The Evolution of Belief Ambiguity during the Process of High-School Choice by Pamela Giustinelli and Nicola Pavoni

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The Big Picture

- How should we represent information frictions?
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- What assumptions do we need to make progress?

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- Characteristics of S perfectly known (probability of success at S
- Two children, Alice (A) and Beth (B)
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- Set of states of nature: $\Omega_1 \times \Omega_2$
- $\Omega_1 = \{$Both pass, Both fail, Only Alice passes, Only Beth passes$\}$
- $\Omega_2 =$
  $\{$Lots of math, Little math$\} \times \{$Ancient greek offered, not offered$\} \times$
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- Alice and Beth ex ante identical:
  - Same prior μ_0 or set of priors M_0
  - Probability of success is the same conditional on any $\omega_2 \in \Omega_2$.

Alice and Beth as Bayesians

- Observe A and B's posterior beliefs at 3 stages, μ_{ij}, $i = 1, 2, 3$, $j = A, B$
- Evolution of beliefs dictated by learning about $\omega_2 \in \Omega_2$
- Learning may be idiosyncratic, beliefs may be different...
- ... but they should converge if ω_2 becomes known.

Alice and Beth meet Gilboa and Schmeidler (or Epstein and Schneider)

- A and B have a range of beliefs about success given each ω_2.
- A and B have a range of beliefs over which ω_2 is true.
- Updating: Bayesian belief by belief.
- Belief range should converge as ω_2 becomes known.
- Convergence might be messy

Example of Messy Convergence

- Alice and Beth have 90% chance of passing if Greek is not part of curriculum
- With Greek, they have no idea (support [0,1])
- Prior: 50% that Greek is offered.
- Prior range: $[45\%, 95\%]$
- Posterior range: 90% or $[0, 1]$

A Way to Make Progress

- Assume that all uncertainty is about learnable characteristics (ω_2)
- or, follow alternative approach to updating (Hansen and Sargent)
- Then range of beliefs will shrink with learning
- Will also converge across A and B in the limit

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- Suppose I have panel with short time dimension, many ex ante identical people with i.i.d. learning process
- Individual learning does not converge, but cross-section informative of true state
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- For each student, observe belief, choice
- $\Longrightarrow$ Infer preferences
- $\Longrightarrow$ Infer measure of people that made wrong choice

Identification under ambiguity

- Cannot learn true probability in general
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- Might also quantify role of forgetfulness (assuming that it is forgetfulness)

Problem: People are Different

- Try matching over observable characteristics
- Impose monotonicity restrictions (better GPA makes certain schools more desirable)