

Estimation of Single Index Models with Misclassified Regressors*

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Abstract

This paper studies the problem of estimation in single index models with a misclassified binary regressor where the measurement error may be correlated with the regressors in the index. Identification of the model was shown in Mahajan (2006) in the presence of an additional random variable that is correlated with the unobserved true underlying variable but unrelated to the measurement error. For the general model, we propose modifications of the weighted partial derivative estimation methods of Powell, Stock, and Stoker (1989) to estimate the parameters on the continuously distributed regressors as well as a method for estimating the marginal effect of the misclassified regressor. Finally, we propose a semiparametric maximum likelihood estimator based on the method of sieves for the important special case of the parametric binary choice model with misclassification. Monte Carlo simulations suggest good finite sample properties of this estimator.

KEYWORDS: Measurement Error, Identification, Non-Linear Models, Single Index Models, Misclassification, Method of Sieves.

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