

Estimating Low Pay Transition Probabilities Accounting for Endogenous Selection Mechanisms¹

*Transizioni da e verso la “bassa retribuzione” in presenza di
selezione endogena*

Lorenzo Cappellari

Istituto di Economia dell’Impresa e del Lavoro, Università Cattolica di Milano,
Largo Gemelli 1, 20123 Milano, lorenzo.cappellari@unicatt.it

Stephen P. Jenkins

Institute for Social and Economic Research, University of Essex, Wivenhoe Park,
Colchester CO4 3SQ, UK, stephenj@essex.ac.uk

Riassunto: In questo lavoro si propone un modello per lo studio delle transizioni in entrata e in uscita dalla “bassa retribuzione” tenendo conto di diversi meccanismi di selezione endogena: il panel drop-out, la possibile non casualità delle condizioni iniziali, il fatto che la mobilità retributiva si può valutare per coloro che rimangono occupati. Il modello viene stimato per la componente maschile del campione della *British Household Panel Survey*. Le condizioni iniziali e la permanenza nel mercato del lavoro risultano essere processi di selezione non ignorabili. Il panel drop-out risulta ignorabile o non ignorabile a seconda di come vengono trattati i dati mancanti sulla retribuzione. Tuttavia, si osserva che alcuni dei modelli che tengono conto in modo più semplice dei diversi processi di selezione producono stime degli effetti delle covariate molto simili a quelle che derivano dall’applicazione del modello generale proposto.

Keywords: low pay, panel dropout, attrition, non-response, ignorability, panel data

1. Summary

This paper is a revised version of Cappellari and Jenkins (2004), and is under submission at *Journal of the Royal Statistical Society, Series C (Applied Statistics)*.

Among those who are currently in low paid employment, who is most likely to remain low paid the next year or to move to high paid employment? Among the high paid, who is most likely to become low paid? Answers to these questions are an important complement to the work of bodies such as the UK Low Pay Commission that focus on the prevalence of low paid employment in a given year using cross-sectional data. With panel data, we can see whether it is the same people who are stuck in low pay employment or whether there is fluidity in the membership of the low paid group. Persistent low pay exacerbates problems associated with one-off low pay episodes, for example difficulties in making contributions to private pension schemes, getting a mortgage, and saving more generally. Experience of low paid employment is associated

¹ ISER receives support from the University of Essex and the ESRC (centre funding for MiSoC and the ULSC).

with higher chances of becoming unemployed in the future (the ‘low pay – no pay cycle’) and, although the overlap between low pay and poverty is relatively low in any given year, the association between persistent low pay and poverty is much higher.

Multivariate regression models are an obvious source of information about how low pay transitions vary with characteristics, but their usefulness is contingent on a number of issues being addressed appropriately, including non-random panel drop-out (panel attrition), retention of employment, and non-random selection into low pay in the base year (the initial conditions issue). We propose and estimate transition probability models that account for these processes, demonstrating the feasibility of accounting for multiple endogenous selection mechanisms with panel data. As far as we are aware, we are the first to consider non-ignorable panel dropout, employment retention and initial conditions simultaneously and jointly with a model of earnings transition probabilities.

When our model is fitted to data for men from the British Household Panel Survey, we find that non-employment and initial conditions are non-ignorable selections, but conclusions about the ignorability of attrition depends on how item non-response on pay is treated. If employed men with item-response on pay are included in the estimation sample but treated as attriters, then attrition is non-ignorable. It is ignorable if one simply excludes men with item non-response from the estimation sample.

A sequence of simpler models nested within our general model, and which ignore one or more selection mechanisms, are also estimated in order to investigate whether neglecting endogenous selections makes a substantive difference to conclusions drawn. Models which incorporate only one endogenous selection when, in fact, several are relevant, did not perform well, even compared to the simplest model in which all endogenous selections are simply ignored. More positively, it appears that a model with fewer equations, in which retention is broadly to encompass both panel retention and employment, and initial conditions is also modelled, performs virtually as well as a general model. Estimates of covariate effects differ little from those derived from the general model. This is a useful result because the simpler models are easier and quicker to estimate.

References

- Cappellari, L., Jenkins, S. P. (2004), Modelling low pay transition probabilities, accounting for panel attrition, non-response and initial conditions. *ISER Working Paper 2004-08*, Institute for Social and Economic Research, Colchester.
<http://www.iser.essex.ac.uk/pubs/workpaps/pdf/2004-08.pdf>.