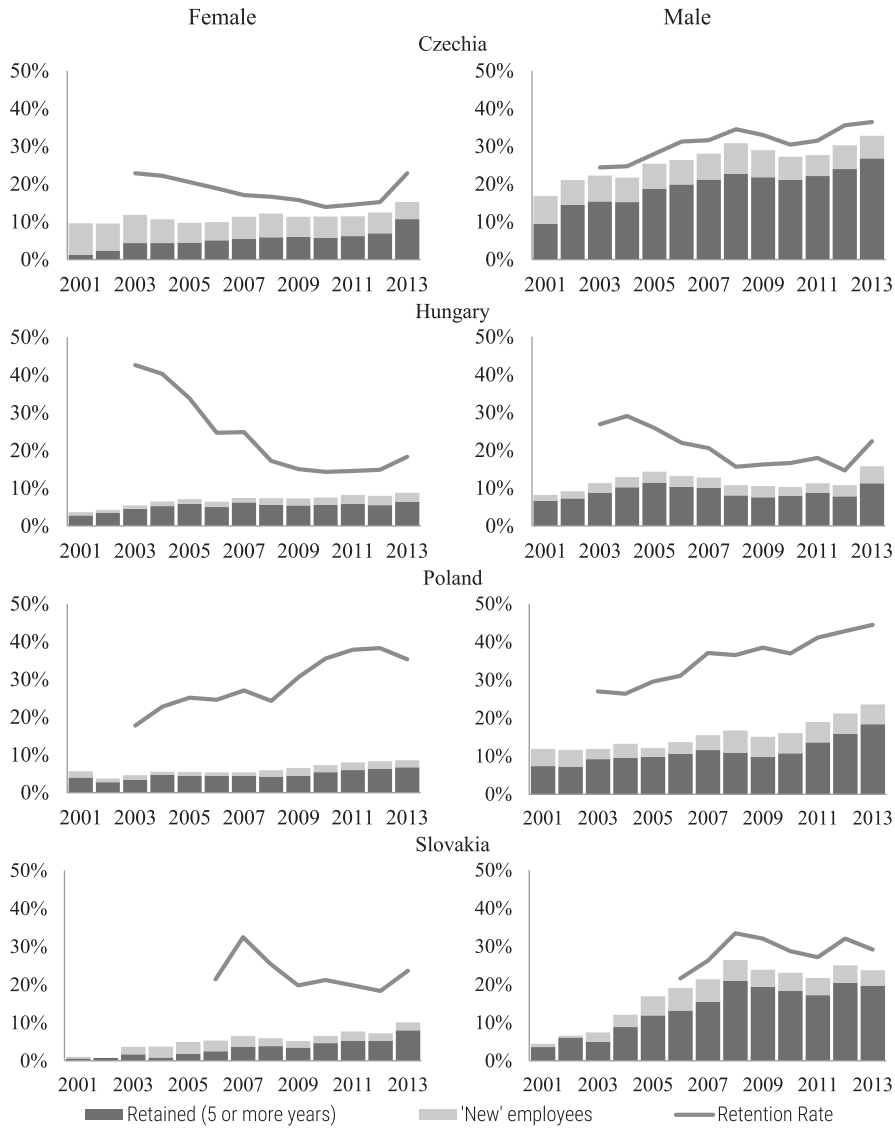
Figure 2. Decomposition of employment rates into retained and new workers, and the OECD retention rates of men and women aged 60–64 in the CEE4, 2001–2013 (in %).

Note: The 'new' employees are those with less than five years tenure in the current workplace, while the 'retained' employees are those who have been working in the current workplace for at least five years. The sum of the shares of both groups in the population constitutes the employment rate. Due to small sample sizes, we used 2006 as a starting point for the OECD retention rates in Slovakia. Source: Own calculations based on EU-LFS data.

which findings are specific to people aged 60–64, and which also apply to people aged 55–59.

We define retention and non-retention based on the current or last (for non-employed) labour status. The model does not include the currently non-employed individuals who were not employed five years earlier. However, we cannot infer from the data whether the self-employed, helping family members or workers who started a new job during the five years prior to the survey were employed five years before the survey. We therefore

drop the self-employed and helping family members from our sample, but include those who started new employment as non-retained workers. We further discuss this potential limitation in the robustness check section. Moreover, the data do not allow us to observe individuals who were working at ages 55–59 but who died before reaching the age of 60. As a result, the retention rates calculated from our sample have a slightly different denominator than the OECD retention rates but follow them closely.

We estimate a pooled OLS model with country-fixed effects explaining the probability of being a retained worker – separately for workers aged 55–59 and workers aged 60–64. The base model includes individual, household and job characteristics as well as controls for the selection into being employed at the age of 60 (55). We then further extend this model by controlling for individual income levels and financial incentives for retirement.[5] Finally, we also re-estimate the base model separately for each country and gender as the trends in retention rates vary greatly across country and gender groups (as evidenced by Figure 2). This allows us to see if these differences can be explained by the same factors within different country-gender groups. The base model can be described as:

$$RW = \beta_1 \text{country\#gender} + \beta_2 \text{education} + \beta_3 \text{hhstructure} + \beta_4 \text{isco}$$
$$+ \beta_5 \text{nace} + \beta_6 \text{year} + \beta_7 \text{emprate} + \beta_0 \text{cons} + \varepsilon$$

where:

