A nonparametric instrumental approach to endogeneity in competing risks models

Jad Beyhum [*]   Jean-Pierre Florens [§]

jad.beyhum@kuleuven.be   jean-pierre.florens@tse-fr.eu

Ingrid Van Keilegom[*]

ingrid.vankeilegom@kuleuven.be

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Abstract

This paper discusses endogenous treatment models with duration outcomes, competing risks and random right censoring. The endogeneity issue is solved using a discrete instrumental variable. We show that the competing risks model generates a nonparametric quantile instrumental regression problem. The cause-specific cumulative incidence, the cause-specific hazard and the subdistribution hazard can be recovered from the regression function. A distinguishing feature of the model is that censoring and competing risks prevent identification at some quantiles. We characterize the set of quantiles for which exact identification is possible and give partial identification results for other quantiles. We outline an estimation procedure and discuss its properties. The finite sample performance of the estimator is evaluated through simulations. We apply the proposed method to the Health Insurance Plan of Greater New York experiment.

Key Words: Survival analysis; Competing risks; Endogeneity; Instrumental variable; Partial identification.

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[*]ORSTAT, KU Leuven.
[§]Toulouse School of Economics, Université Toulouse Capitole.