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“Updating Priors: The Dynamics of Chosen Beliefs”*

Abstract. We develop a tractable model of learning for an agent who derives anticipatory utility from beliefs that she can *choose*. Every period she first chooses her “prior,” then acts on this chosen belief, and finally experiences belief and consumption utility. Brunnermeier and Parker (2005) study an agent who chooses her prior once and for all, optimally trading off more pleasant beliefs with less accurate actions. We instead study an agent who *repeatedly* chooses her prior while naively assuming that this is the first and only time she does so. Despite otherwise updating like a Bayesian, by treating her past beliefs as truth, such an agent misinterprets new information.

Each period the agent biases her belief “upward.” For a small enough bias, the agent chooses overly precise beliefs to reduce anxiety about future outcomes. For larger biases, she chooses overly imprecise beliefs: this way she limits costs from poor decisions in the future (by “overreacting” to future signals) while enjoying her momentary optimism. An anxious agent becomes “dogmatic” over time and stops learning. But since the agent keeps re-choosing her priors, she also becomes arbitrarily overoptimistic, resulting in extremely bad decisions in the long run. A less anxious agent biases her beliefs more initially, and stays uncertain forever, despite observing infinitely many signals. Such an agent eventually reaches a stable level of overoptimism: by re-choosing her prior, she offsets the (average) change in beliefs implied by observing yet another signal.

* (joint with Marc Kaufmann and Botond Kőszegi)