Godambe, V. P.; **Heyde, C. C.**

Quasi-likelihood and optimal estimation. (English) Zbl 0671.62007

Int. Stat. Rev. 55, 231-244 (1987).

Let Θ be an open subset of R^p and let $\mathcal{P} = \{\mathcal{P}_\theta\}$ be a union of parametric families of probability measures, each family being indexed by the same parameter $\theta \in \Theta$. Let $\{X_t : 0 \leq t \leq T\}$ be a sample in discrete or continuous time which is drawn from some process taking values in R^r and with $\mathcal{P}_\theta \in \mathcal{P}$. Further, let $\mathcal{G}$ be the class of zero mean, square integrable estimating functions $G_T = G_T(\{X_t : 0 \leq t \leq T\}, \theta)$ for which E $G_T(\theta) = 0$ for each $\mathcal{P}_\theta$.

The authors consider three equivalent properties of an estimating function belonging to a subclass of $\mathcal{G}$ and then by referring to these properties define the optimality of estimating functions, the quasi-score function, the quasi-likelihood equation and a maximum quasi- likelihood estimator when sample sizes are fixed. Next, they define "optimal in the asymptotic sense" and consider a criterion to be so within a subclass of $\mathcal{G}$ consisting of martingale estimating functions which are square integrable martingales for each $\mathcal{P}_\theta$. They also discuss applications to stochastic processes.

The results extend those of the first author [Biometrika 72, 419-428 (1985; Zbl 0584.62135)] and *J. E. Hutton* and *P. I. Nelson* [Stochastic Processes Appl. 22, 245-257 (1986; Zbl 0616.62113)].

Reviewer: K.I.Yoshihara

MSC:

62A01 Foundations and philosophical topics in statistics

Keywords:

zero mean, square integrable estimating functions; optimality of estimating functions; quasi-score function; quasi-likelihood equation; maximum quasi-likelihood estimator; optimal in the asymptotic sense; martingale estimating functions; square integrable martingales

Full Text: DOI