STUDIA DEMOGRAFICZNE

1–2(181–182) 2022

Original research paper

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DOI: 10.33119/SD.2022.1-2.1

When do workers actually deactivate from the labour market? Non-routine transition from unemployment to retirement[1]

Abstract

The paper investigates the labour force attachment patterns of older workers up to six years prior to transitioning from registered unemployment to retirement. In the study we have identified periods of (un)employment and non-participation, applied sequence analysis and estimated a k-progressive competing risk multi-state model. We used administrative data from public employment offices in Poland referring to the entire population of workers born between 1940 and 1965 who retired directly from unemployment between 2001 and 2017. Our finding is

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[1] This article was prepared within the project: "Registered unemployment as a non-traditional route to non-participation of older workers. Recurrent event longitudinal data analysis" financed by the National Science Centre Poland, project no. UMO-2018/30/E/HS4/00335.

that, on average, 81% of all the observation time was spent in non-employment, and mostly in prolonged unemployment spells. Rates of unemployment were higher the closer workers were to their retirement. These workers tended to collect unemployment benefits as long as possible, and only 43% spent any time in employment during the observation period. Thus, it appears that these workers restricted their labour market activity while waiting to acquire pension benefit rights.

Keywords: older workers unemployment, retirement, transition pathways, multi-state models, recurrent event data, sequence analysis

Introduction

In this study, we examined the labour force participation patterns of older individuals in the late stages of their careers, investigating the research question of to what extent these individuals who have registered as unemployed before retirement could still be considered as the workforce, since the literature indicates they are potentially affected by certain factors diminishing their labour force attachment. Our scientific contribution lies in the following areas.[2] Firstly, we analyse the route to retirement as a multi-year process. We focus on a specific group of workers who have eventually retired directly from unemployment, and we examine their participation pathways in a period of up to six years prior to this transition to old-age non-participation. In particular, we explore the reduction of labour force attachment close to retirement. For our analysis we used administrative longitudinal data that cover the entire population of the studied individuals between 2001 and 2017. The observation period of up to six years was chosen arbitrarily. However, this time period is close enough to retirement so that we can assume that these workers had started thinking about collecting old-age pension benefits before, i.e. receiving transfers not requiring them to participate in the labour market.[3] At the same time, the six-year-long observation period is long enough to observe that these individuals still had incentives to actively participate in the labour market.

[2] Although our research provides additional insights into retirement transition patterns by focusing on routes to retirement other than the standard employment-retirement transition, it has major limitations. We observed only those individuals who retired directly from unemployment and who were registered as unemployed at a public employment office. Consequently, our results cannot be compared with the results for other groups of workers retiring from labour market states other than unemployment.

[3] In Poland, employees are protected against layoffs in the four years' time before they reach the retirement age.

Secondly, late-career unemployment and its relationship to subsequent transitions from unemployment to employment or non-participation provides a background for our analysis. As we assume that the workers who were waiting to fulfil old-age pension eligibility criteria were actually discouraged from active labour force participation, we also see evidence of a broadly defined discouraged worker effect. Thirdly, to our knowledge, there is no previous study that has investigated routes from unemployment to retirement using recurrent event data models.[4] We distinguish[5] between spells of unemployment, employment, and non-participation; and we apply sequence analysis and a flexible multi-state model to examine the recurrence of states.

