“From Noise to Bias in Linked Decisions”

We study a fundamental task combination: a decision maker must (a) choose an alternative, (b) make a forecast for that alternative, and (c) make an investment decision in that alternative. Through behavioral models and laboratory experiments, we show how adding unbiased random noise to the process leads to a downstream systematic bias of overinvestment. This bias arises due to the way that random noise is filtered through the sequence of linked decisions and statistical naivety on the part of the decision-maker. Random noise in the forecast increases the overinvestment bias, but random noise in the choice among alternatives actually decreases the bias. Consequently, under certain parameters, being less rational (i.e., more random) in choice of alternative can actually yield higher performance. Tasks in which information requires greater human interpretation are shown to increase the bias. Finally, employing a task-decomposition approach, we examine when separating alternative selection and investment decision-making across different people can reduce the bias and improve performance.