Sequential Sampling and Equilibrium

Duarte Goncalves

Discussed by Silvio Ravaioli

February 26, 2020

Sequential Sampling (and) Equilibrium - Recap

- **How do individuals form beliefs about opponents' distribution of gameplay?**
- Stopping problem in individual and strategic environment
- Stopping: forward-looking wrt current beliefs and sampling c.
- Sampling: from the true DGP / steady-state distribution
- New equilibrium concept: SSE
- Properties (existence, convergence to NE, effect of incentives in DS games) and predictions (in simple strategic environment)

What I liked of the paper

- Better data deserve better models!
  - Timed stochastic data - Models that include time
- Interpretation of why incentives (scale of payoffs) matter in games
  - Focus on refinement of beliefs
  - Connection with a vast literature on individual DM
- Connection with experimental results (joint elicitation of beliefs and actions)
  - Friedman and Ward (19), Esteban-Casanelles and Goncalves (20)
- Model's assumptions - forward-looking sampling
  - Comparison with myopic sampling (Alaoui and Penta 2019)

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- An initial motivating evidence/puzzle
  - What fact is poorly captured in the existing literature?
  - Create demand for your model (e.g. joint distribution of action and response time)
- A clearer positioning in the theory literature
  - E.g. Osborne and Rubinstein (2003) with endogenous sampling?
  - Sequential sampling model + SSE - what is new in the DM problem? (why you need to start from there?)
- More insights on the connection with experimental results
  - Goeree and Holt (2001) *contra* Nesh equilibrium [slide 20/22]
  - This may become the initial puzzle
- A recap of the testable predictions

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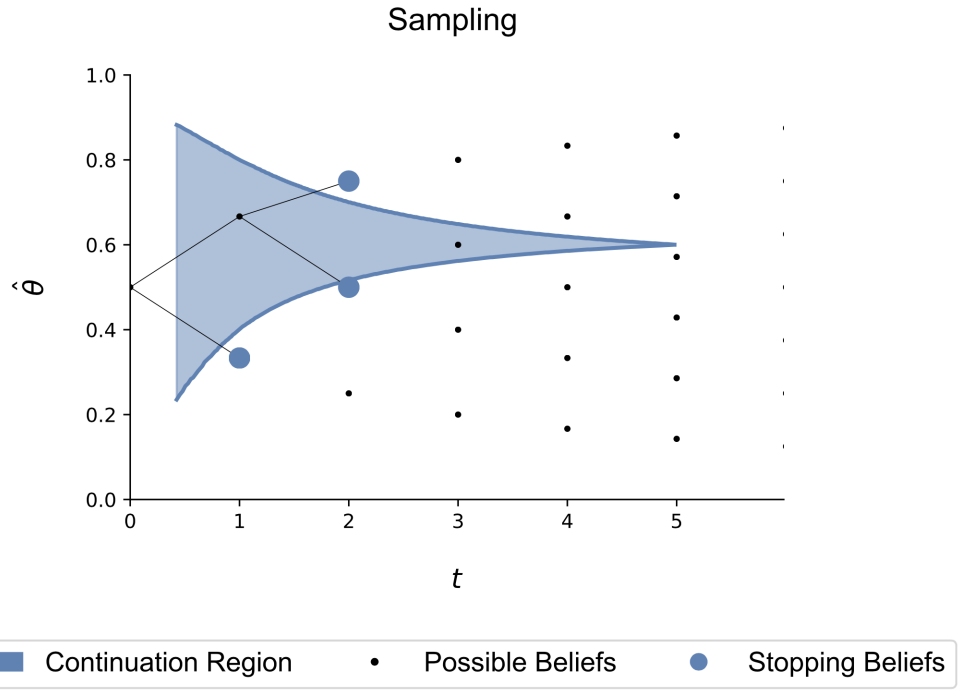
Testable predictions



Collapsing bounds under Beta prior - kindly from the author

- Assuming deterministic behavior (conditional on beliefs) we have strong predictions about observable action/timing
- How do these predictions differ from other (sampling) models?

Further work

- **Introduce stochasticity**
  - How does the introduction of stochasticity in beliefs and/or action affect the predictions?
- **Memory and Learning**
  - How can we integrate the model in a learning setup?
  - Additional constraints: limited storing capacity, leaky memory (forget the distant observations). Can we generate cycles?
  - You could model interaction with feedback (sample from the true distribution), not suited for settings without feedback (sampling from own prior only)
- **Wishful sampling** (two possible directions)
  - Integrate "motivated" sampling
  - 1) Bias in the sampling probability (based on preferences)
  - 2) Each sample has an additional cost/bonus based on the outcome (e.g. painful to sample "bad" distributions)

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