Most of the previous research on retirement focused on retiring from employment (Gruber & Wise, 1999, 2004), and only rarely referred to retirement as to a process, or to non-traditional pathways (from unemployment) to retirement (for example, Marmora & Ritter, 2015). Unemployment regulations affect retirement behaviour (Garcia-Perez et al., 2013). Moreover, pension benefit policies that increase incentives to continue working at an older age can significantly reduce the labour force exit rate of older workers (Coile & Gruber, 2007). Low employment rates among older workers prior to reaching the retirement age have been explained by workers' distance to retirement, the generosity of the unemployment benefits system, and low demand for older workers (Encel, 2000; Hairault et al., 2010; Lee et al., 2018). A lack of job opportunities for older workers increases the risk of early retirement (Hutchens, 1988). In addition, if older workers become unemployed (Chan & Stevens, 2002) or have access to other forms of financial support, such as retirement benefits, they are more likely to retire early (Appold, 2004; Gałecka-Burdziak & Góra, 2016). Merkurieva (2016) estimated that late-career unemployment accelerates retirement by 15 months on average, although this effect was found to be weaker for workers who receive unemployment benefits. Still, it is clear that unemployment benefits represent an attractive income source, and that significant shares of workers collect these benefits prior to retirement (Coile & Levine, 2006). Thus, for the unemployed, the availability of unemployment benefits tends to shorten the job search duration, and to weaken the intensity of their job search (Rutledge, 2014).

[4] Those methods are rarely used in labour economics. There are a few exceptions, for instance, Akerlof and Main (1980), Heckman and Borjas (1980), or Trivedi and Alexander (1989), although none refer to our research area.

[5] In the paper, we mix the ILO definition of the labour market status (employed, unemployed, inactive) with being registered as unemployed, as actually all individuals (for example employed in a shadow economy, unemployed looking for work, inactive) can be actually registered as unemployed with an employment office.

Older workers are subject to the discouraged worker effect (Benati, 2001; Euwals et al., 2011; Filatriau & Reynes, 2012). Maestas and Li (2006) estimated that 13% of older non-employed workers could be characterised as discouraged workers.[6] This effect is often asymmetric and non-linear. The decrease in participation rates in response to a cyclical downturn tends to be greater than the increase in participation rates in response to an economic recovery (O'Brien, 2011). However, in the 1995–2016 period, older workers in Poland did not have an unemployment rate that exceeded the threshold value indicating the presence of this effect. In fact, over most of this period, these workers were influenced by the net added worker effect (Congregado et al., 2020).

The paper is organised as follows. In Section 1 we describe the institutional setting of the labour market for older individuals in Poland and the sample of workers registered as unemployed whose labour force attachment we explore further in Section 2. Section 3 provides the results of the longitudinal study of the transitions of older workers in the labour market.

Institutional setting of the labour market for older individuals in Poland and the sample description

In Poland, the early to mid-1990s marked a period of extensive adjustments to a new economic reality. Kula and Ruzik-Sierdzińska (2001) described the changes in the social security system, while an outline of the overall changes in the labour market can be found in a set of reports in *Employment in Poland* (various issues) and Lewandowski and Magda (2018). In the current study, we disregard the 1990–1994 period, which was prior to Poland's accession to the OECD, and was prior to the adoption of the *Act on employment and on measures counteracting unemployment* in 1995. Throughout the study period, the standard minimum retirement age at which a worker became eligible to receive pension benefits was 60 for females and 65 for males.[7] However, until the beginning of 2009, workers had access to a range of early retirement schemes that enabled them to leave the labour market long before the age limits cited above, provided they had a minimum number of years of pension contributions. The effective retirement age was 56.8 in 2004 and 59.3 in 2009. Between

[6] Maestas and Li (2006) defined discouraged workers as those job seekers who were willing to work at the prevailing wage but were unable to find a job.

[7] In 1999, the minimum retirement regulation replaced the standard retirement age. This means that workers are permitted to retire but are not required to do so. The minimum retirement age was raised in 2013 and was again lowered to 60/65 in 2017. See Buchholtz et al. (2020) for more information on the Polish pension system.

2009 and 2016, the average retirement age increased from 57.8 to 61 for women, and from 61 to 63.3 for men.

