Lecture 5  19 Sept. 07

Last time - Nash Equilibrium

- A strategy profile \((s_1^*, s_2^*, ..., s_n^*)\) is a NE
  - if, for each \(i\), her choice \(s_i^*\) is a best response
to the other players' choices \(s_{-i}^*\).

Motivations

1. no regrets
   - no individual can do strictly better by deviating, holding others fixed

2. self-fulfilling beliefs

\[ s_2^* \]
\[ s_1' \]
\[ s_1 \]
\[ s_2 \]
\[ BR_1 \]
\[ BR_2 \]

\[ x \]
\[ \alpha \]
\[ \beta \]
\[ 0 \]
\[ 0 \]
\[ 3 \]
\[ -1 \]
\[ 1 \]
\[ 3 \]
\[ 1 \]
\[ 1 \]

\( \beta \) is strictly dominated by \( \alpha \)

NE is \((\alpha, \alpha)\)

\[ (U, l) \text{ is a NE, but so is } (D, r) \]

Investment Game

- players - you
- strategy sets - invest 0 or invest $10
- payoffs - if do not invest, then \( \rightarrow 0 \)
  - if do invest $10, \( \begin{cases} \$5, & \text{if } > 90\% \text{ invest} \\ \$0, & \text{if } < 90\% \text{ invest} \end{cases} \)

NE = \{ all invest \}

\( \text{no-one invest} \)

\( \text{guess and check} \)

\( \text{"converged"} \)

\( \text{different social problem than that of prisoners dilemma} \)

\( \text{Coordination - communication can help} \)

NE can be self enforcing agreements