- the dependent variable RW is defined as being a retained worker, i.e. having a current tenure of more than five years, as defined in Section 2.2. The reference group consists of those who had stopped working during the five years prior to the survey or who had been working for less than five years when surveyed.
- country#gender is the set of country and gender dummies, as well as their interactions;
- education is the set of educational level dummies: low (ISCED 0–2 levels), medium (ISCED 3–4 levels), and high (ISCED 5–8 levels);[6]
- hhstrcucture is the set of 8 dummies describing different household structures, including the presence of other people in the household, whether they are working and whether one of them is a partner of the individual (the reference level is living alone);
- isco is the set of occupation dummies based on a 1-digit ISCO-08 classification (last occupation performed for jobless people);
- sector is the set of sector dummies based on the NACE rev. 2 classification (last sector of work for jobless people);
- year is the set of year dummies;
- emprate is the gender-education-region-specific employment rate five years earlier, which we assign to each individual to control for macroeconomic factors influencing the probability of remaining in employment after reaching the age of 60 (55). The region is defined using the NUTS1 classification.

The first extended model includes imputed income levels, as a set of income deciles dummies. EU-LFS contains data on wages only since 2009, only in deciles, and for only some respondents. Moreover, there are no data on income from the last job of individuals who are no longer working. We therefore imputed incomes for individuals and years missing such information.[7]

The second extended model includes replacement rates as reported by Eurostat and matched at the country-gender-year level. Replacement rate in the definition of Eurostat is a ratio of income from pensions of persons aged between 65 and 74 years and income from work of persons aged between 50 and 59 years.

Table 4 shows the main characteristics of the 60–64 age group sample: the shares of workers who remained in their job for at least five years, became jobless, or entered a new job during the five years prior to the survey; divided into those who were retired and those who were not. Women were more likely than men to be working during

Table 4. Descriptive statistics for individuals aged 60–64 who were working five years earlier, average over 2003–2013 (in %).

		Czechia		Hungary		Poland		Slovakia	
		F	M	F	M	F	M	F	M
Retained	Retired	3.9	1.6	2.3	1.4	1.9	0.8	7.7	3.1
	Non-retired	9.0	28.0	15.0	17.6	21.7	31.5	8.0	20.2
New workplace	Retired	8.6	3.8	1.4	1.0	1.4	0.9	7.9	3.1
	Non-retired	3.3	5.4	4.1	4.9	5.8	11.2	1.5	3.4
No longer working	Retired	74.4	54.9	73.2	68.9	65.5	40.7	74.3	66.2
	Non-retired	0.9	6.2	3.9	6.2	3.8	14.9	0.6	3.9
Education:									
Low		16.4	7.8	28.8	23.4	14.6	15.5	13.1	12.0
Medium		71.6	78.8	49.9	55.4	59.1	64.0	66.3	73.3
High		12.0	13.4	21.3	21.2	26.4	20.5	20.5	14.7
Other adults in household[x]:									
None		23.2	11.5	20.5	8.2	23.0	7.4	19.8	6.1
One, E and NP		4.1	1.2	7.6	1.4	4.9	1.0	4.7	1.1
One, E and P		16.4	19.8	6.8	16.4	12.1	13.4	11.1	11.7
One, NE and NP		2.5	1.6	5.0	2.0	4.5	1.3	3.4	1.7
One, NE and P		38.6	44.0	32.6	34.3	29.7	42.8	30.6	38.8
Two or more, E and NP		1.2	0.4	3.3	1.0	2.5	0.6	3.9	0.6
Two or more, E and P		3.1	5.4	2.8	8.1	3.2	4.4	4.9	6.1
Two or more, NE and NP		1.1	0.6	4.2	1.4	3.1	1.1	3.1	1.0
Two or more, NE and P		9.7	15.5	17.1	27.1	17.1	28.1	18.5	33.0
Job sector:									
A. Agriculture		4.6	7.6	3.1	8.6	2.0	3.9	5.5	13.5
B-F. Industry		27.1	53.4	21.9	44.6	18.3	47.3	16.1	49.2
G-N. Services		28.8	23.2	28.6	24.4	30.3	29.5	26.8	19.9
O. Public		8.0	6.5	9.8	7.1	10.7	6.5	10.4	6.5
P. Education		14.6	4.4	19.4	7.5	20.0	6.5	24.2	6.1
Q. Health		13.1	2.6	13.0	4.1	13.3	2.9	13.4	2.8
R-U. Other		3.8	2.4	4.2	3.7	5.4	3.4	3.5	2.0
Occupation (ISCO):									
1: Managers		3.5	6.0	6.1	10.0	7.3	9.3	3.4	6.1
2: Professionals		13.0	7.5	15.5	12.7	24.9	12.9	21.2	8.0
3: Technicians and associate professionals		22.8	17.2	17.4	8.8	18.8	11.0	23.1	14.0
4: Clerical support workers		15.7	3.0	16.2	4.0	13.5	4.4	12.7	3.1
5: Service, shop and market sales workers		15.5	5.2	13.0	6.5	12.9	8.5	17.1	5.8
6: Skilled agricultural, forestry, and fishery workers		2.1	1.3	1.3	2.6	0.5	0.8	1.4	1.0
7: Craft and related trades workers		4.8	29.6	4.1	29.7	4.7	25.3	2.4	27.1
8: Plant and machine operators, and assemblers		8.2	22.4	7.6	17.3	0.8	17.8	2.1	22.6
9: Elementary occupations		14.4	7.7	18.8	8.3	16.6	10.0	16.6	12.4
Observations		29,865	41,907	32,223	37,800	19,967	30,821	9,313	19,978

Source: Own calculations based on EU-LFS data.
[x]E stands for 'all employed', NE for 'somebody non-employed', P for 'with partner', and NP for 'without partner'.

retirement (average difference of 5 pp.), while non-retired men were more likely than women to no longer be working at all (average difference of 6 pp.).

