

Instrumental variable approach to covariate measurement error in generalized linear models

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Abstract The paper presents the method of moments estimation for generalized linear measurement error models using the instrumental variable approach. The measurement error has a parametric distribution that is not necessarily normal, while the distributions of the unobserved covariates are nonparametric. We also propose simulation-based estimators for the situation where the closed forms of the moments are not available. The proposed estimators are strongly consistent and asymptotically normally distributed under some regularity conditions. Finite sample performances of the estimators are investigated through simulation studies.

Keywords Errors in variables · Generalized linear models · Heterogeneity · Measurement error · Instrumental variable · Method of moments · M-estimation · Nonlinear models · Simulation-based estimation