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Regression Discontinuity with Categorical Outcomes*

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Abstract

We consider the regression discontinuity (RD) design with categorical outcomes, and exploit the possibility of adapting well-developed microeconometric models to the RD setting. The channels through which the forcing variable affects the potential outcome distributions are constrained to be minimal, to preserve the nonparametric feature of the RD design. Focusing on general categorical outcomes (nominal or ordinal), we develop a new RD estimator based on a nonparametric extension of the well-known multinomial logit model. The key issues of selecting the optimal bandwidth and constructing confidence regions robust to bias correction, of which the solutions only exist so far for the local linear estimator and a single treatment effect, are addressed through the general approach of local likelihood. The proposed estimator and associated inference are easy to implement, and the codes in MATLAB and R are available as a supplement to the paper. They are demonstrated by two empirical applications and simulation experiments.

Keywords: Bandwidth selection; categorical outcomes; local likelihood; multinomial logit model; nonparametric models; regression discontinuity; robust inference.

JEL classification: C14; C21; C25.

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