Table 4 also presents the sample's descriptive statistics. Most of the individuals in the analysed samples had secondary education, and relatively large shares of people in Hungary and in Poland had tertiary education. In Hungary, the share of people with primary education was also large. The share of women living alone was larger (about 20%) than that of men (about 9%). Most of the people shared their household with at least one other person. The men were more likely than the women to be living with a spouse/cohabiting partner (on average, 85% versus 65%). Most of the individuals (almost two out of three) were living with someone who was non-employed. Many of the men aged 60–64 were employed in industry, while relatively large shares of the women were employed in the service, education, or health sector. Large shares of the workforce aged 60–64 were working in high-skilled occupations; i.e. as a professional, an associate professional, or a technician. The women were often working in clerical support jobs or in service or sales jobs; while the men were often working in manual jobs, such as craft and related trades jobs, or as plant and machine operators or assemblers.

5. Job retention at the worker level - econometric results

5.1. Correlates of job retention in the 60–64 and 55–59 age groups

Table 5 presents the results for the pooled OLS model of job retention for individuals aged 60–64 and 55–59, with country and gender fixed effects. The base model is reported in column [1], while column [2] and [3] include additional control variables – respectively, individual incomes and replacement rates.[8]

First, we find a set of statistically significant correlates of job retention in the age group of 60–64. These include higher education levels, living with an employed person (especially a partner) or living only with a non-employed partner, sectors (lowest probability of retention in industry, and highest in the health[9] and 'other'[10] sectors). Managers, professionals, technicians and associate professionals, as well as clerical support workers were among the occupations with the highest probability of retention. However, the coefficients on occupations become insignificant or negative (for managers and professionals) once we control for income. Also, the goodness of fit increases significantly when controlling for income. Thus, the relationship with occupations was driven by the associated income levels as employees from the top four income deciles were much more likely to retain their jobs. One must also note that this link likely reflects other factors as well, e.g. health, as healthy individuals are likely to have higher earnings. Replacement rates show a statistically significant association with the probability of job retention: higher pension income (in relation to previous earnings) lowers the probability of remaining in one's job. This result stands in line with the previous finding for incomes, as higher-earning individuals are likely to have lower replacement rates (due to the redistributive nature of pension systems and pension caps).

We also note some differences between the workers aged 60–64 and the workers aged 55–59. Notably, among people aged 55–59 the differences in retention probabilities of secondary and tertiary educated workers was less pronounced. Moreover, workers aged 55–59

Table 5. Marginal effects for job retention from linear regression models, people aged 60–64/55–59 and working five years earlier.

	Base [1]		Including income [2]		Including replacement rates [3]	
	55–59	60–64	55–59	60–64	55–59	60–64
Female	−0.28***	−0.12***	−0.19***	−0.06***	−0.28***	−0.15***
Country:			Base level: Czechia			
Hungary	−0.11***	−0.11***	−0.09***	−0.12***	−0.08***	−0.07***
Poland	−0.13***	0.04**	−0.20***	0.00	−0.12***	0.04**
Slovakia	−0.02	−0.06***	−0.01	−0.05***	−0.02	−0.04**
Female × Hungary	0.07**	−0.06***	0.06**	−0.10***	0.02	−0.13***
Female × Poland	0.20***	0.09***	0.18***	0.06***	0.20***	0.13***
Female × Slovakia	0.10***	−0.02	0.15***	0.01	0.17***	0.16***
Prob. employed 5 years before	0.07	0.09**	0.10***	0.08**	0.08*	0.17***
Education:			Base level: Medium			
Low	−0.04***	−0.03***	−0.01	−0.03***	−0.04***	−0.01
High	0.03**	0.09***	−0.03***	0.04***	0.03**	0.07***
Household (other people)[×]: Base level: Living alone						
One, E and NP	0.04***	0.02*	0.04***	0.02**	0.05***	0.02
One, E and P	0.06***	0.08***	0.05***	0.07***	0.06***	0.08***
One, NE and NP	−0.01	−0.01	−0.00	−0.01	−0.01	−0.00
One, NE and P	−0.03***	−0.06***	−0.02***	−0.05***	−0.02***	−0.06***
Two or more, E and NP	0.03**	0.01	0.03**	0.01	0.03*	0.01
Two or more, E and P	0.10***	0.11***	0.09***	0.10***	0.10***	0.11***
Two or more, NE and NP	0.00	−0.01	0.01	−0.01	0.00	−0.01
Two or more, NE and P	0.03***	−0.01	0.03***	−0.00	0.03***	−0.01
Occupation (ISCO):			Base level: ISCO 5. Service, shop and market sales workers			
1. Managers	0.24***	0.11***	−0.17***	−0.14***	0.24***	0.12***
2. Professionals	0.21***	0.11***	−0.11***	−0.07***	0.21***	0.12***
3. Technicians and (…)	0.19***	0.07***	−0.05***	0.01	0.19***	0.08***
4. Clerical support workers	0.14***	0.05***	0.01	0.02**	0.15***	0.05***
6. Skilled agricultural, (…)	−0.02	−0.02	−0.04**	−0.12***	−0.02	−0.02
7. Craft and related (…)	0.09***	−0.02**	0.03***	0.00	0.09***	−0.02**
8. Plant and machine (…)	0.10***	−0.02**	0.01	−0.03***	0.10***	−0.03***
9. Elementary occupations	−0.03***	−0.01	−0.02**	−0.01	−0.03***	−0.01*
Sector (NACE):			Base level: G-N. Services			
A. Agriculture	0.05***	−0.01	0.07***	−0.01	0.05***	−0.01
B-F. Industry	−0.02***	−0.03***	−0.02***	−0.03***	−0.02***	−0.03***
O. Public	0.06***	0.04***	0.04***	0.02*	0.05***	0.03***
P. Education	0.11***	0.02*	0.14***	0.09***	0.12***	0.02*
Q. Health	0.09***	0.07***	0.10***	0.07***	0.10***	0.07***
R-U. Other	0.09***	0.11***	0.09***	0.09***	0.09***	0.10***

