

Nash Equilibrium

Rationalizability means:

- 1) Players form beliefs about each other's behavior
- 2) Players best respond to their beliefs
- 3) these facts are common knowledge among players

Behavior is **congruous** (coordinated) through social norms

Congruity:

- 1) games are repeated in society and player behavior "settles down" and the same strategies are repeated
- 2) players meet before the game + agree on the strategies used. Players honor the agreement
- 3) outside mediator recommends strategy profiles. Each player expects others to follow the recommendation + has incentive to do so themselves

Nash equilibrium: Strategy profile $s \in S$ is a **Nash equilibrium** if and only if $s_i \in BR_i(s_{-i})$ for each player i . That is, $u_i(s_i, s_{-i}) \geq u_i(s'_i, s_{-i})$ for every $s'_i \in S_i$ and each player i .

Strict Nash equilibrium: Strategy profile s is strict if and only if $\{s_i\} = BR_i(s_{-i})$ for each player i .

To find: "Look for profiles such that each player's strategy is a best response to the strategy of the others"

Each Nash equilibrium is a rationalizable strategy

Equilibrium of the Partner Game

Coordination + Social Welfare

Nash equilibria don't always entail strategies that are preferred by the players as a group

↳ Nash of Prisoner's dilemma (1,1) is inefficient

The Third Strategic Tension

Coordinated inefficiency \rightarrow QWERTY, VHS, etc.

Congruous Sets

Nash is only when players coordinate on a single profile

Set X is a congruous set because coordinating on X is consistent with common knowledge of BR

Congruous if X_i contains exactly those strategies that can be rationalized

Weakly congruous if each strategy in X_i can be rationalized with respect to X_{-i}

Experimental Game Theory

Strategic sophistication