Heterogeneous Treatment Effects with Mismeasured Endogenous Treatment*

Takuya Ura
Department of Economics
Duke University
takuya.ura@duke.edu

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Abstract

This paper studies the identifying power of an instrumental variable in the nonparametric heterogeneous treatment effect framework when a binary treatment variable is mismeasured and endogenous. I characterize the sharp identified set for the local average treatment effect under the following two assumptions: (1) the exclusion restriction of an instrument and (2) deterministic monotonicity of the true treatment variable in the instrument. The identification strategy allows for arbitrary measurement error: (i) the measurement error is nonclassical, (ii) the measurement error can be endogenous, and (iii) I impose no assumptions concerning the marginal distribution of the measurement error, so that I do not need to assume the accuracy of the measurement. I provide a consistent confidence interval for the local average treatment effect with uniformly valid size control. I show that the identification strategy can incorporate repeated measurements to narrow the identified set, even if the repeated measurements themselves are endogenous. Using the NLS-72 dataset, I demonstrate that my new methodology can produce nontrivial bounds for the return to college attendance when attendance is mismeasured and endogenous.

Keywords: Misclassification; Local average treatment effect; Endogenous measurement error; Instrumental variable; Partial identification

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