

Empirical likelihood in some semiparametric models

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We study the properties of empirical likelihood for Hadamard differentiable functionals tangentially to a well chosen set and give some extensions in more general semiparametric models. We give a straightforward proof of its asymptotic validity and Bartlett correctability, essentially based on two ingredients: convex duality and local asymptotic normality properties of the empirical likelihood ratio in its dual form. Extensions to semiparametric problems with estimated infinite-dimensional parameters are also considered. We give some applications to confidence intervals for the location parameter of a symmetric model, M-estimators with some nuisance parameters and general functionals in biased sampling models.

Keywords: Bartlett correction; bias sampling models; Donsker class; empirical likelihood; empirical process; Hadamard differentiability; semiparametric models