# Partial Identification in Nonseparable Binary Response Models with Endogenous Regressors

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**Abstract**

This paper considers (partial) identification of a variety of counterfactual parameters in binary response models with possibly endogenous regressors. Our framework allows for nonseparable index functions with multi-dimensional latent variables, and does not require parametric distributional assumptions. We leverage results on hyperplane arrangements and cell enumeration from the literature on computational geometry in order to provide a tractable means of computing the identified set. We demonstrate how various functional form, independence, and monotonicity assumptions can be imposed as constraints in our optimization procedure to tighten the identified set. Finally, we apply our method to study the effects of health insurance on the decision to seek medical treatment.

*Keywords*: Binary Choice, Counterfactual Probabilities, Endogeneity, Hyperplane Arrangement, Linear Programming, Partial Identification

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