UNEMPLOYMENT DURATION AMONG YOUNG GRADUATE JOB SEEKERS

Rui Menezes[a] and Ana Cristina Ferreira[b]

[a]Department of Quantitative Methods, ISCTE Business School
Av das Forças Armadas, 1649-026 Lisbon, Portugal
rui.menezes@iscte.pt

[b]Department of Quantitative Methods, ISCTE Business School
Av das Forças Armadas, 1649-026 Lisbon, Portugal
cristina.ferreira@iscte.pt

Duration data have been used in research work in many applied fields of sciences, such as medicine, biology, engineering, sociology, demography, economics, finance and management. However, the use of this type of data raises a number of problems associated with statistical modeling and estimation techniques. One such problem area is censoring which can be right, left or interval censoring. Another problem is truncation ([1]). These will affect the construction of the likelihood function.

Duration data can be modelled within a discrete or a continuous time framework ([2]). For continuous time data, the Weibull, the exponential and the proportional hazards model have been widely used in applied work, namely in economics ([3]).

This paper considers some issues on the maximum likelihood estimation of continuous time duration models used for joblessness duration econometric data. We start by constructing the likelihood function for joblessness duration data in the presence of right censoring. We next consider the parametric estimation of the Weibull and exponential models. Next, we consider the partial likelihood method for estimation of the proportional hazards model. An empirical application using joblessness duration data for young graduates in Portugal is provided in order to exemplify the methods here described. Extensions of the basic models of duration data include the use of time varying explanatory variables, competing risks, recurrent events and frailty heterogeneity models ([4], [5]).

Keywords
Duration data, censoring, parametric estimation, proportional hazards, partial likelihood

References
[1] J.P. Klein and M.L. Moeschberger, "Survival Analysis: Techniques for Censored and Truncated Data", Springer-Verlag, New York, 1997.
[2] P.D. Allison, "Event History Analysis: Regression for Longitudinal Event Data", Series Quantitative Applications in the Social Sciences, 46, Sage Publications, 1984.
[3] N.M. Kiefer, "Economic Duration Data and Hazard Functions", Journal of Economic Literature, 26 (June), p. 646-679, 1988.
[4] D.W. Hosmer Jr. and S. Lemeshow, "Applied Survival Analysis: Regression Modeling of Time to Event Data", John Wiley & Sons, New York, 1999.
[5] J.D. Kalbfleisch and R.L. Prentice, "The Statistical Analysis of Failure Time Data", John Wiley & Sons, New York, 1980.