Regularized Nonparametric Estimation of Ill-posed Games of Incomplete Information WORK IN PROGRESS

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Abstract

We want to estimate nonparametrically ill-posed games of incomplete information. The problem is studied in the form of an inverse problem, more precisely a nonlinear inverse problem. Typically, the functional form to recover is the distribution of the players private information. Our model can be written as $T(F) = G$, where F is the distribution of interest, G the identified distribution of observable actions and T a nonlinear operator. It is an ill-posed inverse problem if we cannot find a solution F that is unique and stable. In other words, we cannot find a continuous inverse operator T^{-1} in order to obtain a solution F. In general, it is possible to solve our nonlinear ill-posed inverse problem and estimate nonparametrically F. However, we show that estimating instead the quantile function F^{-1} allow us to linearise our inverse problem and derive convergence and asymptotic normality.