Sequential Rationality and Subgame Perfection

Sequential Rationality: Optimal strategies should maximize payoffs, conditional on every information set at which this player has the move

↳ Plan ahead!

"look ahead"

Subgame Perfect NE

Backward Induction

Procedure: Process of analyzing a game from end to beginning. At each decision node, strike any dominated positions, given the terminal nodes that can be reached through the play of the actions identified at successor nodes

Result: Every finite game with perfect information has a pure strategy NE. Backward induction identifies the NE.

Subgame Perfection

node x in a tree is said to **initiate a subgame** if neither x nor any of its successors are in an information set that contains nodes that are not successors of X. This is a **subgame**

Proper Subgames don't start at the initial node

A strategy profile is called a **Subgame perfect NE (SPE)** if it specifies a NE in every subgame of the original game

Subgames are a **refinement** of NE

Incredible threats in the Stackleberg Duopoly Game

The SPE of the Stackleberg Duopoly Game

Technical Notes

for a given node x in a game, a player's **Continuation value/payoff** is the payoff that this player will eventually get contingent on the path of play passing through node X.

Net of Past Receipts