

Nonparametric Estimation with Nonlinear Budget Sets

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Abstract

Choice models with nonlinear budget sets are important in econometrics. In this paper we propose a nonparametric approach to estimation of choice models with nonlinear budget sets. The basic idea is to think of the choice, in our case hours of labor supply, as being a function of the entire budget set. Then we can account nonparametrically for a nonlinear budget set by estimating a nonparametric regression where the variable in the regression is the budget set. We reduce the dimensionality of this problem by exploiting additive structure implied by utility maximization with convex budget sets. This structure leads to a polynomial convergence rate for the estimator. We give asymptotic normality results also. The usefulness of the estimator is demonstrated in Monte Carlo and empirical work, where we find it can have a large impact on estimated effects of tax changes.