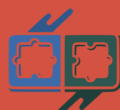
# Game Theory 5:

# Crisis & Cooperation



GAME OF GAINS

# Brinkmanship & Conflict

**Core Concepts of Brinkmanship**

- **Brinkmanship:** The strategic practice of escalating a dangerous situation to the absolute verge of catastrophe to achieve a preferred diplomatic or political outcome.
- **The Creation of Shared Risk:** This tactic involves the deliberate manipulation of a mutually disastrous event to test the resolve and nerve of an opponent.
- **The Logic of Capitulation:** A psychological maneuver designed to force a competitor to blink first, operating on the assumption that the adversary's fear of total loss exceeds their desire for the objective.
- **The Loss of Control:** A state where parties move so close to the edge of conflict that accidental or unauthorized actions could trigger a total collapse of stability.
- **The Threat That Leaves Something to Chance:** A specific maneuver where a player creates a situation where they cannot fully control the outcome, forcing the opponent to decide if they are willing to risk a randomized disaster.

**Case Study: The Cuban Missile Crisis**

- **The Standoff:** The 1962 confrontation between the United States and the Soviet Union serves as the definitive historical example of high-stakes Brinkmanship.
- **Game of Chicken:** This crisis is frequently modeled as a Game of Chicken, where two players head toward a collision; the one who "swerves" loses face, but if neither swerves, both perish.
- **The Strategic Choice:** Both superpowers faced the choice of Swerve (Diplomatic retreat/Concession) or Straight (Military escalation/Nuclear strike).
- **The Risk of Escalation:** While choosing "Straight" offers the highest potential payoff if the opponent swerves, it leads to a catastrophic loss for both if the resolve of both parties remains absolute.

- [visual] Values: Mutual Swerve (0, 0); One Swerves/One Straight (-1, +1); Mutual Straight (-100, -100).

- **The Resolution: T**o avoid the Mutual Straight outcome, both parties engaged in secret negotiations, ultimately allowing for a face-saving exit that pulled the world back from the brink of nuclear war.

# The Path to Pareto

**The Mechanics of Side Payments**

- **Side Payment:** An incentive or compromise offered to encourage a player to choose a cooperative strategy they would otherwise avoid.
- **The Compensatory Mechanism:** These payments are used to "grease the wheels" of negotiation by compensating a party that might lose out when moving away from a Nash Equilibrium.
- **Bridging the Gap:** A tool designed to align individual incentives with collective goals, making it rational for participants to abandon a defensive posture.
- **Enabling Pareto Improvements:** By redistributing gains, side payments allow groups to reach an outcome where at least one person is better off and no one is worse off.
- **External Incentives:** These can take the form of direct financial transfers, political favors, or regulatory changes that alter the payoff matrix for all involved.

**Case Study: Cigarette Ad Ban (1971)**

- **The Prisoner's Dilemma:** Before 1971, tobacco companies were trapped in a cycle where they spent massive sums on advertising just to maintain their market share relative to competitors.
- **The Individual vs. Collective:** While it was collectively rational to stop advertising to save costs, it was individually rational for any one firm to advertise if the others stopped.
- **The Regulatory Intervention:** The 1971 federal ban on television cigarette advertising acted as an external constraint that removed the "Advertise" option entirely.
- **Nash Equilibrium to Pareto-Efficient Outcome:** This ban moved tobacco firms from a high-cost Nash Equilibrium (where they all advertised) to a high-profit Pareto-efficient outcome.
- **Economic Impact:** By removing the ability to compete via television ads, the industry saved millions in marketing expenditures, which led to a significant increase in industry-wide profits.

# Cartels & Collusion

**Structural Foundations of a Cartel**

- **Cartel:** A group of independent firms that collude to restrict supply and raise prices to maximize collective industry profits.
- **The Monopoly Objective:** By acting as a single entity, members aim to eliminate competition and extract higher prices from consumers than would be possible in a free market.
- **The Price-Fixing Agreement:** This structure relies on members strictly adhering to production quotas to ensure the market remains undersupplied.
- **The Barrier to Entry:** Successful cartels must find ways to prevent outside competitors from entering the market and undercutting the artificially high prices set by the group.
- **Supply Control:** The primary lever of a cartel is the collective agreement to limit output, which forces the market price upward along the demand curve.

**The Dynamics of the Cheater's Incentive**

- **Cheater's Incentive:** The temptation for a member to secretly over-produce to gain individual profit at the expense of the group.
- **The Profit Paradox:** While the group benefits from high prices, an individual firm can gain even more by selling extra units at that high price before the market supply increases.
- **Individual Rationality vs. Group Survival:** Each member realizes that if they sell a bit more than their quota, their individual profit rises, even though this action reduces the collective profit of the cartel.
- **The Domino Effect:** Once one member is suspected of cheating, other members often follow suit to protect their own market share, leading to a sudden surge in supply.
- **Price Collapse:** The inevitable result of widespread cheating is a "race to the bottom" where prices crash, the cartel dissolves, and the market returns to a competitive state.