PROFILE EMPIRICAL LIKELIHOOD FOR PARAMETRIC AND SEMIPARAMETRIC MODELS*

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Abstract.   This paper introduces a profile empirical likelihood and a profile conditionally empirical likelihood to estimate the parameter of interest in the presence of nuisance parameters respectively for the parametric and semiparametric models. It is proven that these methods propose some efficient estimators of parameters of interest in the sense of least-favorable efficiency. Particularly, for the decomposable semiparametric models, an explicit representation for the estimator of parameter of interest is derived from the proposed nonparametric method. These new estimations are different from and more efficient than the existing estimations. Some examples and simulation studies are given to illustrate the theoretical results.

Key words and phrases: Profile likelihood, empirical likelihood, efficiency, parametric and semiparametric models.