

# A Theory to Estimate Consumer's Preference from Demand

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## Abstract

This study shows that if the estimate error of the demand function is sufficiently small in the sense of local  $C^1$  topology, then the estimate error of the corresponding preference relation is also sufficiently small. Further, this study shows that if the estimate error of the inverse demand function is sufficiently small in the sense of local uniform topology, then the estimate error of the corresponding preference relation is also sufficiently small. These results are obtained when the consumption space is the positive orthant. If consumption space is the nonnegative orthant, then demand function may have no corresponding (usual) preference, and thus these results cannot be true.

**Keywords:** demand function, inverse demand function, closed convergence topology, uniform convergence topology,  $C^1$  convergence topology.

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