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A Semi-Nonparametric Estimator of Regression Discontinuity Design with Discrete Duration Outcomes*

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Abstract

We consider the regression discontinuity (RD) design with the duration outcome which has discrete support. The parameters of policy interest are treatment effects on unconditional (duration effect) and conditional (hazard effect) exiting probabilities for each discrete level. We propose a novel semi-nonparametric estimator which exploits a flexible separability structure of the underlying continuous-time duration process. Simultaneous inference over discrete levels is nonstandard since the asymptotic variance matrix is singular with unknown rank. The peculiarity is delivered by the nature of the RD estimand, and we provide solutions. Random censoring and competing risks can also be allowed in our framework.

Keywords: Generalized Wald test; grouped duration data; semi-nonparametric models; proportional hazard; regression discontinuity; series estimator; treatment effects.

JEL classification: C21; C25; C41.

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