

Model Uncertainty

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We study decision problems in which the consequences of the alternative actions depend on states determined by a generative mechanism representing some natural or social phenomenon. Model uncertainty arises as decision makers may not know such mechanism. Two types of uncertainty result, a state uncertainty within models and a model uncertainty across them. We discuss some two-stage static decision criteria proposed in the literature that address state uncertainty in the

first stage and model uncertainty in the second one (by considering subjective probabilities over models). We consider two approaches to the Ellsberg-type phenomena that these decision problems feature: a Bayesian approach based on the distinction between subjective attitudes toward the two kinds of uncertainty, and a non-Bayesian one that permits multiple subjective probabilities. Several applications are used to illustrate concepts as they are introduced.