

# What Makes Information More Valuable? An Answer With Convex Analysis

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In decision problems under incomplete information, actions (identified to payoff vectors indexed by states of nature) and beliefs are naturally paired by bilinear duality. We exploit this duality to analyze the interpersonal comparison of the value of information, using concepts and tools from convex analysis. We characterize each decision-maker (DM) by a closed convex lower set, the action/payoff set. Then, we show that one DM values information more than another DM if and only if their action/payoff sets are solution of an algebraic equation involving the Minkowski addition, and their star-differences. We present an application to the precautionary effect by analyzing various examples in the economic literature.

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