Year:			Base level: 2003 (or 2005 if 2003 not included)			
2004	−0.07***	−0.04***	−0.06***	−0.03**	No data on rep. rates in 2003–04	
2005	−0.05***	−0.03*	−0.04***	−0.01		
2006	−0.03**	−0.03*	−0.02*	−0.02	0.02***	−0.01
2007	−0.02	−0.02	−0.01	−0.00	0.03***	−0.00
2008	−0.01	−0.02	−0.00	−0.01	0.04***	−0.01
2009	0.01	−0.03*	0.01	−0.02	0.06***	−0.02*
2010	0.04***	−0.02	0.03***	−0.02	0.09***	−0.01
2011	0.08***	−0.00	0.08***	0.00	0.12***	0.00
2012	0.10***	0.01	0.12***	0.02	0.14***	0.02*
2013	0.13***	0.04***	0.16***	0.06***	0.18***	0.06***
Mean replacement rate × 100					−0.01**	−0.02***
Income from main job:			Base level: 5th decile			
1st decile			−0.00	0.22***		
2nd decile			−0.19***	−0.00		
3rd decile			−0.16***	0.03		
4th decile			−0.06***	0.02*		
6th decile			0.02	−0.01		
7th decile			0.16***	0.20***		
8th decile			0.33***	0.31***		
9th decile			0.42***	0.38***		
10th decile			0.48***	0.56***		
Constant	0.46***	0.24***	0.47***	0.17***	0.90***	1.06***
Observations	395,471	221,874	395,471	221,874	377,732	213,749
R-squared	0.12	0.11	0.21	0.21	0.12	0.11

Note: Standard errors clustered at country-gender-education-region level.

Source: Own estimations based on the EU-LFS data.

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$; [×]E stands for 'all employed', NE for 'somebody non-employed', P for 'with partner', and NP for 'without partner'

had a higher probability of retention when living with two or more people (except for the case when none of them was a partner and none of them were employed). At the same time, they were more likely to retain jobs in agriculture and education or when employed as craft and related trades workers or plant and machine operators and assemblers.

There are clear differences in the probabilities of job retention among the four countries studied, once compositional factors are accounted for. For men in the age group of 60–64, the retention probabilities were on average lowest in Hungary. Also Slovakian male workers had lower probability of retention than the Czech workers. Polish workers were the most likely to retain jobs in the age group of 60–64 – and least likely to do so in the age group of 55–59. Thus, their high job retention rates in the older age group were likely shaped at least partially by a selection effect. In all four countries women had lower probabilities of retention than men, though in Poland the differences were not as pervasive. The differences in Poland and Slovakia become even smaller once we control for income levels or replacement rates. Finally, there was no general trend of an improving probability of retention among people aged 60–64.

For the workers aged 55–59, Czechia and Slovakia evidenced the highest retention probabilities but Czechia also evidenced the largest gaps between men and women. Moreover, it seems that the retention probability for workers aged 55–59 picked up after the Great Recession (2010–2013).

The differences in the probabilities of job retention among the CEE4 countries cannot be thus explained by the different compositions of their workforces, and might seem striking in the light of the overall similar institutional settings of these four countries. Yet, differences in the design of the pension schemes do exist among the CEE4 (cf. Table 2), and the low probabilities of job retention of Hungarian and Polish workers (especially at the age 55–59) are clearly correlated with the high levels of expenditure on anticipated old age pensions, the numbers of their beneficiaries as well as the generosity of other early retirement pathways due to reduced capacity to work or for labour market reasons.

5.2. Country and gender specific correlates of job retention

Table 6 replicates the base model [1] from Table 5, separately for each country-gender group, among workers aged 60–64. This exercise shows some notable differences in the characteristics of retained workers among the four countries.

First, the link between educational attainment and probability of job retention was more nuanced. In all countries the difference between the low and secondary educated workers was less pronounced (or even insignificant) among women and in Czechia lower educated women actually had a higher probability of retention than the secondary educated ones. Moreover, the association between living with an employed partner and retention probability was stronger among men than it was among women. Women, however, were less likely to retain jobs if they were living with a non-employed partner and the relationship was stronger than among men.[11]

Workers in high-skilled occupations were most likely to retain jobs – in all cases except for men in Hungary, while the relationship for women in Hungary was significant only at a 10% level and of low magnitude. Surprisingly, men were more likely to retain jobs in the education sector than in the service sector, but the opposite was true for women.

Table 6. Mean marginal effects for job retention from linear regression models, people aged 60–64 and working five years earlier.

