

Learning and the Economics of Small Decisions

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The paper reviews the basic study of learning (decisions from experience) in psychology, and examines its relationship to the recent studies of learning in games and decisions under risk. The basic research suggests that learning (by human and by lower animals) leads to four robust deviations from maximization. Decision makers tend to (1) underweight rare events; (2) explore too much when the number of alternatives is small (exhibit the payoff variability effect); (3) explore too little when the number of alternatives is large (converges to local maximum), and (4) overreact to attractive forgone payoffs. In addition, the results reveal a "recency/cold stove paradox" that violates models that assume sequential updating (like reinforcement learning and fictitious play). The main results can be captured with models that assume best reply to small samples of experiences.

Evaluation of learning in games suggests that in many cases the implications of the basic regularities, listed above, are enhanced by social interactions. For example, the payoff variability effect implies learning away from equilibrium in certain games with mixed strategies.

Examination of relationship of decisions from experience to decisions from description (as summarized by Kahneman and Tversky, 1979) highlights two surprising observations. First, decision makers deviate from linear weighting in the opposite direction in the two tasks; they overweight rare events in decisions from description (exhibit the certainty effect, and tend to buy insurance and lotteries), and underweight rare events in decisions from experience (exhibit the reversed certainty effect, and behave as if "it wont happen to me). Second, there are no evident for "pure" loss aversion in neither task. In violation of the common belief, direct tests of the assertion that "losses loom larger than gains" reject this hypothesis.