The *Act on promotion of employment and on labour market institutions* was adopted in 2004. Under this law, an individual could register as unemployed if he/she fulfilled certain requirements. While public employment offices in Poland require workers registered as unemployed to show that they are eager and ready to start working, they do not verify that workers are actually looking for a job. Moreover. they do not capture shadow economy employment. Thus, the Labour Force Survey (LFS) and the administrative data have always diverged. Between 1995 and 2016, an average of 72% of workers who were unemployed according to the LFS were registered with a public employment office as unemployed. On the other hand, around 61% of those registered with a public employment office were unemployed, according to the ILO definition adopted in the LFS.[8] Still, administrative data have some clear advantages. Registration is compulsory for workers who claim unemployment benefits, and all those who register with a public employment office are incentivised to provide information on preceding contributory periods. This information is complemented with each subsequent registration. In the study we mix the labour market status according to the ILO definition, namely, the actual economic activity in the labour market with the concept of being registered as unemployed with the public employment office. Hence, the persons in the study refer to both workers (as employed or unemployed, i.e. active) and inactive individuals in the labour market.

In the entire dataset (covering the 1990–2017 period), around 110,000 workers retired while registered with a public employment office as unemployed (around 2.2% of all workers ever registered, born between 1940 and 1965). Workers from the same birth cohorts who deregistered because of claiming pre-retirement benefits constituted almost 11% of the sample, while those who were claiming disability allowances made up 7.2% of the sample, and those who reached the minimum retirement age constituted 3% of the sample. The remaining 76.6% of the workers in the sample appeared in the administrative data but did not belong to any of these groups.

We focused on workers who retired from 2001 onwards (89.5% of the entire sample), and we examined their labour force participation (complete spells) in the period of up to six years before retirement.[9]

[8] We can also assess the population coverage by comparing administrative data to demographic data. Around 30% of those born in the 1940s, but more than 50% of those born between 1950 and 1965, ever appeared in a public employment office registry.

[9] Hence, we excluded workers who 'waited' without interruption in the unemployment pool prior to retirement for a period longer than six years (ca. 7,500 individuals). They spent, on average, 9.3 years in the unemployment pool and descriptive statistics are presented in the Appendix in Table A1.

Table 1. Descriptive statistics

	Statistics	Std. dev.
Sex (percentage distribution)		
males	0.495	-
females	0.505	-
Age at the beginning of the 1st spell (in years)	54.5	4.2
Age at the retirement transition (in years)	58	3.8
Educational level (percentage distribution)		
at most primary	0.427	-
vocational	0.268	-
secondary	0.235	-
at least post-secondary	0.070	-
Total tenure (in years)	27.9	8.5
Unemployment benefit duration (in months)[3]	7.6	4.1

Notes: no. of observations (individuals): 89,428, no. of observations for education: 88,626, no. of observations for total tenure: 84,735.

Source: own elaboration.

Table 1 compiles descriptive statistics of the sample. Almost two-thirds of females retired at age 55, and 17% retired at age 60; while two-thirds of males retired at age 60, and 12% retired at age 65. Workers retired rather at an even pace across time, apart from the year 2009, when we observed fewer retirements, the year of the change of formal regulations on the retirement age. Males had, on average, a total tenure that was seven years longer than that of females. The data also included (in 75% of cases) information on the occupation[10] in the last employment spell preceding each registration with a public employment office. In 83% of cases, workers were in routine manual jobs. In 8% of cases, workers were in routine cognitive jobs. Among the non-routine occupations that in total accounted for almost 9% of cases, the biggest share (around half) were non-routine cognitive personal jobs. Unemployment benefits were collected in 60% of the observed unemployment spells, and 65% of these cases ended with a transition to retirement. The peaks of collecting these benefits were especially visible around six months (7.8% of cases) and one year[11] (25% of cases).

[10] Occupations unified according to the international standard classification of occupations (ISCO-08) were assigned to task content groups according to Acemoglu and Autor (2011) and were adjusted to the Polish labour market by Hardy et al. (2018).

[11] Up to 1997, workers could collect unemployment benefits until they acquired pension rights if certain requirements were met. Thereafter, the maximum eligibility period was 18 months, and was shortened to 12 months at the beginning of 2009. The benchmark duration of the unemployment benefit length is six months.

