

# Regression Discontinuity Designs with Nonclassical Measurement

## Errors

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### Abstract

This paper develops novel regression discontinuity (RD) inferences where the binary treatment and/or continuous assignment variable may contain measurement errors. With a measurement error for the treatment, the standard RD estimator is inconsistent for the RD causal parameter since the measurement error for the binary variable is nonclassical by construction. To correct the problem, we propose a local linear generalized method of moments inference by utilizing the availability of an exogenous variable such as a covariate, instrument, or repeated measurement, and we derive its asymptotic properties. We then develop an identification analysis with a nonclassical measurement error for the assignment variable without additional information such as exogenous variables. Our analysis shows that, when there are agents who accurately report their assignment values, the standard RD estimand may identify a meaningful causal parameter for such agents.

*Keywords:* regression discontinuity; misclassification; local generalized method of moments; nonparametric inference; survey data.

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