	Czechia		Hungary		Poland		Slovakia	
	Female	Male	Female	Male	Female	Male	Female	Male
Prob. employed 5 years before	0.22**	0.26*	0.01	0.07	0.21***	0.05	0.16**	0.18**
Education:				Base level: Medium				
Low	0.03*	−0.04*	−0.04**	−0.06***	−0.02	−0.06***	−0.01	−0.03
High	0.08	0.07**	0.06**	0.10***	0.09***	0.07**	−0.02	0.05
Household (other people)[×]:				Base level: Living alone				
One, E and NP	0.04	0.01	0.05*	0.00	0.00	0.01	0.01	0.11
One, E and P	0.02*	0.12***	0.11***	0.13***	0.01	0.11***	0.05	0.16***
One, NE and NP	0.01	0.04	−0.01	0.03	0.03	−0.13***	−0.02	0.03
One, NE and P	−0.07***	−0.05**	−0.07***	−0.04**	−0.06***	−0.01	−0.05*	−0.03*
Two or more, E and NP	−0.01	0.05	0.04	0.12	−0.04	0.04	−0.03	0.02
Two or more, E and P	0.10***	0.19***	0.06	0.11***	0.07	0.11***	0.07	0.19***
Two or more, NE and NP	0.08**	−0.09**	0.04	0.02	−0.01	−0.06	−0.03	−0.01
Two or more, NE and P	−0.04***	0.02	−0.01	0.03*	−0.03	0.03	−0.02	0.04
Occupation (ISCO):				Base level: ISCO 5. Service, shop and market sales workers				
1. Managers	0.11***	0.19***	0.04*	0.00	0.11***	0.14***	0.09**	0.11**
2. Professionals	0.06***	0.15***	0.05	0.04	0.10***	0.19***	0.10***	0.13***
3. Technicians and (…)	0.06***	0.11***	0.04*	−0.04	0.11***	0.10***	0.03	0.03
4. Clerical support workers	0.04***	0.10***	0.01	−0.05*	0.05***	0.09***	−0.01	0.07***
6. Skilled agricultural, (…)	−0.01	0.00	−0.04	−0.05	0.05	−0.05	−0.05	−0.01
7. Craft and related (…)	−0.01	0.05	−0.00	−0.06**	−0.03	−0.04*	−0.08***	−0.02
8. Plant and machine (…)	−0.00	0.04*	−0.00	−0.05**	−0.08***	−0.04**	0.01	−0.01
9. Elementary occupations	−0.01	−0.04**	0.02	−0.04*	0.02	−0.02	−0.00	−0.01
Sector (NACE):				Base level: G-N. Services				
A. Agriculture	−0.02*	−0.00	0.00	−0.04**	−0.02	0.06**	−0.01	−0.04*
B-F. Industry	−0.03**	−0.03*	−0.06***	−0.03*	−0.03	−0.01	−0.04**	−0.02
O. Public	0.05**	−0.01	−0.02	−0.03**	0.03	0.13***	−0.01	−0.01
P. Education	−0.00	0.05**	−0.02	0.05*	−0.01	0.12***	−0.02	0.07
Q. Health	0.05***	0.04	0.04	0.10*	0.05*	0.22***	0.06**	0.08**
R-U. Other	0.07***	0.09***	0.06*	0.14***	0.07	0.20***	0.13***	0.05
Year:				Base level: 2003				
2004	−0.01	0.00	0.01	−0.00	−0.07	−0.16***	−0.08**	0.05***
2005	−0.00	0.06**	−0.05	−0.00	−0.08	−0.15***	−0.04	0.10***
2006	0.00	0.06**	−0.10**	−0.02	−0.08	−0.14***	0.00	0.09***
2007	−0.01	0.09***	−0.09*	−0.04	−0.10	−0.11***	0.06	0.14***
2008	−0.01	0.10***	−0.14***	−0.08***	−0.09	−0.11***	0.05	0.21***

Table 6. Continued.

	Czechia		Hungary		Poland		Slovakia	
	Female	Male	Female	Male	Female	Male	Female	Male
2009	−0.01	0.09***	−0.17***	−0.09***	−0.06	−0.15***	0.04	0.19***
2010	−0.03**	0.08***	−0.19***	−0.08***	−0.03	−0.12***	0.07	0.17***
2011	−0.03	0.08***	−0.19***	−0.07***	−0.01	−0.07**	0.05	0.16***
2012	−0.02	0.12***	−0.19***	−0.08**	−0.00	−0.04	0.02	0.20***
2013	0.02	0.14***	−0.18***	−0.02	0.00	−0.00	0.08	0.18***
Constant	0.03	−0.02	0.32***	0.21***	0.16**	0.31***	0.06	−0.06
Observations	29,865	41,907	32,223	37,800	19,967	30,821	9,313	19,978

Note: Standard errors clustered at country-gender-education-region level.
Source: Own estimations based on the EU-LFS data.
***$p < 0.01$; **$p < 0.05$; *$p < 0.1$; [×]E stands for 'all employed', NE for 'somebody non-employed', P for 'with partner', and NP for 'without partner'.

The potential sample selection (i.e. the probability of having worked five years earlier) turned out to be statistically significant for all workers in Czechia and Slovakia and for women in Poland. Thus, in these cases, the individuals belonging to groups with higher employment rates at ages 55–59 were subsequently more likely to remain in the same jobs at ages 60–64.

Our results also show that the otherwise unexplained changes in the probability of retention followed different time trends for the distinguished groups. Men in Czechia and Slovakia experienced a growth in the likelihood of job retention, which was focused before 2009 in both countries, with also a further increase in the years 2011–2013 in Czechia. Poland evidenced a plunge in the retention probability in 2004 but it increased over the next years to return to its 2003 level in 2013. Contrary to that, men in Hungary experienced a decrease in retention probability up until 2013 when the trend was reversed. However, women in that country experienced a huge decrease in retention probabilities between 2003 and 2010 and it did not recover. Finally, the retention probabilities for women in Poland also experienced a drop between 2003 and 2008 but the changes were not significant and recovered by the end of the period (2011–2013).