Labour force participation patterns of the individuals registered as unemployed

We observed older individuals registered as unemployed on average for 3.2 ± 2 years, although the duration distribution was bimodal. Around one quarter of all workers were present in the data for a period of up to around 1.1 years, while another one-quarter of all workers were observed for at least 5.1 years. We distinguished four kinds of spells: Active Labour Market Policy (ALMP), employment, unemployment, and non-participation (all others). By unemployment we understand being registered as unemployed with a public employment office. Non-participation refers to the time which cannot be classified as employment or unemployment. In total, we observed 335,951 spells. Table 2 summarises the mean duration of particular types of spells. The distribution of the duration of all kinds of spells apart from ALMP, which is more heavily regulated, was right skewed. The unemployment spell that directly preceded the transition to retirement was, on average, much longer than the overall mean, of 15.7 ± 16 months. Interestingly, the last employment spell prior to retirement was also much longer, of 15.2 ± 14 months. Nevertheless, only 43% of the workers spent any time in employment in the observation period, and the accumulated time spent in employment lasted, on average, 1.8 years, and covered, on average, 40% of the observation period.

Table 2. Spell descriptive statistics (in months)

	Mean	Std. dev.
ALMP	5.3	3.8
employment	11.7	12.2
unemployment	12.9	14.2
non-participation	5.1	9.8

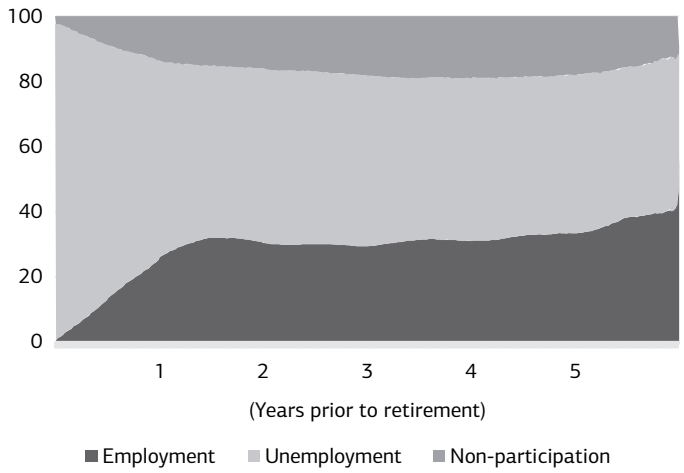
Source: own elaboration.

Figure 1 illustrates the shares of individuals with a particular status. Qualitative changes occurred five years and one year before the retirement transition (a decrease in the employment share and an increase in the unemployment share, respectively). Non-participation spells were relatively rare. Thus, most workers remained in some type of system (employment or unemployment) throughout the observation period.

In the next step, we examined sequences of labour market states. We investigated the patterns since the first unemployment spell in the observation period. We narrowed the sample to the workers who had up to six unemployment spells and up to four

intermediate states (employment including ALMP and non-participation) between unemployment spells. The sample consisted of 87,696 workers (representing 98% of the entire initial sample described in section 2). Out of this final sample, around 60% of workers had one unemployment spell and 22% had two such spells. Meanwhile, 30% of workers had any employment spell, and among these workers, 43% had multiple employment spells. In 80% of cases, the unemployment spell that ended in a retirement transition was preceded by a non-participation spell, but the median length of such spells was 30 days. In 20% of cases, such an unemployment spell was preceded by an employment spell, and the median length of such spells was one year. Individuals were twice as likely to exit from unemployment to employment as to non-participation. If we split ALMP from the employment spell, we see that in around 14% of cases the unemployment spell was followed by participation in an ALMP programme, but only 11% of these cases were followed by an employment spell, and 37% of these cases were directly followed by an unemployment spell. This indicates the relative ineffectiveness of efforts to move people into sustainable employment by means of ALMP.

Figure 1. Stacked tempogram of the shares of workers in a particular state in the labour market in the period of up to six years prior to transitioning to retirement (reverse counting – time to retirement)



Notes: the number of observed workers gradually (almost linearly) decreased the further from retirement workers were, from ca. 87,000 just before retirement, to ca. 50,000 three years before retirement, to 700 six years before retirement.

