14.12 Economic Applications of Game Theory

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

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

- The grade is $x_i - 2\overline{x}/3$ 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)

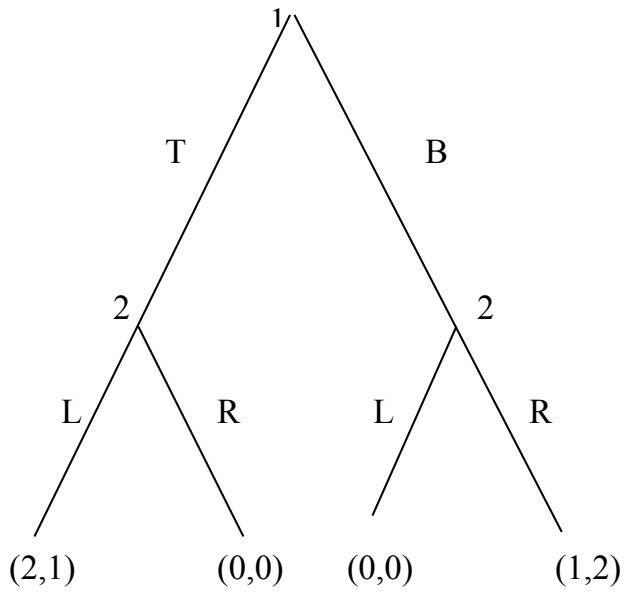
A game

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

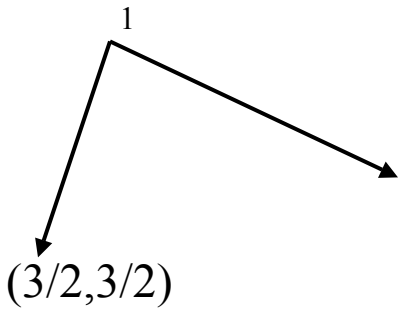
Battle of Sexes

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

Battle of The Sexes with perfect information



Battle of Sexes with outside option



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

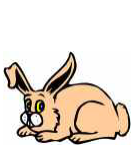
Hawk-Dove game

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

Chicken

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

Stag Hunt



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

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