# Case Study: The Orange Juice Cartel – When Firms Cooperate to Avoid Competition

## Background: Two Rivals, One Sweet Deal

In the early 2010s, two major fruit juice producers in Europe—let's call them FruttiCo and CitrusPlus—were fierce competitors in the market for orange juice sold to retailers and hotel chains. Over time, the CEOs of both firms realized something troubling: their price wars were eating into profits. Margins were razor-thin, and even though both sold large volumes, neither was particularly profitable. So they met quietly.

Instead of competing on price, they agreed to divide the market:

- FruttiCo would focus on northern Europe.
- CitrusPlus would focus on the south.
- Both would agree on minimum prices to avoid undercutting each other.

This secret cartel lasted for several years. Profits improved. Competition nearly vanished. Consumers paid more.

But eventually, one firm cheated—quietly offering discounts to win back accounts in the other's territory. The fragile truce collapsed. Prices fell again. Later, European competition authorities launched an investigation and fined both companies heavily.

## Game Theoretic Analysis

Two juice companies, *FruttiCo* and *CitrusPlus*, consider whether to keep to a cartel agreement (set high prices) or cheat (secretly lower prices to gain market share).

## Task 1: Constructing the Payoff Matrix

Instructions:
1. Define two strategies:
- Collude (set high prices)
- Cheat (secretly undercut the other)

2. Invent plausible payoffs for the following four outcomes. Example framing:

- If both collude: each firm earns €5 million in profits.
- If one cheats and the other colludes: the cheater earns €8 million, the other only €1 million.
- If both cheat: aggressive price war reduces profits to €2 million each.

3. Fill in the matrix below with your payoffs:

|  | CitrusPlus: Collude | CitrusPlus: Cheat |
|---|---|---|
| FruttiCo: Collude | (?, ?) | (?, ?) |
| FruttiCo: Cheat | (?, ?) | (?, ?) |

Question: What is the dominant strategy for each firm?

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**Task 2: Is the Cartel Stable?**

Instructions:
Using the matrix you created in Task 1, answer the following:

1. Is collusion a Nash equilibrium in this game? Why or why not?
2. Which strategy combination is the socially optimal outcome (highest total profits)?
3. Based on your matrix:

   - Who has an incentive to deviate?

   - What happens if both firms deviate?

Conclusion: In a one-shot game, cartels are often not stable. Each firm has an incentive to cheat and grab market share.

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**Task 3: Why Might the Cartel Still Work in Practice?**

Despite the temptation to cheat, cartels like *FruttiCo* and *CitrusPlus* often persist for years.

Discussion questions:

1. What factors might make the cartel more stable in practice?

2. Can you think of real-world mechanisms that firms use to detect or discourage cheating?

3. How might government policies like leniency programs or whistleblower incentives disrupt cartels?

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**Teaching Objectives**

By the end of this case, students should be able to:

- Use game theory to model cartel behavior and analyze strategic incentives.
- Explain why cartels are unstable in one-shot games.
- Identify fastors that support or undermine cartel stability in practice.
- Evaluate policy tools aimed at detecting and deterring collusion.