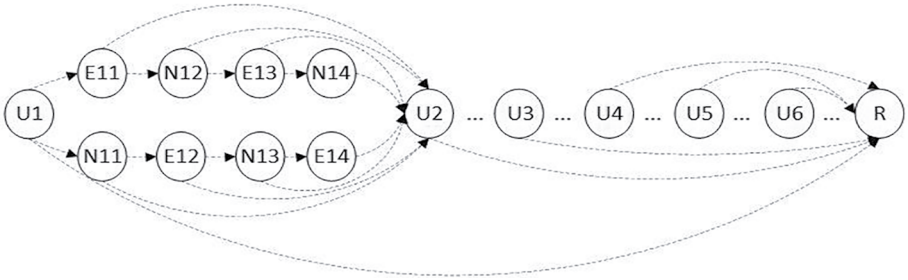
Source: own elaboration.

K-progressive competing risk multi-state model – the longitudinal approach to transitions in the labour market

We used a multi-state model (MSM) to investigate quantitatively pathways to retirement. In such models, individuals move among a finite number of states. If a state is transient, further transitions are possible; otherwise, the state is absorbing. A multi-state process (Meira-Machado et al., 2009; de Wreede et al., 2010) is a stochastic process $(X(t), t \in T)$ with a finite state space $S = \{1, \ldots, N\}$, where $T = [0, \tau]$, $\tau < \infty$ is a time interval and the value of the process at time t is the state occupied at that time. Over time, as the process evolves, history H_{t-} is generated over the interval $[0, t)$. It includes information on the preceding states, the timing of transitions, etc. The multi-state process is fully characterised by transition probabilities between states h and j: $p_{hj}(s,t) = \mathbb{P}(X(t) = j \mid X(s) = h, H_{s-})$, for $h, j \in S$, $s, t \in T$, $s < t$; or by transition intensities, which represent the instantaneous hazard of progression to state j conditionally on occupying state h: $\alpha_{hj}(t) = \lim_{\Delta t \to 0} \frac{p_{hj}(t, t+\Delta t)}{\Delta t}$ (Meira-

-Machado et al., 2009).

Figure 2. K-progressive competing risk full model (up to four states between unemployment spells)



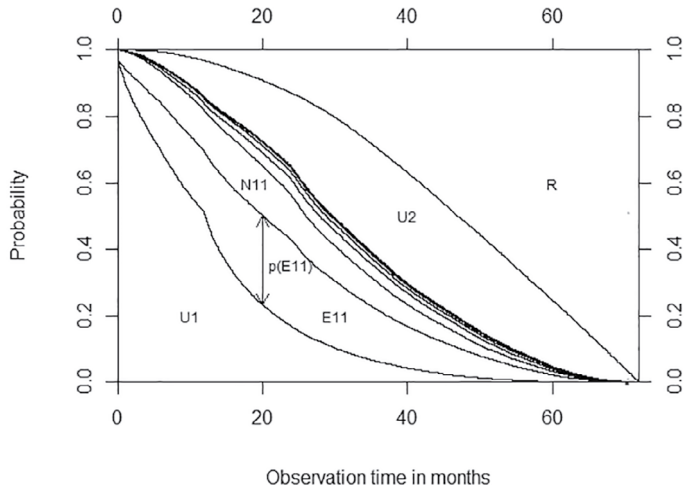
Notes: U1 – the first unemployment spell, E11 – the first employment after the first unemployment spell, N11 – the first non-participation after the first unemployment spell, E12 – the second employment after the first unemployment spell, N12 – the second non-participation after the first unemployment spell, and so on; R – retirement; arrows display possible transitions. The pathway occurs since the first unemployment spell; intermediate transitions between unemployment, employment, and non-participation are possible until retirement, which can occur only from unemployment. Workers can have up to six unemployment spells before retirement.

