28 Book Notes

Monday, November 16, 2020 5:18 PM

Perfect Bayesian Equilibrium

Subgame Perfection does not capture **sequential rationality**

Conditional Beliefs about Types

Player type ≠ Player strategy

updated belief about player type

Sequential Rationality

Consistency of Beliefs

$q = Prob(F|G) = Prob(G|F)Prob(F)/Prob(G)$

Equilibrium Definition

Perfect Bayesian Equilibrium (PBE) if:
1) each Player's strategy specifies optimal actions, given his beliefs and the strategies of other Players
2) Beliefs are consistent w/ Bayes' rule whenever possible

Separating vs **Pooling**

Steps for calculating perfect Bayesian equilibria:

1. Start with a strategy for player 1 (pooling or separating).
2. If possible, calculate updated beliefs (q in the example) by using Bayes' rule. In the event that Bayes' rule cannot be used, you must arbitrarily select an updated belief; here you will generally have to check different potential values for the updated belief with the next steps of the procedure.
3. Given the updated beliefs, calculate player 2's optimal action.
4. Check whether player 1's strategy is a best response to player 2's strategy. If so, you have found a PBE.