

14.12 Economic Applications of Game Theory

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Quiz Problem

- Without discussing with anyone, each student is to write down a real number x_i between 0 and 100 on a paper and submit it to the TA.
- The TA will then compute the average

$$\bar{x} = \frac{x_1 + x_2 + \cdots + x_n}{n}.$$

- The grade is $x_i - 2\bar{x}/3$ where x_i is the number student bids.

Name of the game

Game Theory = Multi-person decision theory

- The outcome is determined by the actions independently taken by multiple decision makers.
- Strategic interaction.
 - Need to understand what the others will do
 - ... what the others think that you will do
 - ...

A coordination game

		Left	Right
Top		(1,1)	(0,0)
Bottom		(0,0)	(1,1)

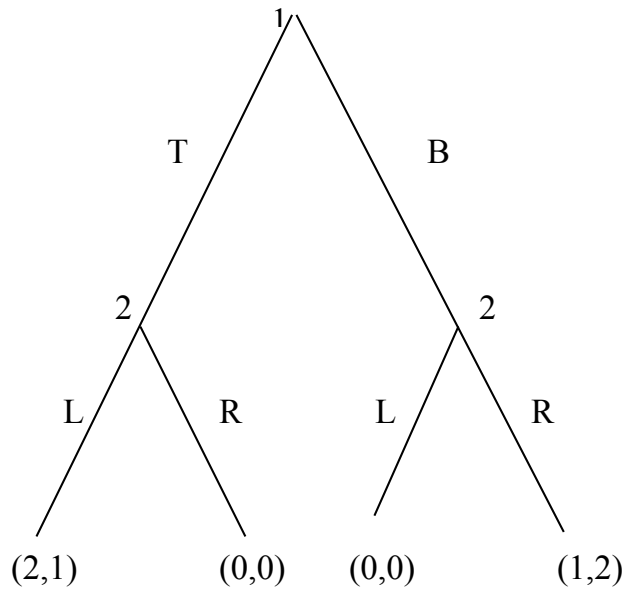
A game

	2			
1		L	m	R
	T	(1,1)	(0,2)	(2,1)
	M	(2,2)	(1,1)	(0,0)
	B	(1,0)	(0,0)	(-1,1)

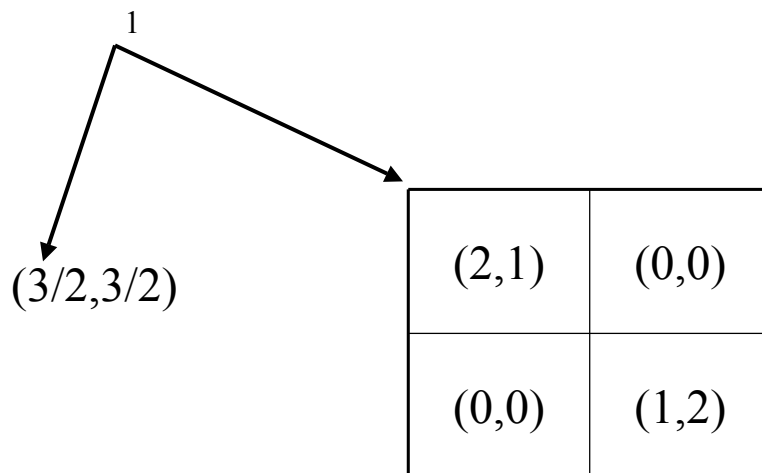
Battle of Sexes

	(2,1)	(0,0)
	(0,0)	(1,2)

Battle of The Sexes with perfect information



Battle of Sexes with outside option



Hawk-Dove game



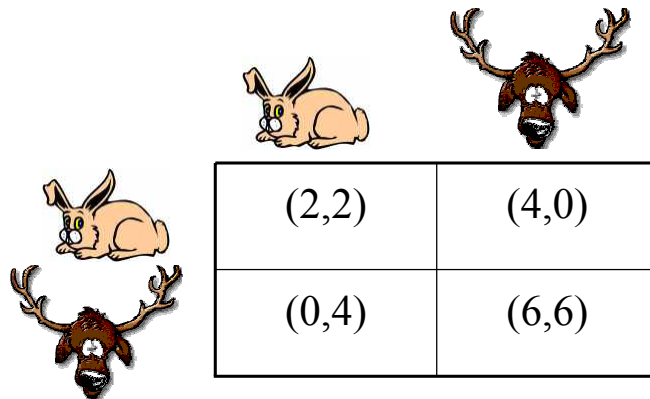
$\left(\frac{V-c}{2}, \frac{V-c}{2}\right)$	$(V, 0)$
$(0, V)$	$(V/2, V/2)$

Chicken





$(-1, -1)$	$(1, 0)$
$(0, 1)$	$(1/2, 1/2)$

Stag Hunt



A 2x2 payoff matrix for the Stag Hunt game. The rows represent the choices of Player 1 (Rabbit or Stag) and the columns represent the choices of Player 2 (Rabbit or Stag). The payoffs are shown in the cells of the matrix. Illustrations of a rabbit and a stag are placed around the matrix to indicate the choices.

	(2,2)	(4,0)
	(0,4)	(6,6)

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