

GAME THEORY • BEGINNER FRIENDLY

The Prisoner's Dilemma

Why can two people make individually sensible choices and still end up worse off together?

THE STORY

Two suspects are questioned separately. Each must choose whether to stay silent or confess. They cannot coordinate their choices.

For this example, the sentence outcomes are: if both stay silent, each gets 1 year; if both confess, each gets 3 years. If only one confesses, the confessor goes free and the silent suspect gets 5 years.

THE CENTRAL PUZZLE

Both suspects acting in their own self-interest may lead to a worse joint outcome than cooperation.

Important: the prison sentences are illustrative. The point is the strategic structure of the choices, not a claim about real legal outcomes.

STEP 1

Read the payoff matrix

Each cell shows the sentence for Person A first and Person B second. Fewer years is better for each person.

Person B chooses a column

PERSON A chooses a row	B: Stay silent	B: Confess
A: Stay silent	A: 1 year B: 1 year	A: 5 years B: 0 years
A: Confess	A: 0 years B: 5 years	A: 3 years B: 3 years

Why would each suspect confess?

IF THE OTHER STAYS SILENT

Confess: 0 years
Stay silent: 1 year

Confessing gives you the shorter sentence.

IF THE OTHER CONFESSES

Confess: 3 years
Stay silent: 5 years

Confessing again gives you the shorter sentence.

Result: Confess is a dominant strategy

It gives each suspect a better individual outcome regardless of what the other suspect chooses.

STEP 2

The Nash equilibrium

A Nash equilibrium is an outcome where no player can improve their result by changing their own choice alone, given the other player's choice.

PREDICTED OUTCOME

Both confess

Each gets 3 years.

BETTER JOINT OUTCOME

Both stay silent

Each gets 1 year - better for both.

Why is this a dilemma?

The two suspects would both be better off if they could commit to staying silent. But each has an individual incentive to confess. When both follow that incentive, they end up with 3 years each instead of 1 year each.

REMEMBER THESE TWO TERMS

Dominant strategy: a choice that is best for a player regardless of the other player's action. Here, confess is dominant for each suspect.

Nash equilibrium: a set of choices where neither player can do better by changing alone. Here, both confess.

EXAM-READY SUMMARY

The Prisoner's Dilemma is a game in which individually rational choices lead to a collectively inferior outcome. In the standard one-shot version, confess is dominant for both players, so mutual confession is the Nash equilibrium, even though mutual silence would make both better off.

This result depends on the assumptions of the model, including a one-shot interaction and no enforceable agreement to cooperate.