5.3. The decomposition of retention rate changes over time

In the next step, we decompose the changes in the predicted retention rates using the Blinder–Oaxaca methodology (Blinder, 1973; Oaxaca, 1973), and particularly its three-component extension (e.g. Jones & Kelley, 1984). We seek to find out to what extent the recorded changes in the retention rates were related to changes in endowments; that is, in the composition of employment (by characteristics which influence the retention probabilities), and to what extent they were related to the changes in the estimated coefficients which are associated with particular characteristics' correlations.

To this end, we analyse the changes between 2003–2005 and 2011–2013 by modelling the two periods separately with a linear model analogous to the base models in Table 6, but without year dummies. We use three years of data for the start and end in order to average out possible single-year deviations from the general trend. We decompose the changes into the contributions of the change in variable values (endowments), coefficients, and interactions; in line with the following equations:

$$PRP_{2011-2013} - PRP_{2003-2005} = Endowments + Coefficients + Interaction,$$
$$Endowments = (X_{2011-2013} - X_{2003-2005}) * \beta_{2003-2005},$$
$$Coefficients = (\beta_{2011-2013} - \beta_{2003-2005}) * X_{2003-2005},$$
$$Interaction = (X_{2011-2013} - X_{2003-2005}) * (\beta_{2011-2013} - \beta_{2003-2005}),$$

where:

- PRP_{t-t+2} is the predicted retention rate averaged for the period from year t to year $t+2$,
- X_{t-t+2} is the vector of correlates for the period from year t to year $t+2$, and
- β_{t-t+2} is the vector of parameters (including the intercept) for the period from year t to year $t+2$.
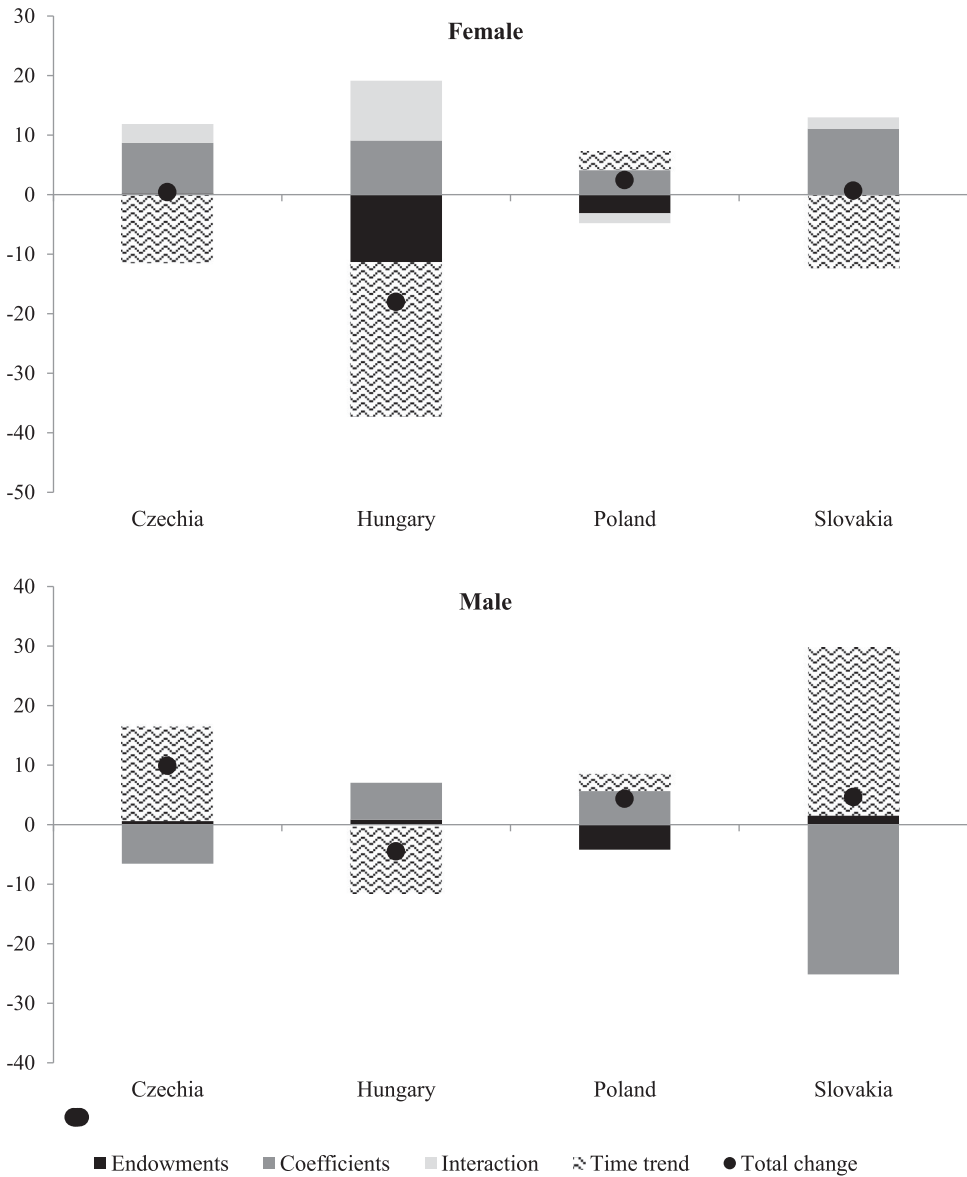
Figure 3. Three-component decomposition of the changes in the predicted job retention rates between 2003–2005 and 2011–2013 among people aged 60–64 in the CEE4 (in pp.).

