

IMPROVING ON THE MINIMUM RISK EQUIVARIANT ESTIMATOR OF A LOCATION PARAMETER WHICH IS CONSTRAINED TO AN INTERVAL OR A HALF-INTERVAL

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Abstract. For location families with densities $f_0(x - \theta)$, we study the problem of estimating θ for location invariant loss $L(\theta, d) = \rho(d - \theta)$, and under a lower-bound constraint of the form $\theta \geq a$. We show, that for quite general (f_0, ρ) , the Bayes estimator δ_U with respect to a uniform prior on (a, ∞) is a minimax estimator which dominates the benchmark minimum risk equivariant (MRE) estimator. In extending some previous dominance results due to Katz and Farrell, we make use of Kubokawa's *IERD* (Integral Expression of Risk Difference) method, and actually obtain classes of dominating estimators which include, and are characterized in terms of δ_U . Implications are also given and, finally, the above dominance phenomenon is studied and extended to an interval constraint of the form $\theta \in [a, b]$.

Key words and phrases: Lower-bounded parameter, location family, constrained parameter space, minimax estimation, minimum risk equivariant estimator, dominating estimators.

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