Source: own elaboration.

In the study we proposed a k-progressive model with competing risks (see Figure 2). The starting point was the first unemployment spell observed no sooner than six years prior to the retirement transition. Then, all possible pathways through labour market states were observed until the last transition from unemployment to retirement. Workers could have up to six unemployment spells and up to four intermediate states of employment and/or non-participation between consecutive unemployment spells. We applied non-parametric and semi-parametric methods to this Markov type model and used the *mstate* package in R for the computations (compare de Wreede et al., 2010). To check the robustness of the results, we estimated the model separately for workers who had a certain number of unemployment spells. For workers with only one unemployment spell, the model was reduced to a standard survival analysis model.

In the non-parametric estimates, we assumed a separate baseline hazard for each of the transitions and computed a transition probability matrix. Figure 3 displays the results by means of stacked transition probabilities for workers having two unemployment spells in the observation window before retirement. The vertical distance between two adjacent curves represents the probability of being in the corresponding state in a given moment.

Figure 3. Non-parametric estimates of stacked transition probabilities, workers with two unemployment spells



Notes: U1 – the first unemployment spell, E11 – the first employment after the first unemployment spell, N11 – the first non-participation after the first unemployment spell, etc; R – retirement; p(·) – probability of being in a given spell in a given moment, equal to the distance between two adjacent curves; e.g., p (E11) – probability of being in the first employment spell after the first unemployment spell in the 20th month of observation time.

Source: own elaboration.

In the semi-parametric approach, we focused on the impact of particular transition-specific covariates between certain states; for *h* and *j* (de Wreede et al., 2011):

$$\alpha_{hj}(t \mid \mathbf{Z}) = \alpha_{hj,0}(t)\exp\left(\beta^T \mathbf{Z}_{hj}\right),$$

where: $\alpha_{hj,0}(t)$ is the baseline hazard for this transition, $\mathbf{Z}$ is the vector of covariates at baseline, and $\mathbf{Z}_{hj}$ is the vector of transition-specific covariates. As previously, separate baseline hazard for each transition was assumed. Results are reported in Table 3.

Table 3. Semi-parametric estimates of the k-progressive competing risk model

Variable/estimate	Parameter estimate (standard errors)				
	two unemployment spells	three unemployment spells	four unemployment spells	five unemployment spells	six unemployment spells
observation time	–0.0022*** (0.000)	–0.0015*** (0.000)	–0.0013*** (0.000)	–0.0013*** (0.000)	–0.0015*** (0.000)
total tenure	0.0039*** (0.001)	0.0057*** (0.000)	0.0053*** (0.001)	0.0065*** (0.001)	0.0083*** (0.001)
occupation[1]					
routine manual	-	-	-	-	-
routine cognitive	–0.0344** (0.016)	–0.0355* (0.021)	–0.0707** (0.031)	–0.1000*** (0.038)	0.0231 (0.048)
non-routine manual physical	–0.0726** (0.030)	–0.0450 (0.039)	0.0093 (0.055)	0.0374 (0.072)	–0.0846 (0.070)
non-routine cognitive personal	–0.0330 (0.021)	0.0017 (0.027)	–0.1067** (0.046)	0.0355 (0.071)	–0.2234** (0.094)
non-routine cognitive analytical	–0.0301 (0.039)	–0.0133 (0.059)	–0.2775** (0.120)	0.0236 (0.100)	0.2067 (0.144)
sex					
females (U1→E11)	0.0012 (0.022)	–0.0611* (0.032)	–0.1451*** (0.047)	–0.0673 (0.064)	–0.2549*** (0.075)
females (U1→N11)	0.0739*** (0.027)	0.1410*** (0.043)	0.0636 (0.071)	0.1941* (0.011)	0.1751 (0.145)
females (U2→E21)	-	0.0662** (0.031)	–0.0575 (0.046)	–0.0113 (0.063)	–0.0701 (0.074)
females (U2→N21)	-	–0.0375 (0.046)	0.0974 (0.074)	0.1258 (0.115)	0.1159 (0.148)
females (U3→E31)	-	-	0.1052** (0.046)	–0.0595 (0.062)	–0.1367* (0.074)
females (U3→N31)	-	-	0.1762** (0.076)	–0.0448 (0.116)	0.0792 (0.151)
females (U4→E41)	-	-	-	0.0368 (0.062)	–0.1268* (0.074)
females (U4→N41)	-	-	-	0.0308 (0.119)	–0.1016 (0.154)

