Efficient and Roubst Estimation in Semiparametric Models

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Abstract: The successful application of Hellinger distance approach to fully parametric models is well known. The corresponding optimal estimators, known as minimum Hellinger distance estimators, are robust and efficient (Beran, 1977). In this paper, we extend this approach to general semiparametric models. We obtain minimum Hellinger distance and minimum "profile" Hellinger distance estimators in this context. The asymptotic properties such as consistency, asymptotic normality, efficiency and adaptivity of the proposed estimators are investigated. The robustness and small sample properties of the proposed estimators are also studied using a Monte Carlo study.