Note: The change for Slovakia is between 2006–2008 and 2011–2013. Source: Own estimations based on the EU-LFS data.

Figure 3 presents the changes decomposed into aggregated contributions of changes in endowments, coefficients, the time trend (the change in the intercept), and interactions.

Our results show that the changes in coefficients were the dominant factor behind changes in the predicted retention rates between 2003–2005 and 2011–2013. These changes had a substantial positive effect on the retention rates of women in all four countries and on retention rates of men in Hungary and Poland. This means that in these groups of workers the characteristics of older individuals (personal and workplace)

had become more conducive to remaining in the same job in 2011–2013 than they were in 2003–2005. The opposite was the case among men in Czechia and Slovakia. The changes in characteristics (endowments) made a noticeable negative contribution only among women in Hungary and both men and women in Poland. This means that the characteristics of workers in these groups changed to ones less conducive to job retention by 2011–2013.

We found that the single variable that contributed most was the probability of having worked five years earlier, which suggests that an increasing selection into a longer working life was already taking place at ages 55–59. This result also underlines the importance of high levels of employment at the late prime-age stage for employment prospects in the pre-retirement stage. This effect was particularly noticeable among women in Czechia, Hungary, and Slovakia and among men in Hungary and Poland. For women in Poland and Slovakia, education became less conducive to job retention by 2011–2013. Among workers in Slovakia, the probability of non-retention became larger for those who were living with non-working people in the household. Among women in Poland and Slovakia as well as men in Hungary, workers in high-skilled occupations became much more likely to remain in the same job when reaching the age of 60–64. However, among men in Czechia, plant and machine operators and assemblers and craft and related trades workers became much less likely to retain their jobs when reaching the age of 60–64. The exact contributions of all explanatory variables for women and men are available upon request.

Importantly, except for Poland, the contributions of time trends (of the change in the intercept) were of comparable or larger magnitudes than those of endowments, coefficients, and interactions together. These contributions were positive for both male and female workers in Poland and among men in Czechia and Slovakia. This suggests that the overall job retention probabilities were increasing over time for these workers. The opposite was the case for women in Czechia and Slovakia and among both male and female workers in Hungary. In three instances, these increases in overall job retention probabilities overlapped with changes in the statutory retirement age or pension system reforms aimed at prolonging working lives. In Poland, early retirement eligibility was limited in 2009 and the statutory pension age was increased in 2012 (Chłoń-Domińczak, Strzelecki, & Łątkowski, 2016, found that these reforms had a positive effect on the employment rates of older workers in Poland). The statutory retirement age increased over the study period from 61.2 to 62.5 for men and from around 57 to around 59.5 for women in Czechia, as well as from 60 to 62 for men and from around 55 to around 59.1 for women in Slovakia. Thus, in Czechia and Slovakia the changes of the statutory retirement age were mostly likely to affect men aged 60–64 and women aged 55–59 (estimation results – available upon request – show a large positive trend in job retention probabilities among women aged 55–59). While we are not able to test for the causality of these reforms, we think that these developments were related. In contrast, in Hungary the retention rates decreased, especially among women, despite their statutory retirement age having increased from 59 to 62 during the period studied. However, Cseres-Gergely (2014) notes that the increase in statutory retirement age of women in Hungary reduced the retirement pension claims but that the effect was counterbalanced by additional disability pensions claims, which also explains why the retention rates of women failed to increase.

5.4. Robustness

We ran a series of robustness checks of our analysis. First, we used a probit model instead of a linear regression as the dependent variable can only take two values. Second, to account for the often simultaneous decisions of non-retention and retirement, we modelled job retention and retirement decisions jointly with a seemingly unrelated regression and bivariate probit models. The second dependent variable in these two specifications was being a non-retired worker – i.e. the case when the main labour status (as defined in the EU-LFS) is not described as retirement or early retirement. The results confirmed the main findings, both with respect to the large country and gender differences in the probabilities of job retention, and to the differences in their correlates. Moreover, we repeated our regression analyses without the workers employed for fewer than 5 years in the sample (see Section 3). In principle, this makes most of our estimates larger. This is because this group of workers includes at least some people who worked five years earlier and remained in employment (though changed jobs). As such, on average, this group of workers shares more characteristics with the retained workers than with workers who became non-employed. Excluding this group from the denominator would increase the retention rates (as the relative share of workers marked as retained would increase) but would not affect their changes significantly (see also Figure 2 in Section 2.2). The results are available from the authors upon request.

Admittedly, while the estimated relationship with demographic factors is likely a causal one, we cannot claim that for all of our explaining variables. Factors like gender or education are set a long time before the age of 55–64 and thus can be considered exogenous. The same cannot be said of factors like occupation, sector or household composition. It is likely that these factors influence the retention rates and at the same time are influenced by the prior retention at younger ages or that both these factors and retention are influenced by omitted variables describing labour market conditions. However, this does not invalidate the importance of our study as our main focus is on describing the groups at higher risk of non-retention. Estimating the correlates of job retention contributes to the understanding of job retention processes.

Moreover, our results obviously reflect a partial equilibrium only and it is possible that the correlates will change in the future. These correlates might be further moderated by the ongoing processes of population aging, technology-driven deroutinisation of labour markets or by the changes to the statutory retirement age. Indeed, our findings already suggest some significant differences across countries and years that are potentially linked to such processes.

