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Identification of Additive and Polynomial Models of Mismeasured Regressors Without Instruments*

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Abstract

We show nonparametric point identification of a measurement error model with covariates that can be interpreted as invalid instruments. Our main contribution is to replace standard exclusion restrictions with the weaker assumption of additivity in the covariates. Measurement errors are ubiquitous and additive models are popular, so our results combining the two should have widespread potential application. We also identify a model that replaces the nonparametric function of the mismeasured regressor with a polynomial in that regressor and other covariates. This allows for rich interactions between the variables, at the expense of introducing a parametric restriction. Our identification proofs are constructive, and so can be used to form estimators. We establish root-n asymptotic normality for one of our estimators.

JEL codes: C14, C26

Keywords: Nonparametric, semiparametric, measurement error, additive regression, polynomial regression, identification.

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