THE PRISONERS' DILEMMA

	C	D
C	-1, -1	-20, 0
D	0, -20	-5, -5

$S_i = \{C, D\}$ C: "COOPERATE"
D: "DEFECT"

	C	D
C	1, 1	-2, 2
D	2, -2	0, 0

NOTE THAT IN BOTH OF THESE GAMES THE ONLY NASH EQUILIBRIUM IS (D, D), BUT THAT THE PROFILE (C, C) IS BETTER FOR BOTH PLAYERS.

THIS IS AN EXAMPLE OF A CLEARLY "BAD" EQUILIBRIUM. IT IS ALSO A VERY "STRONG" EQUILIBRIUM, IN THE FOLLOWING SENSE.

DEFN: A DOMINANT STRATEGY FOR PLAYER i IN THE GAME $(S_i, \pi_i)_1^n$ IS A STRATEGY $\hat{s}_i$ THAT SATISFIES THE CONDITION

$$\forall s_{\sim i} \in \mathop{\times}_{j \neq i} S_j : \forall s_i \in S_i : \quad \pi_i(\hat{s}_i, s_{\sim i}) \geqq \pi_i(s_i, s_{\sim i}).$$

A DOMINANT-STRATEGY EQUILIBRIUM IS AN n-TUPLE $\hat{s}$ OF DOMINANT STRATEGIES.

REMARK: A DOMINANT-STRATEGY EQUILIBRIUM IS A NASH EQUILIBRIUM.

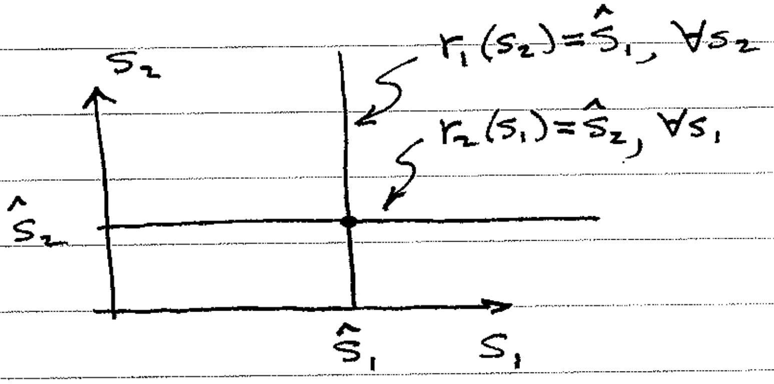
AN INDUSTRIAL ORGANIZATION VERSION OF THE PD GAME

C: CHARGE \$8 D: CHARGE \$5

$\pi_i(s_1, s_2)$: \$ MILLION/YEAR PROFIT.

	C = \$8	D = \$5
C = \$8	1, 1	−2, 2
D = \$5	2, −2	0, 0

NOTE THAT IN A GAME WITH A (UNIQUE) DOMINANT-STRATEGY EQUILIBRIUM, EACH PLAYER'S REACTION FUNCTION IS A CONSTANT FUNCTION:



HERE, $n = 2$ AND $S_1 = S_2 = \mathbb{R}_+$.

IN THE PRISONERS' DILEMMA:

$s_{\sim i}$:	C	D
$r_i(s_{\sim i})$	D	D

ROW:

	C	D
C		
D	•	•

COLUMN:

	C	D
C		•
D		•