6. Conclusions and policy implications

Dealing with population ageing and the problems associated with prolonging working lives are some of the main challenges facing European countries. As older workers tend to have more difficulties than younger ones in finding new employment, it is crucial to understand the factors that can help older workers to keep their job and remain in the workplace longer. Public policy should support these processes. In this paper, we analysed some of the factors associated with job retention among workers approaching retirement age in four Central Eastern European countries. While much has been said about the

demand for older workers, employer-side strategies, and the factors that influence the decision to keep working, such as pensions; there has been less discussion about the national context and the individual characteristics of the people who retain their job as they approach retirement. Our research fills this gap by analysing job retention among people aged 60–64 (and 55–59) in four Central European countries that experienced different changes in retention rates between 2003 and 2013.

We found that workers with lower educational attainment, in agriculture or industry, in a lower-skilled occupation, and living with a non-working partner were the least likely to retain their job. On the other hand, workers with tertiary education, in a high-skilled job, in the education or health sector, and living with a working partner were the most likely to remain in their job after the age of 60. The job retention rates of women were generally lower than those of men, a gap that can be attributed to some extent to a more pronounced sorting of women into low-skilled occupations by ages 60–64. Our analysis shows that the changes in job retention rates cannot be solely explained by the changes in transitions to retirement. However, our findings further indicate that the countries that experienced job retention rate increases that are attributable not to individual-level factors (education, sector of employment, etc.), but to overall improvements (Poland, Czechia), were also the countries that increased their statutory retirement ages or reduced access to early retirement.

Retirement policies constitute an important, but not the only component of policy packages aimed at increasing job retention and employment among older workers. Future policies should address the gender specificity of labour outcomes among older workers, and place a larger emphasis on job retention among workers with primary education, especially in the agricultural and industrial sectors. The largest improvements in retention rates can be made among female workers, especially if the employment rates of prime-age women increase. To this end, public policy can be tailored to address the sorting of older women into elementary occupations (in which the chances of job retention are relatively low) by providing additional childcare facilities, by offering improved healthcare and in-house support for people with poor health (which would allow their family members to continue working), and by supporting remote work.

In all of the countries we studied, the low-skilled workers were the least likely to remain in their job after reaching pre-retirement age. Therefore, more emphasis needs to be placed on training and continuous learning for older workers. Policies aimed at improving the quality of jobs would also bring benefits to older workers and help them to work longer. Such actions may focus on promoting flexible working arrangements, part-time work, and gradual retirement. But these initiatives should also focus on improving workers' health, expanding preventive measures, and providing health checks. Finally, it is crucial that policies that shift retirement to later stages in life and policies that improve employability and job quality among older workers complement each other in a coherent and well-coordinated policy mix.

Notes

1. Due to the small LFS sample size before 2006, the OECD retention rates for all age groups in Slovakia are reported for 2006 instead of for 2003.
2. In 2013, the largest gender gap in the OECD retention rates was 14 pp. in Czechia.

3. Except for female workers in Czechia until 2008.
4. We use 'job retention' and 'remaining in the workplace' interchangeably, but always refer to keeping the same job for at least five years.
5. The literature offers three main approaches to accounting for financial incentives to retire (or disincentives to stay on the labour market). The first one involves inclusion of the (present value of) future retirement incomes (and comparing them to potential job income streams). This approach is mostly used in theoretical/simulation models and papers (e.g. Stock & Wise, 1990; Berkel & Börsch-Supan, 2004; Asch et al., 2005; Blundell, French, & Tetlow, 2016). Benefit replacement rates are the second most commonly used measure of financial incentives to retire. These include both old age pension replacement rates (i.e. the relation of net pension to net previous earnings) as well as early retirement and disability schemes replacement rates (Kerkhofs, Lindeboom, & Theeuwes, 1999; Hanel, 2010; Van Soest & Vonkova, 2014). Thirdly, some authors account for implicit tax rates levied on further employment, usually for some typical workers (Diamond & Gruber, 1999). We follow the 2nd approach and add to our model information on replacement rates.
6. We also use current level of education for those who left the workforce during the five years prior to the survey, as continuing education is very rare at ages 55–64: in the CEE4 in 2013, only approx. 0.06% of people aged 60–64 attained their current level of education between 2009 and 2013 (own calculations based on EU-LFS data).
7. To do so we calculated the median income deciles within occupations in 2009 (with ISCO-88 occupational classification) and in 2011 (with ISCO-08 occupational classification) for each country, gender, and (when possible) part/full-time employment cell. We then imputed the resulting values to all such cells, using the data from 2009 for the imputations in years before 2011 and the data from 2011 for years 2011–2013.
8. Estimates in column [3] are based on a more restricted sample, since the replacement rates are unavailable for 2003 and 2004. We did re-estimate all the models using the sample restricted to 2005–2013 data as in column [3] and the results are consistent. Thus, the sampling difference between models [1][2] and model [3] does not impact the results. The estimates are available from authors upon request.
9. Many researchers have noted that around the world, the health sector in particular is burdened by the ageing of the population, and could benefit from the retention of older nurses and doctors (e.g. Heinen et al., 2013; or the review on the retention of older nurses by Uthaman, Chua, & Ang, 2016). In the CEE4, the health sector already has a relatively high retention rate.
10. The category 'other' consists of the following sectors: arts, entertainment, and recreation; other service activities; activities of households as employers; undifferentiated goods- and services-producing activities of households for own use; activities of extraterritorial organizations and bodies.
11. This finding is in line with the literature. Van Solinge and Henkens (2007) noted that the influence of the spouse on retirement decisions is ambiguous and Atalay and Barrett (2016) showed that raising the statutory retirement age of women increases the labour market participation of the husbands of the affected women.

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