cont. Table 3

Variable/estimate	Parameter estimate (standard errors)				
	two unemployment spells	three unemployment spells	four unemployment spells	five unemployment spells	six unemployment spells
females (U5→E51)	-	-	-	-	0.0177 (0.074)
females (U5→N51)	-	-	-	-	0.1021 (0.152)
females (U2→R)	–0.0685*** (0.017)	-	-	-	-
females (U3→R)	-	–0.0545** (0.026)	-	-	-
females (U4→R)	-	-	–0.0546 (0.039)	-	-
females (U5→R)	-	-	-	–0.0047 (0.055)	-
females (U6→R)	-	-	-	-	–0.0022 (0.066)
unemployment insurance (UI):					
UI (U1→E11)	–0.1425*** (0.024)	–0.2333*** (0.033)	–0.2308*** (0.046)	–0.2536*** (0.061)	0.0484 (0.074)
UI (U1→N11)	–0.9397*** (0.028)	–0.9784*** (0.043)	–1.023*** (0.073)	–1.150*** (0.115)	–1.193*** (0.156)
UI (U2→E21)	-	–0.1617*** (0.031)	–0.1645*** (0.045)	–0.1334** (0.060)	0.1225 (0.076)
UI (U2→N21)	-	–1.122*** (0.052)	–1.015*** (0.082)	–1.104*** (0.132)	–1.496*** (0.175)
UI (U3→E31)	-	-	–0.2105*** (0.045)	–0.0433 (0.060)	0.0050 (0.074)
UI (U3→N31)	-	-	–1.177*** (0.089)	–1.666*** (0.147)	–1.844*** (0.198)
UI (U4→E41)	-	-	-	–0.2128*** (0.060)	0.0361 (0.076)
UI (U4→N41)	-	-	-	–1.1235*** (0.140)	–2.005*** (0.215)
UI (U5→E51)	-	-	-	-	–0.0151 (0.075)
UI (U5→N51)	-	-	-	-	–1.599*** (0.191)
UI (U2→R)	0.2806*** (0.010)	-	-	-	-
UI (U3→R)	-	0.1896*** (0.011)	-	-	-
UI (U4→R)	-	-	0.1753*** (0.014)	-	-
UI (U5→R)	-	-	-	0.1289*** (0.017)	-

Variable/estimate	Parameter estimate (standard errors)				
	two unemployment spells	three unemployment spells	four unemployment spells	five unemployment spells	six unemployment spells
UI (U6→R)	-	-	-	-	0.2060*** (0.020)
Concordance	0.729 (se=0.002)	0.679 (se=0.002)	0.647 (se=0.003)	0.628 (se=0.004)	0.617 (se=0.004)
Likelihood ratio test	27360 (df=13)	9383 (df=18)	3968 (df=23)	1971 (df=28)	1517 (df=33)
Wald test	23539 (df=13)	9371 (df=18)	4029 (df=23)	1952 (df=28)	1477 (df=33)
Number of events	53178	39960	24924	16889	13575

Notes: [1] – task-based occupation group in the employment preceding the last unemployment spell before the retirement transition, observation time expressed in days, total tenure expressed in years, *E* – employment, *N* – non-participation, *R* – retirement, *U* – unemployment. Each equation additionally included a dummy variable on the impact of the sex covariate on the transition from the first employment spell after a particular unemployment spell to a subsequent unemployment spell.

Source: own elaboration.

