Age-Specific Production Systems and Employment Duration

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Extended Abstract

We want to study the relation of age-specific programmes at the firm-level on transitions out of employment for older workers. These programmes are not uniform: some firms offer partial retirement plans whereas other firms encourage workers to stay longer by providing special training, specific workplaces or mixed-age teams. Our interest is to analyse the effects on individual employment duration, when the firm provides these kinds of age-specific production systems for its employees. According to human capital theory, training investment does not pay off for old workers when the expected time until employment exit or retirement is short. But as society ages and skill shortages arise, firms need to rethink treatment of older workers.

In this paper, we want to study relations of age-specific programmes for older workers and other determinants of transitions out of employment. Using German linked employer-employee data, we are able to analyse individual as well as firm-specific characteristics of transition rates. Individual determinants of employment exit and early retirement considerations have been investigated in the literature (Börsch-Supan, 2000), also institutional effects and incentives caused by unemployment benefits (Fitzenberger and Wilke, 2009). When using linked employer-employee data, a focus on firm-side determinants is feasible since labour supply and labour demand effects can be considered simultaneously. Wübbeke (1999) stresses the importance of firm-side characteristics for employment decisions near retirement age. Boockmann and Steffes (2009) analyse employment hazards for workers of every age with linked employer-employee data. Their main result is that exit rates are influenced strongly by firm characteristics, especially by the presence of works councils.

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Within the focus on older workers, it is important to separate age effects and effects caused by duration dependence. We set up a hazard rate model with simultaneous consideration of duration and age dependencies. So far, we are not aware that simultaneous modelling of duration and age dependence has been done in the literature. Employment exits for workers near retirement age have been analysed by Hanel (2008) with a hazard rate model, wherein she controls for duration dependence by dummy variables. For our analysis, we refer to Imbens (1994), who models duration and calendar time effects simultaneously and mentions that a similar model could be applied to age effects. This type of hazard rate estimator allows to separate the age effect from duration dependence. Our hazard rate model consists of three parts: a flexible piecewise-constant part for age dependence, a parametric part for duration dependence in form of a Weibull distribution, and an explanatory part containing covariates. All three parts enter the likelihood function multiplicatively, which is estimated by maximum likelihood. In principle it is possible to control for unobserved heterogeneity, as long as there is an analytical solution to the integral of the survival function. One way to circumvent implementation of unobserved heterogeneity into the hazard rate estimator could be to exploit the richness of our data by using firm dummies.

As our interest is in employment conditions for the workers aged 50 and above, we sample distinctively long employment spells. An inflow sample can not follow spells that have a long duration at the date of sampling, because time between sampling date and right-censoring is short. With stock sampling long spells can be sampled, but this kind of sampling has to deal with right- and left-censoring at the same time. Our estimator corrects for stock sampling, since in stock samples long-lasting employment spells are overrepresented compared to short spells. The correction for stock-sampled spells increases duration dependence and reduces age effects for the elderly, since they are more likely to be in an overrepresented long-lasting spell. Employment spells are left-censored before 1975 (8 percent). Sensitivity analyses will show whether it is necessary to correct the estimator for the occurrence of incomplete spell starts (see D'Addio and Rosholm, 2002).

Estimation results show that there is in fact a strong age effect when controlling for duration dependence. Our interest lies in the effects caused by age-specific production systems offered by the employer, such as specific workplaces, further training for the elderly, mixed-age teams, and also partial retirement. In fact, we seem to be the first to study impacts of firm-level programmes for older workers on individual employment duration. Do these programmes work in a way to reduce employment exits for older workers?

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