

Behavioral Economics

Lecture 6: Overconfidence and Complex Disclosure

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Connecting Grether and complexity

- ▶ Grether (1980) gives us a reduced-form way to describe non-Bayesian updating: how much weight people put on the signal versus the prior
- ▶ That framework is especially useful when the information itself is hard to process
- ▶ In this application, receivers might not get a clean signal of the state when the sender reports are complex
- ▶ So the question becomes: do receivers overly trust their read of complex reports?

Mapping complex disclosure into the Grether model

- ▶ Let $\theta \in \{1, \dots, 10\}$ be the true state, and let $N \in \{1, \dots, 20\}$ denote report complexity
- ▶ The sender chooses N strategically, so observed complexity contains information about the state
- ▶ The receiver then reads the report and forms an internal signal s about θ by trying to process the report

A Bayesian receiver would combine:

$$p(\theta|s, N) = \frac{\Pr(s|\theta, N) \Pr(\theta|N)}{\sum_{\theta'} \Pr(s|\theta', N) \Pr(\theta'|N)}$$

- ▶ $\Pr(\theta|N)$: what complexity N implies about the state θ given sender strategies
- ▶ $\Pr(s|\theta, N)$: how informative the receiver's internal read of the report is

A Grether-style representation of overconfidence

$$p(\theta|s, N) = \frac{\Pr(s|\theta, N)^{\beta_1} \Pr(\theta|N)^{\beta_2}}{\sum_{\theta'} \Pr(s|\theta', N)^{\beta_1} \Pr(\theta'|N)^{\beta_2}}$$

- ▶ Following Grether (1980) and Holt & Smith (2009), β_1 controls the weight placed on the signal and β_2 controls the weight placed on the prior
- ▶ If $\beta_1 > 1$, the receiver over-weights their own read of the complex report (overconfident)
- ▶ If $\beta_1 < 1$, the receiver under-weights their own read of the complex report (under-confident)

Why this can generate over-guessing

- ▶ Suppose highly complex reports are used more often to hide bad states
- ▶ Then a sophisticated receiver should treat a very complex disclosure with skepticism: high N pushes beliefs toward lower values of θ
- ▶ But an overconfident receiver may think, “I worked through the report, so my read of the state is probably right”
- ▶ In the Grether language, the receiver puts too much weight on $\Pr(s|\theta, N)$
- ▶ Because of this, complex disclosure can lead receivers to guess too high

What the application will test

- ▶ Are mistakes with complex disclosure just random arithmetic errors?
 - ▶ That is, are they just due to noise in $\Pr(s|\theta, N)$?
- ▶ Or do they also reflect two distinct belief distortions?
 1. **Naivete**: failing to infer enough from the sender's strategic use of complexity
→ incorrect $\Pr(\theta|N)$
 2. **Overconfidence**: over-trusting one's ability to extract the truth from a hard report
→ $\beta_1 > 1$
- ▶ The complex disclosure experiment uses a controlled setting to separate these possible explanations
 - ▶ Key elements: elicit prior $\Pr(\theta|N)$, assume functional form about signal $\Pr(s|\theta, N)$, estimate parameters of functional form out-of-sample, estimate β_1 in-sample

References I

- Grether, D. M. (1980), 'Bayes rule as a descriptive model: The representativeness heuristic', *The Quarterly Journal of Economics* **95**(3), 537–557.
- Holt, C. A. & Smith, A. M. (2009), 'An update on bayesian updating', *Journal of Economic Behavior & Organization* **69**(2), 125–134.