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Host: Stefan Trautmann

Optimal Utility: Endogenizing the Cardinal Representation of Riskless Subjective Value in Cognitively Constrained Chooser *

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We investigate the optimal representation of cardinal utility in a cognitively-constrained chooser whose goal is to maximize earnings. We show that the optimal utility depends on the *a priori* reward distribution and the level of noise in the nervous system's encoding process. We quantify the monetary gains and biological costs of relaxing the resource constraint in the brain to calculate the optimal level of noise in the representation of value, thus endogenizing both the utility function and the noise term. Our framework links environmental conditions, neural efficiency, and utility. We discuss implications for choice theory, experimental evidence, and policy.

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Joint work with Paul W. Glimcher, and Shreya Sinha