

ECON 521, Discussion Section 1

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Goals of discussion sections

- Our goal for the discussion sections this term is to work on **important game theory examples** that will help us better understand the concepts covered in the lectures as well as prepare us for problem sets and exams. Discussion sections are also a good place to **ask questions**.
- Discussion sections are optional, but attending discussion sections in economics classes tends to correlate quite significantly with exam performance, so we highly recommend that you attend.
- We will be evaluating you as students through problem sets and exams. However, you will also be evaluating me through TA evaluations. These are important to me. If there's something I can do to facilitate your study of game theory (within reason), let me know.

Logistics

- I don't care which of the four Friday **discussion sections** you come to. You can even be inconsistent and mix it up from week to week, despite what they may say about your rationality. However, two of the discussion sections are in smaller rooms. Therefore, I would ask you to try to avoid coming to the last two discussion sections, which are in the smaller rooms, unless you are registered for them.
 - #301 9:55am - 10:45am in Social Sciences 6102 (open to all)
 - #302 11:00am - 11:50am in Social Sciences 5231 (open to all)
 - #303 12:05pm - 12:55pm in Social Sciences 6314 (come only if registered, pls)
 - #304 1:20pm - 2:10pm in Social Sciences 4322 (come only if registered, pls)

Each week I will have a **discussion section handout** for each of you. I will also post these, along with solutions, on Learn@UW.

- **My office is Social Sciences 6470.** If I expect a lot of people for office hours, I will reserve another room, but I'll put a sign directing you there on the door of 6470.
- **My office hours are Tuesday 10:00am to 11:30am and Thursday 3:50pm to 5:00pm.** If neither of those times works for you, send me an email and we can arrange for another time.
- Please try to avoid sending me questions about game theory by email - instead, **use the office hours**. Talking game theory over email is super inefficient, and hard to do with the notation. It's far better (and more enjoyable), to just come in and discuss during office hours. Please do use the office hours, also - I love talking game theory.
- We'll have **review sessions** before exams.
- We haven't worked out how we'll **collect problem sets and redistribute them** to you yet, but there will be a system for this.
- If you want to **work on your problem sets in groups**, but don't know anybody in the class, email me and I will match you with 2-3 other people in your situation. All I do is share your names and emails with those people (and theirs with you) and then I let you try to arrange to meet as a group to work on a problem set (or study). If you ever want to be rematched, let me know and I'll try to do so. Obviously, my ability to match you into groups depends upon the availability of others wanting to be matched. Note that you must still hand in your own work for each problem set - you cannot submit a problem set as a group.

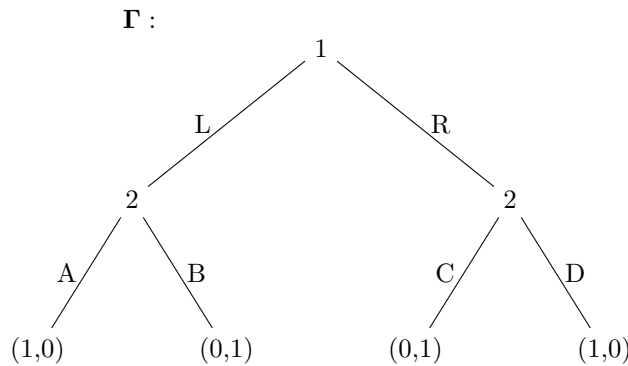
Questions

Q1: Are the following two games (G and G') static or dynamic? Are they displayed in the normal (strategic) form or the extended form? Which archetypical game do G and G' most resemble (pick from: Prisoner's Dilemma, Battle of the Sexes, Stag Hunt, Good Restaurant Bad Restaurant, Matching Pennies)? Are G and G' *ordinally equivalent*? Are G and G' *cardinally equivalent*?

G :		L	R
	T	19,15	3,0
	B	0,3	15,19

G' :		L	R
	T	-2,-3	-4,-5
	B	-5,-4	-3,-2

Q2: Is the following game, Γ , static or dynamic? Is it displayed in normal (strategic) form or extensive form? Can it be displayed in the other form? If so, do it. If not, explain why it cannot. Why is A not a strategy for player 2?



Q3: Write up the strategic form (i.e. a bi-matrix of payoffs) for *Rock, Paper, Scissors* given that a player gets one util if she wins, negative one if she loses, and zero otherwise. Is this game typically played with complete information? Is it static or dynamic?

Q4: For each table, determine whether the two utility functions are *ordinally equivalent*, *cardinally equivalent*, both, or neither. If they are *cardinally equivalent*, write v as a transformation of u . Let O denote the outcome.

Table 1

O	$u(O)$	$v(O)$
A	1	6
B	7	18
C	2	8

Table 2

O	$u(O)$	$v(O)$
A	9	-2
B	-12	-9
C	3	-4

Table 3

O	$u(O)$	$v(O)$
A	1	4
B	2	5
C	3	7

Q5: At the doctor's office, you test positive for a disease called *Gametheoryitis*, a crippling condition under which you apply game theoretic reasoning to every situation in life, even when such reasoning is unnecessary. Exactly one percent of people suffer from this affliction. Your doctor tells you that the test is sometimes incorrect. In particular, when given to people who do not suffer from this affliction, the test still yields a positive result ten percent of the time. In the other direction, five percent of those with the disease receive negative test results. Given that you tested positive, what is the probability you have the affliction? (hint: Bayes' rule)