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| Game Theory |

Dominance

MobLab Game: Prisoner’s Dilemma (Matrix) or Prisoner’s Dilemma (Push and Pull)

Key Teaching Points:

* Shows the conflicting incentives of cooperation and self-interest.
* Gain familiarity with reading payoff matrices and the key concept of a dominant strategy.

MobLab Game: (Keynesian) Beauty Contest

Key Teaching Points:

* Strategic thought requires making conjectures about the reasoning and choices of others whose actions affect the payoffs of my choices.
* Students learn the logic behind iterated dominance

MobLab Game: Public Good: Linear

Key Teaching Points:

* Gain intuition for playing dominant strategies without a payoff matrix. Free-riding increases across rounds.

Nash Equilibrium

MobLab Game: Instructor Specified Matrix

Key Teaching Points:

* Create your own normal form game where you specify actions and payoffs.
* Test solution different concepts such as Nash Equilibrium.

MobLab Game: Cournot Competition

Key Teaching Points:

* Gain intuition for the logic of best response and Nash Equilibrium without a payoff matrix.

MobLab Game: Two-Candidate Election

Key Teaching Points:

* Develop the Median Voter Theorem (Hotelling location model) and the Nash Equilibrium predictions.

MobLab Game: Battle of the Sexes

Key Teaching Points:

* Identify a limitation of Nash Equilibrium as a solution concept. With multiple equilibria it is unclear which will emerge.

MobLab Game: Stag Hunt

Key Teaching Points:

* An alternate to the Prisoner’s Dilemma in highlighting the tension between individual and group payoff maximization.
* Allows discussion of factors affecting coordinated social cooperation.
* Discuss equilibrium selection in light of a tradeoff between equilibrium payoff and its riskiness.

Mixed Strategy Nash Equilibrium

MobLab Game: Matching Pennies

Key Teaching Points:

* Demonstrate that not all games have an equilibrium in pure strategies. In these cases, the goal of each player is to choose actions with a probability that makes the other player indifferent.

*Additional MobLab Games: Rock, Paper, Scissors and Hide and Seek (Focal Points)*

Repeated Games

MobLab Game: Any (all games can be indefinitely repeated)

Key Teaching Points:

* Players learn about the role of repeat interaction and reputation in sustaining cooperative outcomes.

Backward Induction

MobLab Game: Bargaining: Alternating Offer

Key Teaching Points:

* Players learn about tradeoffs and fairness in negotiations.
* Promotes learning about backward induction and subgame-perfect equilibria in sequential games.

MobLab Game: Trust Game

Key Teaching Points:

* Explore and test backward induction and subgame perfect Nash Equilibrium.
* Preferences for trustworthiness (positive reciprocity) or fairness may lead a Responder to return positive amounts. Anticipating this, and perhaps also motivated by altruism or fairness, Investors may choose to invest.

MobLab Game: Stackelberg Competition

Key Teaching Points:

* We can find the subgame-perfect Nash equilibrium with backwards induction. In the Stackelberg model, we assume that each leader output induces a follower best-response output, and the leader chooses the most profitable leader output under this assumption.
* Contrast the strategic and outcome differences of the Cournot and Stackelberg environments.

Games of Incomplete Information

MobLab Game: Monty Hall

Key Teaching Points:

* Serves as an introduction to conditional expectations.
* Through repeated iterations of the Monty Hall game (and 3 doors v. 20 doors) students learn the intuition behind Bayes' Rule.

MobLab Game: Market for Lemons

Key Teaching Points:

* Experience a market with asymmetric information.
* Asymmetric information may lead to adverse selection and market failure.

MobLab Game: Principal-Agent

Key Teaching Points:

* Students learn how the optimal contract offered to the worker depends on the information environment (full information v. asymmetric information).
* Students learn how the magnitude of different contract features (flat-fee and bonus) depend on worker outside option and cost of effort.

MobLab Game: Private Value Sealed Bid Auction

Key Teaching Points:

* Use first and second price auction rules to highlight differences in equilibrium bid strategies.
* Test the theory of revenue equivalence across pricing rules.

MobLab Game: Common Value Sealed Bid Auction

Key Teaching Points:

* Show differences between private and common value auctions as well as how bidders are susceptible to the winner's curse in common value auctions.

There other auction formats to explore such as English, Dutch, and All Pay auctions. In the Display Ad Auction, students can act as auctioneers and choose reservation price and first v. second price formats to see their effect on revenue.

Fairness and Social Preferences

MobLab Game: Ultimatum

Key Teaching Points:

* Demonstrates how social norms such as fairness and altruism may result in behaviors that deviate from game theoretic predictions.
* In conjunction with the Dictator Game, helps distinguish between strategic and non-strategic altruism

MobLab Game: Ultimatum: Strategy Method

* The successful bargainer accounts for a wide variation in others’ preferences for fairness.
* Many players make offers that they themselves would not accept, which may be evidence of a lack of strategic thought.

*Additional MobLab Games: Dictator and Trust Game*