

An Instrumental Variable Approach for Identification and Estimation with Nonignorable Nonresponse

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Abstract: Estimation based on data with nonignorable nonresponse is considered when the joint distribution of the study variable y and covariate \mathbf{x} is nonparametric and the nonresponse probability conditional on y and \mathbf{x} has a parametric form. The likelihood based on observed data may not be identifiable even when the joint distribution of y and \mathbf{x} is parametric. We show that this difficulty can be overcome by utilizing a nonresponse instrument, which is an auxiliary variable related to y but not related to the nonresponse probability conditional on y and \mathbf{x} . Under some conditions we can apply the generalized method of moments (GMM) to obtain estimators of the parameters in the nonresponse probability and the nonparametric joint distribution of y and \mathbf{x} . Consistency and asymptotic normality of GMM estimators are established. Simulation results and an application to a data set from the Korean Labor and Income Panel Survey are also presented.

Key words and phrases: Consistency and asymptotic normality, generalized method of moments, missing not at random, nonparametric distribution, nonresponse instrument, parametric propensity.