

Nonparametric Maximum Likelihood Estimation of the Binary Response Model and Its Applications *

Hisatoshi Tanaka[†]

January 17, 2008

Abstract

Non-Parametric Maximum Likelihood Estimation (NP-MLE) is applied to a semiparametric binary response model, whose random term distribution is not parametrized. The method is a two-step procedure: a finite-dimensional coefficient parameter is estimated by existing methods, then the random term distribution is estimated by the NP-MLE based on the first step estimates. In the paper, consistency, convergence rates and asymptotic distribution of the estimator are proven. Furthermore, the method is shown to be semiparametrically efficient for estimation of integrated parameters. The results are applied to the Willingness-To-Pay (WTP) estimation and the Iterated Least Squares Estimation (ILSE).

JEL classification: C14; C25; C42; Q20

KEYWORDS: Binary Choice; Nonparametric Maximum Likelihood Estimation; Semiparametric Efficiency; Iterated Least Squares; Contingent Valuation.

*This version of the paper is prepared for the presentation at Keio University on January 21, 2008. The paper is very preliminary and incomplete. Any comments would be deeply appreciated.

[†]School of Political Science and Economics, Waseda University. 1-6-1 Nishi-Waseda, Shinjuku-Ku, Tokyo 169-8050, Japan.
E-mail: t.hisatoshi@gmail.com