

Game Theory

EE311

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Maximin Strategy

Playing Nash strategy against an irrational rival may be risky.

- Nash Equilibrium:
 - Firm 1: invest
 - Firm 2: Invest
- This assumes firm 2 understands the game and is rational
- If Firm 2 does not invest, Firm 1 incurs significant losses

		<i>Firm 2</i>	
		Don't invest	Invest
<i>Firm 1</i>	Don't invest	0, 0	-10, 10
	Invest	-100, 0	20, 10

Maximin Strategy

Maximin =
Maximize
the minimum
payoffs

Maximin solution

		<i>Firm 2</i>		
		Don't invest	Invest	
<i>Firm 1</i>	Don't invest	0, 0	-10, 10	Minimum for Firm 1 -10
	Invest	-100, 0	20, 10	-100
		Minimum for Firm 2 0	10	

The diagram illustrates the Maximin strategy for two firms. Firm 1's minimum payoff is -10 (when Firm 2 invests), and Firm 2's minimum payoff is 0 (when Firm 1 doesn't invest). The Maximin solution is the outcome where both firms choose their strategy that maximizes their minimum payoff, which is (Don't invest, Invest) with payoffs (-10, 10).

Maximin Strategy

- If both are rational, both firms will invest. This is the NE.
- If both are risk-averse, both firms will use maximin strategy.

Firm 1: Not Invest Firm 2: Invest Payoff: - 10, 10

- If Firm 2 is risk-averse while Firm 1 is rational, then

Firm 2 will use maximin strategy and Invest.

Knowing Firm 2, Firm 1 will play his best response and Invest.

Payoff: 20, 10