In each sample, the total observation time decreased the likelihood of subsequent transitions, while a longer total tenure increased the hazard of retirement transitions. The type of occupation performed (if employed) prior to the last unemployment spell before retirement diversified the transition to retirement to a limited extent. However, workers in all types of occupations were less eager to retire than workers in routine manual jobs. Sex variously diversified the hazard of transitioning out from unemployment to either employment or non-participation. When this hazard was statistically significant, females were usually disadvantaged in finding a job, and were more prone than men to the transition to non-participation. If, however, females found a job, they were more eager than males to register as unemployed after the job terminated. Females were also found to be less eager to retire than males, although the results were significant in two samples only. Claiming benefits generally discouraged individuals from transitioning out of unemployment, but in a diversified manner. It discouraged transitioning to non-participation (by as much as 70%–80%) more than finding employment (by 15%–30%). The only exception was that claiming benefits increased the hazard of transitioning to retirement by 14%–32%.

For the robustness check of the results, we re-estimated the above model using the education level covariate directly.[12] The point estimates were significant in the samples in which the occupation seemed irrelevant for the retirement transition. The higher

[12] The results are available upon request from the authors.

the level of education, the lower the chances of old-age economic deactivation were, from ca. 4% for those with vocational education, up to 8%–25% for those with at least post-secondary education, compared to those with primary education.

Conclusion

Our results indicate that workers who experienced late-career unemployment (understood as being registered with an employment office), and who eventually transitioned from unemployment to retirement, often had only a marginal attachment to the labour force. It appears that many of these workers deactivated long before they officially retired, and that their labour force participation in the pre-retirement period was marginal. On average, the individuals in the sample spent 81% of the observation time in non-employment states. The longer the time to retirement, the more likely the workers were to be employed. On average, however, these employment spells were shorter than the unemployment spells. Transitions from unemployment to employment were infrequent, and ALMP participation seldom led to employment. This finding may suggest that participating in ALMP programmes was a method to accrue the contributory spells needed to acquire pension rights and/or to earn some income. The latter strategy may have been especially attractive to workers who were not eligible to receive unemployment benefits. As the last unemployment spell of each individual was, on average, the longest one, it appears that many of these workers were simply waiting to become eligible for pension benefits.

Moreover, many of these workers were collecting unemployment benefits for long periods of time. This was likely to discourage them from transitioning out of unemployment to intermediate states (to non-participation rather than to employment). Workers with higher employability may have preferred employment to unemployment when they were offered a job. However, collecting unemployment benefits increased the hazard of transitioning to retirement. Knowing that they would soon be eligible to receive old-age pension benefits may have motivated these workers to use unemployment benefits as a temporary source of income before retirement. This tendency was also clearly visible for those who had only one unemployment spell.

Older individuals who were close to retirement did not fully contribute to the effective labour supply. Registered unemployment seems to have discouraged heavily or disturbed them from labour force attachment, and these workers remained actually inactive close to retirement to a large extent. It is, however, unclear whether older workers were waiting to retire voluntarily, or whether they were unable to find a job.

In either case it seems reasonable to expect that a combination of labour market policy programmes tailored to the demand and supply could increase the demand for old-age workers, and prevent the 'wait' strategies of older individuals registered as unemployed.

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Appendix

Table A1. Descriptive statistics of individuals who were registered with a public employment office for a period longer than six years directly prior to old-age benefit deregistration

	Mean	Std. dev.
Sex (percentage distribution)		
males	0.380	-
females	0.620	-
Age at the beginning of the 1st spell (in years)	49.3	4.1
Age at the retirement transition (in years)	58.8	3.3
Educational level (percentage distribution)		
at most primary	0.540	-
vocational	0.234	-
secondary	0.189	-
at least post-secondary	0.037	-
Total tenure (in years)	21.3	8.3
Unemployment benefit duration (in months) [3]	14.6	15.3

Notes: no. of observations (individuals): 7,582, no. of observations for education: 7,212, no. of observations for total tenure: 6,608.

Source: own elaboration.